

# PROCEEDING

## International Conference on Vocational Education and Training (ICVET) 2012



# 60 Years

## Indonesia-Germany

From Friendship to Partnership



# 6 Windu

21 Mei 1964 - 21 Mei 2012

*Strengthening the Partnership  
between Vocational Education and Training and Industry*

**Yogyakarta State University, INDONESIA**  
**28 June 2012**



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# Proceeding

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**All articles in the Proceeding of International Conference on Vocational Education and Training (ICVET) 2012 are not the official opinions and standings of editors. Contents and consequences resulted from the articles are sole responsibilities of individual writers.**

## **FOREWORD**

This proceeding compiles all papers from the invited speakers and complementary papers in International Conference on Vocational Education and Training (ICVET) 2012. The conference is organized by Yogyakarta State University in collaboration with the German Embassy in Jakarta and the Indonesian Embassy in Berlin on 28 June 2012. It is conducted as a part of event series held to celebrate 60 Years Indonesia-Germany Partnership.

The main theme of this conference is “Strengthening the Partnership between Vocational Education and Training and Industry”. Three sub themes are covered in this conference: 1) Management; 2) Learning Process; and 3) Program and Collaboration.

I should apologize for the discontentment and inconvenience concerning both the conference and proceeding. I hope this proceeding will give deeper insights about vocational education and training.

Yogyakarta, 28 June 2012

Editor

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# IDENTIFYING THE CUSTOMER IN VOCATIONAL EDUCATION & TRAINING

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## Abstract

Vocational Education & Training (VET) in Australia has a proud history of partnership between the key stakeholders of Government, Industry, Employers, Training Organisations and Individuals. Rigour, regulation and full stakeholder commitment to quality provision has ensured the strength of the Australian VET system, industry and the skills of their workforce. In the last decade, national skills shortages and political/demographic changes have created tensions between stakeholders. Scrutiny around governance, quality regulation and responsibility for skills raises questions as to role distinction within the sector. Government policy changes have devolved much of the responsibility for training to the VET marketplace, creating a responsive but short-term satisfaction of consumer demand at the expense of long term, strategic development of a strong skills profile for the future workforce. At the heart of the competing demands of VET stakeholders lies the question, “Who is the Customer of VET?”

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## 1. Introduction

### History

Since Federation, Australian states<sup>1</sup> have recognised apprenticeships at the heart of trade skill development. The system has evolved over time, with increased government regulation, funding for training and support for both apprentices and employers.

### 1.1 The Australian Commonwealth Government regulates vocational training qualifications through National Training Packages.

Delivery is the responsibility of State Governments. Critical to the provision of a robust apprenticeship and traineeship system is the relationship between employer, training organisation and apprentice. Governments have regulated the training system through funding of a network of Technical and Further Education (TAFE) institutes, and stimulated training through financial incentives paid to both individuals (apprentices/trainees) and employers.

In the last decade, the Australian apprenticeship/traineeship system has come under scrutiny from government and industry, as skills shortages in the trades threaten to undermine the sustainability of the economy. The quality, cost, attractiveness and flexibility of apprenticeships and traineeships – for each stakeholder – have been widely debated.

### Driver 1 – Labour Shortages

A shortage of labour in specific Australian industries (eg. Mining) has led to policies (such as VISA 457) that encourage skilled migration from overseas. This satisfies short-term labour needs, but does experience some resistance from those attentive to Australian unemployment statistics. Meeting the demand for skilled workers locally requires both the skills generation and a local population willing to acquire them.

### Driver 2 – Skill Shortages

The issue of skills shortages threaten the viability of Australian industry and, hence, the economy.

*Most industries have remained at relatively stable shares of total employment over time however some industries have changed markedly. Most notable is the long-term decline in manufacturing employment, from a 20 per cent share in the mid 1990s to 16.5 per cent in 1995 to 11.1 per cent in 2010. Significant increases have been recorded in construction (from 6.2 per cent in 1995 to 9 per cent in 2010) and health care and social assistance (from 8.4 per cent in 1995 to 11.4 per cent). [Skill Shortages Victoria, 2011]*

In recent years, the effort has increased to improve the provision of trade skills training across Australia to address growing concern for skills shortages, and the impact those shortage have on the Australian economy. *Government as the customer of VET.* The apprenticeship system remains Australia’s largest trade skills development

program. Governments regulate, and encourage growth in apprenticeships and traineeships through a range of policy instruments:

- Financial incentives have been offered to employers to increase the affordability of hiring an apprentice
- Apprentice wages have increased, and financial bonuses (such as an \$800 toolkit allowance) offered for milestone achievements
- Unique funding access is offered through the School-based apprenticeship program

However, industry has been vocal about the engagement level of the government-funded training system. Numerous industry stakeholders have been highly critical of TAFE, in particular its poor response times and inflexibility to meet employer and industry needs (AiG Response to Productivity Commission *Draft Report Vocational Education Workforce*, Feb 2011).

### **The Government Response**

The Council of Australian Governments (COAG) has committed the nation to the opening up of the apprenticeship training market and in 2011 Victoria was the first state to implement the national policy of full contestability for access to government VET funding.

Prominent industry groups have pressured Australian governments to reform the VET system, to meet their own skills development needs. Governments have responded by encouraging industry and employers to manage their own training needs. *Industry as customer of VET*.

### **State Governments: Marketisation of the vocational education system**

In 2009, the Victorian Government announced the opening of access to VET funding in the policy *Securing Jobs for your Future: Skills for Victoria*. In particular, “the most significant impact of these changes (*was*) the shift from a planning and purchasing model with limited contestability, to a demand based funding model with significantly increased contestability and client choice”<sup>2</sup>. *Individuals as customers of VET*.

### **1.2 Skills Victoria is the state government department responsible for VET delivery in Victoria.**

([http://www.skills.vic.gov.au/\\_\\_\\_data/assets/pdf\\_file/0007/188449/ssa-review-of-skills-vic.pdf](http://www.skills.vic.gov.au/___data/assets/pdf_file/0007/188449/ssa-review-of-skills-vic.pdf))

This redefines the market, inviting private providers to lobby employers and apprentices alike for their training services. TAFEs experienced

strong competition in the less resource-intensive trade training domains. It is clear that the opening of the market has had two clear impacts on Victorian VET delivery:

1. The number of students acquiring VET qualifications has increased; and
2. The proportion of private VET providers issuing qualifications has increased significantly

(2011 Victorian Training Market Quarterly Report – Full Year, March 2012)

‘Contestability’ (the policy) has changed the profile of VET delivery in Victoria, with the Victorian private provider market share increasing from 12% to 34% in the period between 2008 and 2011 (p8, Victorian Training Market Quarterly Report – Full Year, DEECD). Within Victoria University’s traditional geographic heartland of Western Melbourne, 168 new private providers have registered their operations in the 18 months prior to December 2011 (2011 Victorian Training Market Quarterly Report – Full Year, DEECD).

In May 2012, Department of Education & Early Childhood Development (DEECD) delivered *Refocusing Vocational Training in Victoria* as part of the State Budget 2012. The neo-liberal response to excessive VET expenditure has reduced State government investment in vocational education and training, removing TAFE ‘Full Service Provider’ funding and drastically reducing ‘profile’ funding of many courses. Victorian TAFE providers are forecasting a \$400m impact of the strategy with up to 2000 staff redundancies. The Australian Council of Private Education & Training (ACPET) forecasts up to 900 job losses from private providers.

Without government direction and in the hands of a highly contested market, numerous providers have withdrawn delivery to ‘boutique’ trades (such as gunsmithing, watch-making and boat-building), as the financial viability of these courses is threatened. Also, there is significant concern (from Unions, TAFEs, industry) that the exposure of market forces to the provision of trade training services will reduce the quality of training. Since the ‘contestability’ strategy has been implemented, numerous private training organisations have been closed due to financial and quality shortfalls.

### **Federal Government: Redirection of funding**

In 2012, the Council of Australian Governments (COAG) asserted its commitment to TAFE at the centre of its skills development strategy. However, changes to the provision of government investment to training indicate a similar trend away from central (government) investment towards employer / client responsibility for training. Initiatives such as *Workforce Development Funding* specify that:



*“Under the Fund, organisations can identify their current and future business and workforce development needs and apply for funding to support the training of existing workers and new workers in areas of need. “The Fund is part of the Australian Government’s Building Australia’s Future Workforce package and also forms part of Australian Government Skills Connect, an initiative designed to consolidate Government skills programs and better target training to meet industry and employer needs.”<sup>3</sup>*

### 1.3 DEEWR,

<http://www.deewr.gov.au/Skills/Programs/SkillTraining/nwdf/Pages/default.aspx>

### 1.4 Industry Skills Councils

<http://www.isc.org.au/>

These funds are administered (or regulated) through Industry Skills Councils<sup>4</sup> and provided to employers (rather than RTOs). This effectively mirrors the Victorian government intent, to place employers and industry at the heart of training. Inherent in that intent is that employers take responsibility for the development of their own workforce/s. *Employers as customers of VET.*

In effect, employers and industry have been repositioned as the primary customers of vocational education and training.

## 2. Industry

Numerous industry stakeholders have been highly critical of the TAFE workforce, in particular its poor response times and inflexibility to meet employer and industry needs (AiG Response to Productivity Commission *Draft Report Vocational Education Workforce*, Feb 2011).

Over the last ten years Australian governments have suggested (and implemented) various policies to address not only skills shortages, but the criticisms of powerful industry stakeholders. Each attempts to increase stakeholder engagement with training, targeting employers, industry, Registered Training Organisations (RTOs) and individuals.

Industry representative groups (such as Australian Industry Group, AiG) have successfully lobbied successive governments for pro-industry reforms to the apprenticeship system, such as a shift away from the time-served model towards Competency-Based Progression (in Engineering and Automotive) and Competency-Based Completions (CBCs in 13 trades, including Carpentry, Cookery, Electrical, Plumbing, Hairdressing, etc). Another of the COAG commitments, these changes are currently being rolled out. To reduce the time served in an apprenticeship addresses labour shortages through a shortened pipeline, and attempts to present a more attractive model for young people considering a career in trades.

*Individuals as customers in VET.*

To attract more young people into trades, the Australian Government has committed \$2.5 billion to the establishment of Trades Training Centres (TTCs) in schools across Australia. TAFE is likely to see – and collaborate in – the shift of delivery of Certificate II (School-Based Apprenticeship, Pre-apprenticeship and VET in Schools) programs onto these school sites.

## 3. Attractiveness of VET to Local Youth

The status of apprenticeships has been promoted to young people and their parents with increased marketing to Careers Educators and through popular media. Over many years, government (*Government as customer of VET*) implemented financial incentives as levers within the market, boosting apprentice wages (*Individual as customer of VET*) and rewarding employers for taking on apprentices (*Employers as customers of VET*).

Despite the clear employment opportunities available for those completing a trade apprenticeship (80.7% of those with a CIII qualification are working after training, with an average salary of \$45,500) the luxury of choice for young people to fill positions within the job market, is increasing. Young people can afford to be more demanding of their employers – and their training providers – as the youth unemployment rate drops and employer competition for their service, increases.

Responding to national educational attainment targets, the Victorian Government has invested considerable funding to address the Australia-wide issue of apprentice attrition (currently sits at roughly 50%). Apprentice drop-out is costly for employers and government alike and typically surrenders the ex-apprentice to low educational achievement, for life. Services such as Apprentice Support Officers (ASOs), Apprentice Field Officers (AFOs) plus new responsibilities for Group Training Organisations (GTOs) and Australian Apprenticeship Centres (AACs) support and monitor apprentice engagement.

Criticisms of young people toward the apprenticeship system include the low remuneration structure (currently under review from Fair Work Australia) and the duration of the apprenticeship. Both of these are criticisms echoed within the mature-aged apprenticeship market.

## 4. The Mature Apprentice

Australia has a rapidly ageing demographic, with a decrease in numbers of young people entering the workforce and an increase in the lifespan (and potential workspan of existing workers). There is an increasing need to train and retrain older workers as skill sets required for evolving jobs, change.

For mature age apprentices, the living wage is a key issue, with social ramifications of no adjustments to salaries for people with families. Apprenticeship salaries and contracts suppose youth; apprenticeships for older workers require a different compact between employer, individual and institution.

## 5. Overseas Approaches

Australia's apprenticeship model was originally modelled on the established British system, and Australian governments and industry continue to reflect on developments in the VET system in Great Britain (and other countries). Fuller & Unwin (2007), in *What counts as good practice in contemporary apprenticeships? Evidence from two contrasting sectors in England* identify a range of features, that when combined, appear to create the conditions for well-managed and effective apprenticeships. According to Fuller & Unwin, good practice features tend to appeal to two stakeholder groups in particular:

### *Government as Customer of VET*

- Investment over and above government funding is critical for the provision of an apprenticeship program that builds capacity for the future

### *Individual as Customer of VET*

- Investment in publicity about the program to sustain a reputable image of VET in the community at large.
- Young people are regarded as important for the future success of the organisations and are made to feel valued
- Well-designed recruitment policies and practices help to select young people who can benefit from an apprenticeship and contribute to the organisation's (ever) developing skill base
- Dedicated personnel monitor the progress and welfare of apprentices and liaise with line managers, supervisors and trainers to ensure both personal and organisational needs are being met
- Training (on and off-the-job) is seen as relevant to the apprentices' work tasks and as providing a platform for further progression.

In Rudd, Henderson, Usher & Hawtin's 2008 *Rapid review of Research on Apprenticeships* in the United Kingdom noted the similarity of UK issues about apprenticeships as in Australia: problems with quality, employer commitment, retention and progression of apprentices (including to Higher Education), concerns about the capacity of on-job apprenticeships achieving standards required and cultural issues associated with the status of

apprenticeships.

In contrast to the UK, Australia has entered a new era of a demand-driven tertiary education market characterised by increased competition (between training organisations) with uncapped government funding. In 2009, the Victorian Government announced the opening of access to VET funding in the policy *Securing Jobs for your Future: Skills for Victoria*. In particular, "the most significant impact of these changes (*was*) the shift from a planning and purchasing model with limited contestability, to a demand based funding model with significantly increased contestability and client choice".

([http://www.skills.vic.gov.au/\\_\\_data/assets/pdf\\_file/0007/188449/ssa-review-of-skills-vic.pdf](http://www.skills.vic.gov.au/__data/assets/pdf_file/0007/188449/ssa-review-of-skills-vic.pdf))

This decentralisation reduces government direction of the focus or supply of training, reliant on the market to regulate provision in accordance with consumer demand. In this case, *Employer and Individual as Customer of VET* has elevated the customer to a position of control in VET provision.

The benefits of competition in the Australian training market have yet to be fully realised, and neither have the risks. Numerous stakeholders have raised serious concerns about the risk to training quality, of reduced central governance of VET.

## 6. A National Skills Strategy

Governor of the Reserve Bank of Australia, Glenn Stevens advises caution in Australia's reliance on the Chinese economic boom and its appetite for resources. Some 13% of Australia's annual income is generated by China importing Australian commodities<sup>5</sup>. Government initiatives to boost apprenticeship numbers must see beyond the current skills shortages and prepare Australians and the workforce for a post-China economy.

5 Sydney Morning Herald, 23/02/11

To equip a nation's workforce beyond current market priorities requires long-term, strategic thinking.

In 2012, the Council of Australian Governments (COAG) asserted its commitment to TAFE at the centre of its skills development strategy. However, changes to the provision of government investment to training indicate a similar trend away from central (government) investment towards employer / client responsibility for training. Initiatives such as *Workforce Development Funding* specify that:

*"Under the Fund, organisations can identify their current and future business and workforce development needs and apply for funding to support the training of existing workers and new workers in areas of need. "The Fund is part of the Australian Government's Building Australia's Future Workforce package, an initiative designed to*

*consolidate Government skills programs and better target training to meet industry and employer needs.”*

Long-term skills strategies must be centrally driven, clearly articulated and capture the ‘buy-in’ of industry. Within the above statement, government’s responsibility is to create the industry and employer need. To leave VET provision to the whim of markets controlled by individuals and employers risks short-term thinking, and a potential crisis in the national skills profile.

Support strategies to encourage individual participation in VET should rely on strategic rather than reactive measures. Training is a longer term commitment by all stakeholders: individuals, governments, employers and industry, to create a skilled future workforce. Longer term commitment must be secured within a longer term, strategic framework.

## 7. Conclusion

Australia’s vocational education and training system has faced significant criticism and reform in recent years, as labour and skills shortages threaten the potential and viability of Australian industry to compete in a global economy. Stakeholders (government, industry, VET organisations, employers and individuals) have competing interests in the shape and outcomes of VET, yet the shift to a market-led, demand-driven system risks short-term thinking to override the long-term strategic thinking required to equip a nation’s workforce for the future.

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# **PARTNERSHIP MODELS OF VET AND INDUSTRY: GERMANY EXPERIENCES IN FIRST AND CONTINUOUS EDUCATION.**

**Prof. Dr. Thomas Köhler**

## **Abstract**

The German educational system has a serious strength concerning the organization of the vocational and technical education. A core component of the TVET is the strong inter-organizational, even inter-sectorial linkage between vocational institutions and industry. The principle of the German model is to interlink training components coming from both sides, VET and Industry. Whereas in some other European states more than 50% of the workforce received a mainly academic training, taking place at a colleges and universities, in Germany the majority of the workforce is trained within the VET programmes. Due to the core role of the two key players, VET and Industry, it is labelled the “Dual System”.

However over the last 25 years the Dual System did not always receive high appreciation. Indeed also in Germany the vocational education training has lost some attention not only among the young. Even policy was more concerned about the Europe-wide harmonization of the academic education sector, labelled as the Bologna process. Also young people tend to prefer office oriented professions, for example in an administration or in the media industry, what has led to further difficulties. Now, with the demographic change due to a decreased birth rate, for the first time since decades there are more apprenticeships in VET offered than young people exist!

These influences are among others currently leading to a renewed attention given to the VET in Germany. The paper will discuss two examples for new development lines in a case study like manner, concerning both challenges and related approaches for structural developments of the VET in Germany.

Measure 1 deals with the European Framework for Education, an 8-step-scale that defines how to interlink the different levels of any education provided in Europe. Indeed the national VET schemes lead sometimes to dead ends of education, when the highest vocational level is reached but the transfer to other educational routes would not be allowed. It will be discussed what consequences such a unified qualification scheme does have for the Dual System in VET and how the German educational sector tries to keep up, perhaps even advances by adopting it.

Measure 2 deals with need of an improved collaboration of VET and Industry in the training process. Here the duality leads to some weakness because education is not delivered by one institution only. Indeed even different regulations need to be applied to determine the targets and contents of the VET. Introduced is a research project of Dresden University of Technology, one of Germanys leading academic institutions, which aims to promote social interaction between learners and teachers to encourage the building of vocational online- communities of learners and teachers in vocational education but also of practitioners who are located at different places but need to exchange knowledge and information

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## **1. Measure 1: The European Framework for Education and its meaning for the TVET in Germany**

The European Qualifications Framework for Lifelong Learning (EQF) is a relatively new eight-step scale that defines how to interlink the different levels of any education provided in Europe. The EQF, Which is intended to act as a vehicle for linking the various national qualifications system via so-called National Qualifications Framework in order to create greater understanding of national qualifications at a European level profiles (cf. EUROPEAN COMMISSION, 2008). Following the recommendation of the European Parliament and European Council of 23 April 2008 on its establishment the European Qualifications Framework for lifelong learning should be linked to the national system of qualifications until 2010.

However, the new scheme does not directly fit the German legal situation as defined by the Vocational Training Act (cp. Federal Ministry for Education and Research, 2005).

To implement this new European specification in Germany it has been agreed to develop a national qualifications framework, the DQR. Following the adoption of the DQR (see DQR Working Group, 2011) in the group DQR also been afforded an opportunity to begin the mapping of national qualifications levels to the DQR. As described by Esser (2012) already during the phase of drafting the DQR drew a dissent in the positions between the TVET affiliated institutions and the Standing Conference of the Education of the German states (KMK) occurred. In particular the allocation of professional qualifications and general university entrance qualification could not be resolved, even until now.

Indeed the subsequent VET leads sometimes to dead ends of education, when the highest vocational level is reached but the transfer to other educational routes would not be allowed. It will be discussed what consequences such a unified qualification scheme does have for the Dual System in VET and

how the German educational sector tries to keep up, perhaps even advances by adopting it.

In its German version the qualification framework is linked to the levels of vocational and professional education as follows (cp. Esser 2012) in table 1.

Table 1: German version the qualification framework and related levels of vocational and professional education

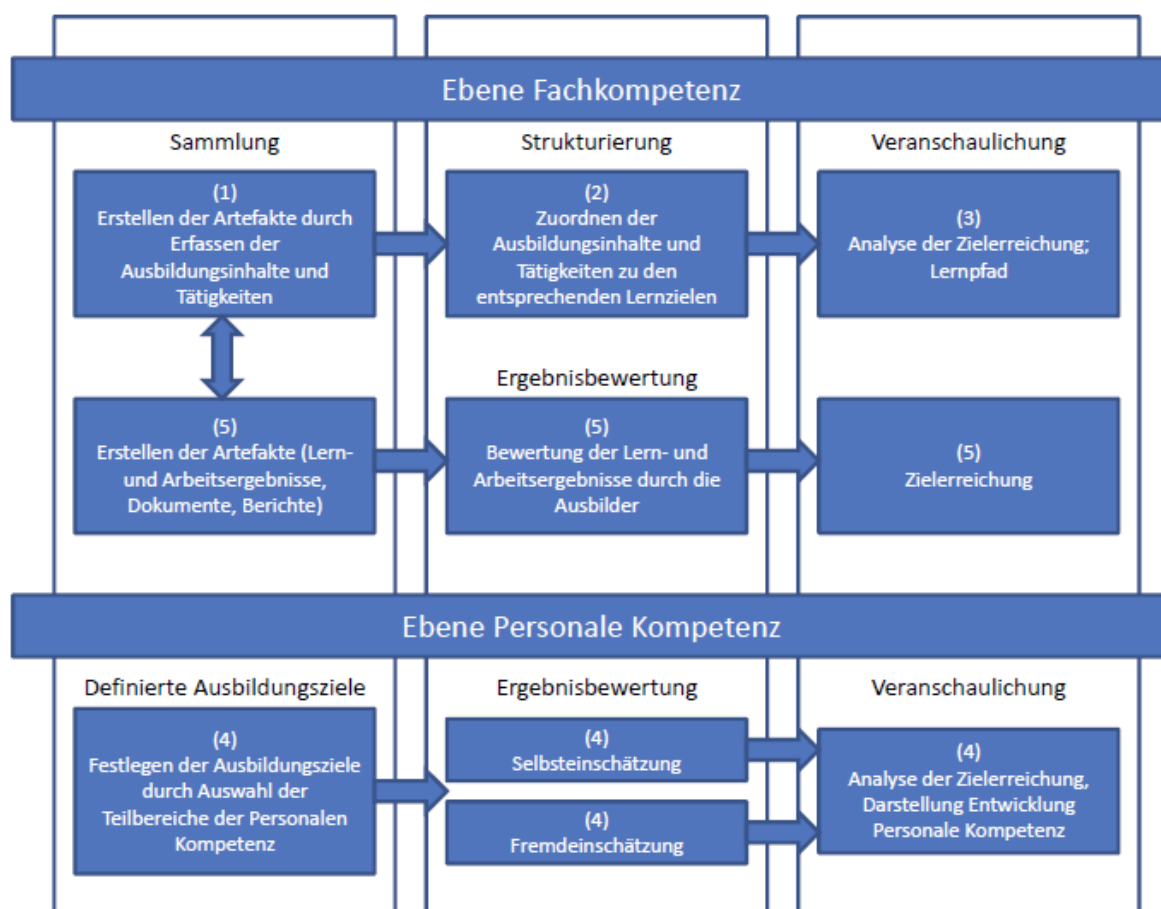
<b>Niveau- stufe</b>	<b>Niveauindikatoren</b>	<b>Exemplarische Zuordnung von formalen Qualifikationen</b>
<b>1</b>	Über Kompetenzen zur Erfüllung einfacher Anforderungen in einem überschaubar und stabil strukturierten Lern- oder Arbeitsbereich verfügen. Die Erfüllung der Aufgaben erfolgt unter Anleitung.	
<b>2</b>	Über Kompetenzen zur fachgerechten Erfüllung grundlegender Anforderungen in einem überschaubar und stabil strukturierten Lern- oder Arbeitsbereich verfügen. Die Erfüllung der Aufgaben erfolgt weitgehend unter Anleitung.	
<b>3</b>	Über Kompetenzen zur selbstständigen Erfüllung fachlicher Anforderungen in einem noch überschaubaren und zum Teil offen strukturierten Lernbereich oder beruflichen Tätigkeitsfeld verfügen.	Zweijährige Ausbildungsberufe
<b>4</b>	Über Kompetenzen zur selbstständigen Planung und Bearbeitung fachlicher Aufgabenstellungen in einem umfassenden, sich verändernden Lernbereich oder beruflichen Tätigkeitsfeld verfügen.	Drei- und dreieinhalbjährige Ausbildungsberufe
<b>5</b>	Über Kompetenzen zur selbstständigen Planung und Bearbeitung umfassender fachlicher Aufgabenstellungen in einem komplexen, spezialisierten, sich verändernden Lernbereich oder beruflichen Tätigkeitsfeld verfügen.	Erste Aufstiegsfortbildungsebene (Spezialist)
<b>6</b>	Über Kompetenzen zur Planung, Bearbeitung und Auswertung von umfassenden fachlichen Aufgaben- und Problemstellungen sowie zur eigenverantwortlichen Steuerung von Prozessen in Teilbereichen eines wissenschaftlichen Faches oder in einem beruflichen Tätigkeitsfeld verfügen. Die Anforderungsstruktur ist durch Komplexität und häufige Veränderungen gekennzeichnet.	Zweite Aufstiegsfortbildungsebene (operativer Professional), Bachelor, Fachschule, Fachwirt, Meister
<b>7</b>	Über Kompetenzen zur Bearbeitung von neuen komplexen Aufgaben- und Problemstellungen sowie zur eigenverantwortlichen Steuerung von Prozessen in einem wissenschaftlichen Fach oder in einem strategieorientierten beruflichen Tätigkeitsfeld verfügen. Die Anforderungsstruktur ist durch häufige und unvorhersehbare Veränderungen gekennzeichnet.	Dritte Aufstiegsfortbildungsebene (strategischer Professional), Master
<b>8</b>	Über Kompetenzen zur Gewinnung von Forschungserkenntnissen in einem wissenschaftlichen Fach oder zur Entwicklung innovativer Lösungen und Verfahren in einem beruflichen Tätigkeitsfeld verfügen. Die Anforderungsstruktur ist durch neuartige und unklare Problemlagen gekennzeichnet.	Dr., Ph. D.

**2. Measure 2: Improving collaboration of VET and Industry in the training process by web 2.0 methods**

Continuous training is one of the most rapidly growing sectors of education and has become even stronger under the label of lifelong learning in Europe (cp. Frindte et al., 2001; El-Gamal & Köhler, 2009). However, it appears that vocational education learning contents and as well as study contents hardly meet the operational specifics of work-related training where rather short periods of training activity are needed.

To explore the potential that is given by the application of new online technologies in the field of vocational training we present the online vocational portfolio as an example. This online vocational portfolio is not a direct transfer of the traditional vocational educational and training model into the context of virtual teaching and learning. Moreover it is a solution to improve the organization and documentation, and the way how students deal with the individual reflection of the educational and training process – as shown by the table 2.

Table 2: Workflow of principal activities concerning subject related versus person related competencies



The online training certificate was developed within the R&D project „Online record book for strengthening the place of learning cooperation” (<http://www.blok-online.org/>) and is currently sponsored by the Federal Ministry for Education and Research within the context of the national programme „Web 2.0 in Vocational Education”. In the centre of the project stands the re-development of our existing instrument, a paper-based training certificate book, with the help of innovative online communications technologies. Primary objective is to strengthen the cooperative learning location

between businesses and schools through a unified and common information base. Overall, the online record book links all stakeholders participating in the vocational education scheme, including students, teachers, vocational trainers and members of the examination committees at the chambers of trade.

The online record book is the digital conversion of paper-based form of the report booklet in a Web 2.0 application that can be used anytime, regardless of current place of learning of the trainee. As usual

with the classical form of report specifications, the trainees also document in the web form on a regular basis the temporal and material process of its apprenticeship. The special feature is the virtual representation of the entire process of using the record book. This means that not only the time and location independent performing and reading the report booklet is made possible through the online training certificate, but also the (legally binding) acceptance of the report issue by the instructor and the transfer of the record books contents to the examiners in the respective chambers and guilds.

Figure 1 shows a screenshot of the report book in the weekly issue. Besides the view of a single weekday there is a possibility to select the form of training and the type of presence (for example, vacation or illness). In addition, the trainee can insert an unlimited amount of additional contents (notes, documents etc.) in his record book, which allows building an extensive but highly individual documentation

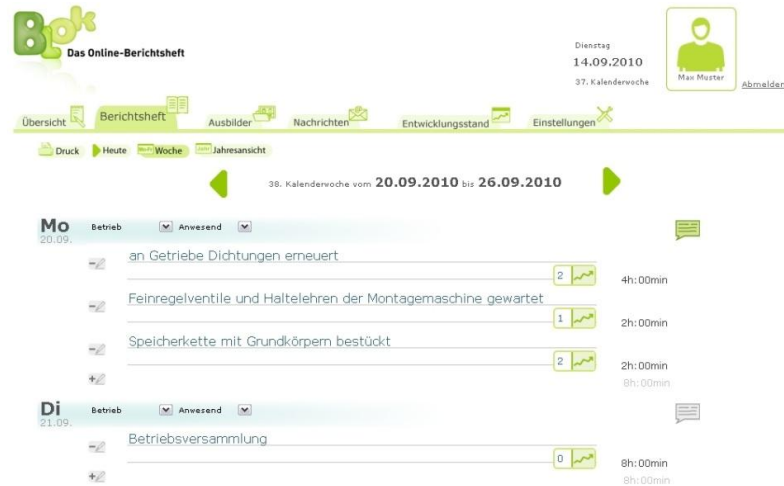


Figure 1: Implementation of the report in the online record of formal qualification

Main goal is the reliable collection and presentation of subject specific competences in the context of the vocational training. The measure of professionally applicable, well-trained competencies is based upon the trainees initially assignment in the record book. Here the entries are linked to so-called qualifications, i.e. vocational training positions from the regulations, which are stored in the system according to the professions temporal and subject related structure. This assignment requires active reflection of the training content edited by the trainees and can thereby strengthen their ability to reflect their own vocational development.

Captured by the accumulation in the record book and the professional profiles positions assigned work or study hours in each area, the corresponding actual state is represented as achieved by the trainees. With the target / actual status indicator both the trainees and trainers are able to identify whether the trainee has worked according to training policy / curriculum at the particular time and on the necessary activities to a sufficient extent. Through the resulting transparency differences may be easily detected and corrected by the student in a mostly self-determined way.

Betriebliche Qualifikationen: Peter Schröder

Aktueller Stand  Entwicklungsstand vergleichen

Gesamter Ausbildungszeitraum: vom 28.01.2010 bis 27.01.2013

Vergleichszeitraum: Bis vor 2 Monaten (vom 28.01.2010 bis 22.12.2010)

Optionen  Berufsbegleitende Qualifikationen ausblenden

Berufsbildposition	Soll	Ist	Offen	Datenauswertung in Prozent
0 Nicht zugeordnet	---	598h	---	
5 Betriebliche und technische Kommunikation	274h	83h	192h	30,1%
6 Planen und Organisieren der Arbeit, Bewerten der Arbeitsergebnisse	175h	53h	122h	30,2%
7 Montieren und Anschließen elektrischer Betriebsmittel	187h	87h	100h	46,7%
8 Messen und Analysieren von elektrischen Funktionen und Systemen	155h	59h	97h	37,8%
9 Beurteilen der Sicherheit von elektrischen Anlagen und Betriebsmitteln	96h	67h	29h	70,1%
10 Installieren und Konfigurieren von IT-Systemen	50h	34h	16h	67,3%
11 Beraten und Betreuen von Kunden, Erbringen von Serviceleistungen	123h	18h	105h	14,9%

Figure 2: Screenshot of the online TVET competency development portfolio

Figure 2 shows a screenshot of the development portfolio presented in relation to the job description for each position of activity as defined by the training regulations and, secondly, its completion measured by the amount of workload completed in % of the overall amount demanded.

### 3. Conclusions

1. The German vocational education system offers a strong basis for a high quality approach to TVET when principally involving both, the schools and the industry. However the system does also show some weakness in the context of an effective collaboration of both partners. Another demand is linked to the localization of the TVET in the overall education system.
2. Recent developments concerning both new organisational principle and new media technologies allow the development of better solutions for the near future. One can also speak of a slight renovation of the dal system in Germany to trigger its classical strength.
3. Moreover such provides additional opportunities to re-define the role of the trainee as a self-steered and self-reflected learner who becomes more and more an active partner of both, the teacher and the vocational trainer.

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# INDUSTRIAL SUPPORT IN VOCATIONAL EDUCATION AND TRAINING DEVELOPMENT TO ACHIEVE QUALITY ASSURANCE OF INDONESIAN PROFESSIONAL LABOR FORCE

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## Abstract

High quality of labor force can be formed through quality assurance of the education vocational and training system. Vocational education and training can help individuals to generate income and contribute towards economic growth and social development of a country by acquiring knowledge and skills. Trend analysis is needed and very important to face globalization competitiveness of labor force in order to become ready to fulfill demand driven in workplace. Government Policy and Planning Development will be created based on the result of trend analysis to sustain vocational and technology education development in Quality Assurance Industry Based. Vocational education and training to effectively support industrialization, economic growth, wealth creation and poverty eradication, skills training must be of high quality and competency-based. Vocational education and training development is needed in the preparation professional labor force in the field of engineering for national development purposes to fulfill demand driven. Technical and vocational education and training (TVET) has emerged as one of the most effective human resource development strategies that Indonesia country need to embrace in order to train and modernize their technical workforce for rapid industrialization and national development. The impact of globalization on technical and vocational education in Indonesia and how skills training in developing countries can benefit from a globalizing economy. Technical and vocational education play a vital role to effectively support industrialization, economic growth, skills training must be of high quality and competency-based. Consequently, cooperation among industrial, Government Institutions, Chamber of Commerce and Industry should be managed by a clear government policy to prepare professional labor force to fulfill demand driven correspond with national development purposes.

**Keywords:** quality assurance, vocational education and training, income, economic growth, labor force, professional, industrial.

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## 1. Introduction

Education aims to complete the personal in the balance, trade, organic, harmonious, and dynamic to achieve the purpose of human life. Educational philosophy is the philosophy used in the study of educational problems. Characteristics are thought of philosophy:

- Think by using the high discipline of thinking,
- Think systematically, and
- Compile a comprehensive conceptual schema.

So through a person's vocational education will be expected to be **competent** (professional fields), **confident** (confident in his ability), **consistent** (steady stance/istiqomah), has a **commitment** (in the promise/responsibility) and have **credibility**

(trustworthy/trustful/al-amin) in performing their duties.

Knowledge and skills of vocational education and training can help individuals to generate income that contributes to economic growth and social development of a country. Educated workforce will be better and become critical if we are to meet the requirements of labor demand with a more rapid growth. A country's economic growth is crucially dependent on the ability to produce goods and services of better quality with competitive price.

Training and skills development play an important role in the productive capacity of individuals and is an integral part of Human Resource Development. Vocational education and training to effectively support the industrialization,

economic growth, wealth creation and poverty eradication, skills training should be high quality and competency based. Development of vocational education and training required in preparation for the professional labor force in the field of engineering to national development goals.

In general, vocational education is "industrial educators" whose role in the design and implementation of educational programs oriented to the needs of the industrial production process. So vocational education is concerned with technological developments affecting the industry. Vocational education should be able to be a dynamic entity and is able to follow developments in the industry.

Indonesia has the classification of vocational education is somewhat unique and slightly different from that applied in other countries. Overall, the types of education in Indonesia stipulated in Act no. 20 of 2003 on National Education System, Article 15. This article reads: "This type of education include general education, vocational, academic, professional, vocational, religious, and special." There are three types of education in the category of PTK (technological and vocational education) are vocational, professional and vocational for under graduate level.

Vocational education should be adaptive and flexible with the era. This kind of education will continue to grow in the future where the role of higher-quality human resources. Globalization will also be very instrumental for the provision of qualified labor will occur regardless of geographic boundaries.

One of the most important features of TVET is its orientation towards the world of work and the emphasis of the curriculum on the acquisition of employable skills. TVET delivery systems are therefore well placed to train the skilled and entrepreneurial workforce that Indonesia needs to create wealth and emerge out of poverty. Another important characteristic of TVET is that it can be delivered at different levels of sophistication. This means that TVET can respond, not only to the needs of different types of industries, but also to the different training needs of learners from different socio-economic and academic backgrounds, and prepare them for gainful employment and sustainable livelihoods. A skilled workforce is a basic requirement for driving the engine of industrial and economic growth, and TVET holds the key to building this type of technical and entrepreneurial workforce.

Technical and vocational education and training (TVET) has emerged as one of the most effective human resource development strategies that Indonesia country need to embrace in order to train and modernize their technical workforce for rapid industrialization and national development.

Training for high-quality skills requires appropriate training equipment and tools, adequate supply of training materials, and practice by the learners. Other requirements include relevant textbooks and training manuals and qualified instructors with experience in enterprises. Well-qualified instructors with industry-based experience are hard to come by, since such categories of workers are also in high demand in the labor market. But they could be suitably motivated to offer part-time instruction in technical and vocational schools.

### 1.1 Function of Vocational Education and Training are:

- a. Prepare students to become fully human Indonesia that can improve the quality of life, able to develop themselves, and have the skill and courage in a sense opened opportunities to improve income ",
  - 1) Meeting the workforce needs of business and industry
  - 2) To create employment for themselves and for others
  - 3) Change of dependency status of students into the nation's income (productive)
- b. Prepare students to master science and technology, so
  - 1) Able to follow, control, and adjust to the advancement of science and technology
  - 2) Have the basic skills to be able to develop self-sustainable.

Vocational education and Training as further higher education that prepares students for a job with a specific applied skill equivalent to the maximum degree program.

## 2. Problem

In general, the quality of training is low, with undue emphasis on theory and certification rather than on skills acquisition and proficiency testing. Inadequate instructor training, obsolete training equipment, and lack of instructional materials are some of the factors that combine to reduce the effectiveness of training in meeting the required knowledge and skills objectives. High quality skills training requires qualified instructors, appropriate workshop equipment, adequate supply of training materials, and practice by learners.

The low quality of vocational and vocational education in Indonesia is one of the causes of the increasing unemployment of the labor force year to year. This makes the burden becomes increasingly heavy government to reduce unemployment. Meanwhile, annual population growth rate increased sharply, not comparable with the availability of jobs. However, people who have a particular field of expertise and skills such as

carpentry experts, workshop, mining, shipbuilding and other experts can do many jobs. So that they no longer rely completely to existing jobs. But they could make work that is needed by industry and businesses to earn revenue.

Expertise and skills required by industry is still difficult to be fulfilled by vocational technology education, due to quality assurance in vocational schools and other institutions of vocational do not according to the model industry yet. Under these conditions required a comprehensive study to find the right model, so as to meet the requirements desired by the industry and the business world. Therefore, improving the quality of vocational education on an ongoing basis (continuous improvement) is inevitable. Because of the relevance and quality of secondary vocational education is low, access to secondary vocational education services have been inadequate, and the management of education is still not efficient (Dikmenjur/Secondary and Vocational Education, 2004).

Current training programs in many countries are supply-driven. TVET programs are very often not designed to meet observed or projected labor market demands. The emphasis appears to be on helping the unemployed to find jobs, without any critical attempt to match training to available jobs. This situation has resulted in many vocational school graduates not finding jobs or finding themselves in jobs for which they have had no previous training. Non-targeted skills development is one of the major weaknesses of the TVET system in Indonesia. Training institutions also do not track the employment destination of their graduates. Consequently, valuable feedback from past trainees on the quality of the training they have received and the opportunity for their experience-based inputs to be factored into the review of curricula and training packages are lost. In other words, the use of tracer studies to improve the market responsiveness of training programs is currently absent in many countries.

Currently the trend seen many that vocational education providers are not able to change more rapidly to anticipate the needs of the workforce in the industry. Therefore, vocational education needs to improve the quality and quantity to address the acceleration of progress marching dynamics of an increasingly competitive job market. This can be realized if the concept of a mature and reliable than government policy, vocational education practitioners, industry and guarantee the quality of graduates.

There are two training models stand out for mention: the centralized Singaporean model and the dual system practiced in Germany. In Singapore, a National Manpower Council ensures that training is relevant to the needs of the labor market. Training also includes the inculcation of shared cultural values and attitude development. The dual system of vocational training in Germany allows for learning to take place in a vocational school and in an enterprise concurrently. Approximately, 70% of all school leavers, aged between 15 and 19 years undergo training under the dual system. The dual system promotes the linkage of vocational training to the world of work. Therefore, the dual system has been implemented in Indonesia, just for few years when Prof. Dr. -Ing. WardimanDjojonegoro as Ministry of Education and Culture from March 17<sup>th</sup> 1993 – March 17<sup>th</sup> 1998.

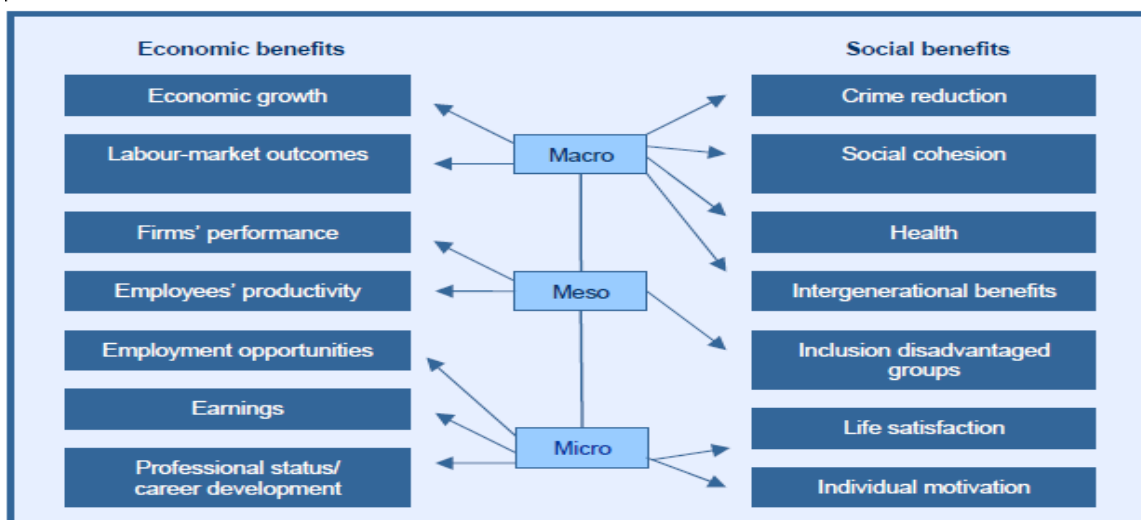
### 3. Discussion

To achieve high quality of labor force can be formed through quality assurance of the education vocational and training system. Therefore, it can be derived from VET benefits.

Fig. 1 **Types of VET benefits**

**VET benefits** can be grouped using a classical typology based on the nature of results. Two main categories can be identified: economic benefits and social benefits. Both can be analyzed on three different levels: the **micro** level (the benefits for individuals); the **meso** level (benefits for

**Figure 1 Types of VET benefits**



Source: Cedefop

enterprises/groups); and the **macro** level (benefits for society as a whole). Figure 1 gives examples of VET benefits according to the dimension (economic and social) and the level of analysis (micro, meso and macro).

### **Economic and social benefits reported by countries**

#### **The economic dimension**

##### **Macro level:**

- economic returns on VET: research on the evaluation of public and private investment in VET in terms of profitability and economic growth;
- labor-market outcomes of VET: reduction of unemployment and inequality resulting from more people attaining a VET qualification.

##### **Meso level:**

- performance of enterprises: costs and benefits of training in terms of profitability and innovativeness;
- employee productivity: individual abilities and capacity to contribute to profit after VET.

##### **Micro level:**

The benefit of IVET and CVET on individuals: earnings, finding a job, reduction of skill mismatch, integration into the labor market with satisfactory wage, further career development opportunities and professional status.

#### **The social dimension**

##### **Macro level:**

- effects of VET across generations within families and how family impacts on skills development;
- relationship between VET and health: how education and VET can support the health of a nation;
- social cohesion: multidimensional concept measured by, for example, tolerance, trust, formal and informal networking (social and relation capital), low grade of social polarization, etc.;
- how education and VET can reduce delinquent and criminal acts in a society.

##### **Meso level:**

Inclusion of disadvantaged or marginalized groups through education and VET.

##### **Micro level:**

Personal well-being: quality of life for individuals and effects on personal development, attitudes and motivation.

Training and skills development play a vital role in individual's productive capacity and are integral part of Human Resource Development (Javied and Hyder, 2009). Human resource

development improves economic growth and productivity. Economic growth of a country crucially depends on skills for producing goods and services of better quality at competitive prices (Asghar and Siddiq, 2008; Khan, 2005; Mouzakitis, 2010).

Rapid economic growth demands a mixture of skilled worker; technician, technologist, engineers, research professionals and innovative scientists trained in the areas linked with national development and need of the industries. The accelerated economic progress of the Asian Countries like China, Japan, Malaysia and also Australia are the excellent examples in point. It is an established fact that technical education and vocational training can help individuals to generate income and contribute towards economic growth and social development of a country by acquiring knowledge and skills (National Skill Strategy, 2008).

Indonesia's workforce is characterized as having comparatively low skills and less prepared to compete in today's globalized world. Rapid technological changes now require individuals to learn and relearn skills throughout their working lives by ensuring its relevance and effectiveness. The most important outcome of an effective human resource development system is that it opens up decent employment opportunities by enhancing workers' abilities to secure and retain jobs, progress at work and cope with the change (Kazmi, 2007, p-105).

#### **A classification of VET**

From a theoretical perspective, VET can be classified in the following categories (Grubb and Ryan, 1999):

- pre-employment VET: prepares individuals for the initial entry into employment; in most countries these are traditional programs of vocational and educational training in schools; they are found both in schools and workplaces as dual systems and are often operated by national ministries of education;
- upgrade training: provides additional training for individuals who are already employed, as their jobs change, as the technology and work environment become more complex, or as they advance within the company;
- retraining: provides training for individuals who have lost their jobs so that they can find new ones, or for individuals who seek new careers to develop the necessary competences for employment; individuals in retraining programs, by definition have already had a labor-market experience; therefore, retraining may not have a direct connection with the occupation they already have;

- remedial VET: provides education and training for individuals who are in some way marginal or out of the mainstream labor force; typically those who have not been employed for a long period of time or who do not have any labor-market experience; usually people depending on public income;

Cedefop (2008) offered a distinction which encompasses the previous ones: initial and continuous educational training (IVET and CVET)

- IVET refers to general or vocational education and training carried out in the initial education system,
- usually before entering working life. Some training undertaken after entry into working life may be considered as initial training (e.g. retraining). Initial education and training can be carried out at any level in general or vocational education (full-time school-based or alternate training) pathways or apprenticeship;
- CVET is defined by the area of education or training that comes in after entry into working life and aims to help people to (a) improve or update their knowledge and/or skills; (b) acquire new skills for a career move or retraining; (c) continue their personal or professional development (Cedefop, 2008); continuing education and training is part of lifelong learning and may encompass any kind of education: general, specialized or vocational, formal or non-formal, etc.

Technical and vocational education as preparation for an occupational field should provide Vocational Education and Training via the foundation for productive and satisfying careers and should:

- lead to the acquisition of broad knowledge and generic skills applicable to a number of occupations within a given field so that the individual is not limited in his/her choice of occupation and is able to transfer from one field to another during his/her working life;
- at the same time offer both a thorough and specialized preparation for initial employment, including self-employment, and also training within employment;
- provide the background in terms of knowledge, skills and attitudes for continuing education at any point in the individual's working life.

Vocational Education Strengthening Project of Government of Indonesia

Ensuring that the system responds to Indonesia economic and employment needs is therefore a high priority. Government consultations with industry indicate (i) some industrial

developments are constrained due to Indonesia comparative lack of skilled workers, and (ii) widespread concern about the lack of relevance of some vocational schools courses to industry requirements. The need to strengthen ties with local industry is strong; the Project will provide continuous upgrading courses for vocational schools graduates and other workers. Growth in formal sector employment opportunities has stagnated in recent years with unemployment and underemployment becoming significant social concerns and slowing poverty reduction.

Vocational education should be adaptive and flexible with the globalization era. This kind of education will continue to grow in the future where the role of higher-quality human resources. Globalization will also be very instrumental for the provision of qualified labor will occur regardless of geographic boundaries. They are ASEAN Free Trade Area (AFTA), General Agreement on Tariffs and Trade (GATT), which evolved into the World Trade Organization (WTO), European Economic Community (EEC), North American Free Trade Area (NAFTA), and Asia Pacific Economic Cooperation (APEC). Consequently, all these are inevitable to conduct analysis in Vocational and Technological Education to prepare the quality of human resources of labor force to develop Indonesian economy growth.

Based on information above, Industrial Support in Vocational Education and Training Development to Achieve Quality Assurance of Indonesian Professional Labor Force is inevitable.

To attain Quality Assurance of Indonesian Professional Labor Force need a good cooperation amongst **Industry, Ministry of Labor & Employment and Chambers of Commerce and Ministry of Education and Culture** with a clear **Government Policy**. In addition, management system as a key to conduct the program successfully.

**Have the keys to success in Management Planning Keys to success in the Management Plan are as follows:**

- 1) Have a quality culture
- 2) Consistent with what has been planned
- 3) Have a clear Vision and Mission
- 4) Oriented to the labor market and industry
- 5) The discipline of time and a steady job.
- 6) Always creative and innovative in creating goods and services.

#### **Implementation of the Academic System**

The curriculum for each course is competency based curriculum is organized according to the Minister of Education Decree No. 232/U/2000 dated December 20, 2000, and No. 045/U/2002 dated 2 April 2002.

Implementation of **ISO 9001:2008 Quality Management System**, from the International

Certification Body of TÜV Rheinland Germany precisely Right

**Forward up to five years related HR issues, not least, there are three major challenges to be faced, namely:**

- Improve *the quality of manpower* in the country to jack up the national competitiveness of the business world;
- Improve *the quality of formal workers* to seize the opportunities of employment opportunities abroad;
- Develop entrepreneurial professionals use *to reduce unemployment*.

In the process of recovery and in later years can be expected that Indonesia will be more attractive as a place for investment by foreign investors due to various reasons. Among those reasons are: (1) a large number of people who become potential buyers of the product produced, (2) the availability of labor force whose productivity is still very likely to be improved, (3) the availability of resources that can be processed and a requirement region or the world community, (4) the maintenance of stability in politics and increase open space for the operation of market mechanisms, and (5) the decline in costs not directly related to production and distribution activities (clean government or corporate governance).

Employment opportunities abroad has not been used optimally, particularly for semi-skilled labor. Meanwhile, Indonesia has a great chance to be a product of the exporting country based on local renewable resources (renewable local resources) such as in agriculture, plantation, forestry, and fisheries. To develop the potential of the necessary qualified human resources.

Similarly, Indonesia has a great opportunity to send a formal and semi-skilled workers place because Indonesia has a population of productive working age group in particular is great. It required candidates formally qualified workers so as to compete with workers from other countries.

#### **Development Challenges of Education from 2010 to 2014**

Based on the analysis of external factors, internal, potential, and educational problems can be identified many challenges faced in implementing the educational development of the next five years. These challenges are as follows:

- a. Complete the derivatives regulations mandated by legislation in the field of education;
- b. Meeting the global commitment to achieving the goals of the Millennium Development Goals (MDGs), Education For All (EFA) and Education for Sustainable Development (EfSD);

- c. Ensure favor of the poor to gain access to quality education in the broadest of all the educational unit;
- d. Ministry of Education and Culture Strategic Plan 2010 to 2014
- e. Implement the National Standards of Education to emphasize the balance between thought though, if a sense, though the liver, and sports;
- f. Improving the quality and quantity of vocational education / vocation to meet local and national needs and be able to compete globally;
- g. Produce creative human resources through education necessary in the development of the creative economy;
- h. Increasing the effective coordination with the ministries / other agencies and local governments;

#### **4. Conclusion**

Particular attention should be given to planning the development and expansion of technical and vocational education by:

- (a) giving high priority to technical and vocational education in national development agendas as well as in plans for educational reform;
- (b) evaluating national short-term and long-term needs;
- (c) providing appropriate current and future allocations of financial resources;
- (d) establishing a national body responsible for coordinating planning in technical and vocational education based on analysis of statistical data and projections to facilitate complemen

Vocational Education and Training and vocational education is best served by a diversity of public and private providers. The appropriate mix can be found in many ways, with the responsibility of governments being to facilitate choice while ensuring quality.

Government and the private sector should recognize that Vocational Education and Training is an investment, not a cost, with significant returns, including the well-being of workers, enhanced productivity and international competitiveness.

Therefore, funding for Vocational Education and Training should be shared to the maximum extent possible between government, industry, the community and the learner, with government providing appropriate financial incentives. Furthermore, the governments of least developed countries in particular should seek bilateral and multilateral capacity-building cooperation in technical and vocational education.

Research on the benefits of education has a long history in the economics of education, but the

same cannot be said about research on the specific benefits of VET.

For VET policy-making, however, it is crucial that decisions on actions and measures are adequately supported by sound research evidence.

By having a good management Training and Skill Development in Vocational Education in various area in technology for vocational school graduates. Vocational education should be oriented to the manpower need of the community and market driven. Vocational education should be evaluated on the basis of economic efficiency.

- 1) Development of Vocational Education and Training /vocational policy requires the establishment of cooperation, support and full participation of government organizations and non-governmental.
- 2) Vocational Education and Training should be able to respond to the challenges of globalization in providing qualified human resources that have a match with the industrial world and International standards
- 3) Vocational Education and Training Development Trend must map the ability to see the dynamics of market segmentation and technological developments.
- 4) Do efforts to repair, among others:
- 5) a). Revised curriculum is oriented to the industry field and the world of work, b). Changes in competency-based teaching system by referring to the industrial model, c). Improving facilities and infrastructure, d). Development of quality and quantity of teachers and lecturers, and e). Supporting Training and Skill Development program by Industries. Training and Skill Development in Individual's Productive Capacity will be hoped achieved by doing these efforts.
- 6) Vocational Education and technology education institutions will be developed if the synergy with Industrial and Business fields internationally.

## 5. Suggestion

- 1) Studying and implementing the Quality Assurance Model-Based Vocational Education Industry (Model Development of Quality Assurance in Vocational Education Based Industry) in developed countries.
- 2) Socialize "**pattern**" Culture of Quality and Discipline Leaders Work to the elements of the Faculty, Lecturer, technicians, laboratory, and students and all civitasacademica.
- 3) Provide quality cultural training and discipline to all civitasacademica by consistently applying the ISO 9001:2008 Quality Management System which is accompanied by reward and punishment.

- 4) **Curriculum development,** and implementation of teaching and learning process (PBM) is designed in a mature, consistent, and commitment to quality assurance-oriented graduates to the needs of industry and labor market.
- 5) The keys of the success of implementing the quality assurance industry based as the benchmark to be applied at the Vocational and technology education throughout Indonesia.
- 6) Improving the quality of managerial capabilities-based planning and performance of each unit within Vocational and technology education institutions.

## 6. Recommendation

The low quality of human resources is reflected in the level of education and training will affect the competitiveness of the economy. Required an integrated program of work improving the competence of Indonesian human resources in order to encourage the improvement of competitiveness of national economy.

In order to develop the national economy's competitiveness and Indonesia in particular for the construction period 2009-2014, recommended Five Key Program of National Competitiveness Improvement based human resources involving government, business and education-training institutions, namely:

### 1) Increasing Competence of Manpower

Not the synchronization and synergy enhancing the competence of human resources in order to improve productivity and competitiveness are urgent to be addressed. Synchronization and the revitalization of education institutions, training, certification of competency, productivity, internships and job placement is absolutely necessary. Required the coordination mechanism within government, business and communities to increase the competence of workers, among others through the establishment of a coordination of the National Committee for the Improvement of Education and Training HR Competency.

### 2) National Policy on Skill Development

A National Policy on Skill Development should be formulated by the Ministry of Labor & Employment and Chambers of Commerce and Industry. The objective is to create a workforce empowered with improved skills, knowledge and internationally recognized qualifications to gain access to decent employment and ensure Indonesia competitiveness in the dynamic Global Labor market. It aims at increase in productivity of workforce both in the organized and the unorganized sectors, seeking increased participation of youth. Thus, there is a need for

increasing capacity and capability of skill development programs.

- 3) **Capacity and Capability of skill development programs** should be addressed to **Engineering and Technology:** Civil Construction/Maintenance, Mechanical Servicing, Audio Visual Technician, Maintenance and Repair of Electrical Domestic Appliances, Building and Road Construction, Building Maintenance, Ceramic Technology, Computer Technique, Rural Engineering Technology, Materials Management Technology, Rubber Technology, Structure and Fabrication Technology, Sugar Technology, and Services.

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# DESIGNING NEW CONCEPT OF INTERNSHIP IN VOCATIONAL EDUCATION CURRICULUM: NEW APPROACH TO INCREASE ALUMNI ASSIMILATION IN WORKPLACES

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## Abstract

For many years, internship has been viewed as a key point in determining successful of vocational collage's graduates in the workplace. However, in many cases, internship program has been less effective in developing student's knowledge and skills due to several factors such as public policy, interrelationship between vocational collage and the industry, student's capacity and the efficiency of teaching in a vocational collage. To evaluate this issue, Realistic Evaluation (RE) method was carried out to sort out major attributes regarding student's internship by interviewing embedded group of people, in this case student, lecturer and employer. Based on this study, several recommendations are offered to improve current internship program namely careful plan and arrangement prior to student's engagement to the workplaces which is needed to ensure the effectiveness of the program and further this includes in campus preparation. Initial preparation in campus including curriculum and policy to support internship program is discussed along with industry placement arrangement including conceptual methods on student work, mentoring and project reports. Meanwhile, arrangement in the workplace, such as setting a project is expected to help student to learn the implementation of science they have studied in the collage/university.

**Keywords:** internship, vocational education curriculum, realistic evaluation (RE)

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## 1. Introduction

Internship, according to Brown [1], is a program set by school, college or university through which students learn about an occupation or industry by working for an employer over a specific period of time. This program is the major requirement that should be undergone by students before they graduate from any education schools and collage. An increasing demand in the workplace has made internship program critical to increase competitiveness of a high education graduate, so then they can meet industry's requirements in terms of knowledge and skills needed when they work.

However, some suggested that internship program has been less effective in improving student's competency on their expected job. For many said that public policy not supporting the current internship program, others suggested that students were not given enough preparation before entering any specific workplace. Further, knowledge on what internship meant to be is not generally known by most student and its socialization is sometimes ignored by their academic supervisors. Many students do not think that internship is part of their education program but only a requirement to get the degree, thus many of them finish their internship program without any significant improvement in their knowledge and skills. Yet, these are only one of many problems

that make the current internship program less effective. To put more detail picture on this current situation, Realistic Evaluation (RE) method was carried out to evaluate a set of ideas or opinions on problems regarding internship program. This study was conducted across groups of interests, in this case student, lecturer/academic supervisor and employer. Thus result was put together to design new concept of internship that can help to increase assimilation of graduates in the workplace.

## 2. Methodology

Realistic Evaluation (RE) is a method which look thoroughly on elements of a program works for whom in which circumstances. The method is a proper way to address social issues which contingent on people attitude or value[2]. This evaluation method is best in addressing program effectiveness. In this case we were trying to draw a picture on the current internship program and find the best way to manage internship so then we can increase assimilation of the graduates in the workplace. The method will focus on the quality of the data obtained from the group not the quantity. As many as 10 students and 5 lecturers of vocational education institution in Makassar and 3 employers were interviewed on their opinion on the current internship program.

### 3. Results

Results showed that in campus preparation is minimal, there had been no special preparation prior to the departure and on site mentoring by academic supervisors/lecturers is scarce only occurred on specific school's departments. The mechanisms of internship are initiated by both institution and students but students are the most predominant culprits that determine their placement. Some departments have seemed to give assistance on finding a placement in industry but more often students themselves gone to ask permission to do their placement in certain industry. When asked about working contract, many of them said that they have never signed any contract before the internship begins.

During internship program, discussion with academic supervisors/ lecturers has rarely done in the industry; many of the students manage themselves to consult through phone or on-line email with their lecturer in campus. Academic preparation only obtains through lecture in the classrooms and a few self-preparations by students have been done. Some students, however, mention that they read the previous internship reports.

Expected knowledge and skill does not improve as expected. Many students said that they do regular jobs and rarely trusted to involve directly on the main operation process. Project based internship indeed experienced by some students, despite the fact that their access to the factory facilities is limited. Despite this condition, they are still given the opportunity to access factory data from the integrated computer systems. Hence, students do not really experience the atmosphere of working under pressure which is vital for their future. Most of the students however feel that their self-discipline has improved after finishing their internship program.

Furthermore, learning process during this internship program is not limited to those practical knowledge and skill but they also learn how to communicate with others and solving problems. Team work, nevertheless, is only appeared between students from the same campus not between other workers of the industry. The understanding of working condition and the organizational structure in the workplace are well established by most students.

Yet, when the academic supervisors/lecturers and the staff from the industry were asked about the current program, they both suggested it was not prepared well. Local government policy has not been encouraging industry to widely open to students who want to do their internship. Lecturers said that the link between college/university and industry was not well established therefore some industries tend to reluctant to accept student to work with them. Students have been arguing that

they need a close contact person within the industry to be accepted.

### 4. Discussion

The previous result has pinned point weaknesses in the current in internship program, therefore the following discussion will further describe the issue and propose solutions of those problems.

#### 4.1 Internship and Public Policy

Terms of internship has been regulated in National Law (Undang-Undang) No.13 year 2003 about Worker. In this regulation [3] , Internship has been define as "part of work training which is conducted by an institution under supervision of an instructor or more experienced worker to produce goods and service within a company and aimed to gain specific skills". This definition has not been clearly understood by both students and company when they start the internship program. Student has to involve in daily working activities to be able to achieve certain skills; in fact, more students complained that they were not given enough access to the facilities. The industry itself argues that students have not reached certain level of competency to fully be trusted to handle a job. However, senior worker who has been selected to their supervisor sometimes allowed them to do simple work which is under his supervision. What student can do is observing and learn as much as possible despite the fact that this a bit contradict to verse 8 of Ministry of Labor and Transmigration Regulation No. 22/MEN/IX/2009 which suggest students to get theory as well as practical works [4].

Other than the definition, National Law (Undang-Undang) No.13 year 2003 verse 22 to 23 also notes some important guidelines to be followed by the industry [3]:

1. Industry should provide contract prior to the program which explain right and responsibility students and the company as well as type of the program which students are going to do in the company, this includes period of time of the internship.
2. The students should at least get competency acknowledgement from the company on the of their internship program.

Contract prior to the program is deemed important because within this contract according to regulation posed by Ministry of Labor and Transmigration No. 22/MEN/IX/2009 verse 16 students are entitled to get [4]:

1. Health and protection facilities
2. Health insurance
3. Allowance and transportation fee

Because of this complication sometimes company reluctant to make a contract. Some

students suggested that those facilities are only given by a well established company (big company) whilst the middle or small company tend to neglect it.

Yet another problem regarding the company preference to allow internship, it was said to solely company good will. There is no regulation enforce regarding internship either by national or local government. What have been said in verse 12 of Ministry of Labor and Transmigration Regulation No. 22/MEN/IX/2009 is that the internship program has be approved by local government [4]. The benefit of having internship students in company was assumed insignificant. There is no advantage such tax reduction obtained by the company as those offered by US governments to company which providing intern students on site training [5].

#### **4.2 On Campus Preparation**

This internship program is not only conducted by vocational education institutions but also the university alike. Internship programs is now viewed as the final and crucial learning activities of students in which students can put everything that they have learned in campus on the real life action. Knowledge, skills, ability to organize and work in a team, these are all important for the student to pass their internship program. However, the actual conditions of workplaces are demanding students to use their creativity and critical thinking to solve many problems occurred in the industry. Despite of these drawbacks, everything that they are going to learn during their internship program are expected to become their provisions in their actual life careers and this is hopefully help them to develop their professionalisms and integrity toward their future works. In doing so they should manage and prepare to open their minds on upcoming challenges and continually to develop their knowledge and skills even they are not attending any classes anymore. Support from campus and industry alike is crucial. Smith and Betts [6] noted “the effectiveness of work-based learning is directly related to the quality and effectiveness of partnership”.

Partnership between both stakeholders should be established beforehand. This will help university or vocational collage to manage placement of their students. Both vocational education and industry will gain benefit by this cooperation. For university, there would be an improvement in the quality of their graduates; the university would receive input on the ways to plan on campus learning program to meet the company needs. As for the company, it would help from students in identifying and resolving problems. The company will then gain trust from academician and university which can help to provide them future high quality workers [1].

On campus learning program should be managed well. Several attempts can be carried out to such as: (1) providing pre-departure bridging program for students to give them an overview on what they about to experience in the workplace; (2) persuading students to master basic knowledge through “pass-learning” program where they learn some basic concepts related to the fields of the company; (3) persuading students to do an extra reading session where they can learn all about the company and recent improvement in science and technology to help them adjust to the company; (4) giving extra class on communication skills and teamwork to ease their adaptation, and lastly (5) stimulating students critical thinking throughout learning process in the classrooms.

In addition, curriculum should be adjusted to meet local company’s needs. For instance, if one region has many cement industry, the university should provide at least one subject regarding analysis, processing or management of such industry. Therefore, intern students can comply with the company demands. Within the curriculum, the university/collage should regulate student’s final project by providing academic supervisor or lecturer (mentor) who in charge in helping student to finish their projects. Project proposal should be made prior to the engagement with the company and has been review by the lecturer or mentor.

Guideline in writing this project should also be prepared so then student know what to write. It is best for the industry to allocate one mentor per industry. However, this is less effective because of limitation on human resource in campus. However, from the interview, students has proposed to have the mentor to visit them once in time on the regular basis so they can consult directly not via telephone or email as happen currently.

#### **4.3 On Site Company Arrangements**

On company arrangements may regard as project based learning. In line what has been managed previously in campus, students should establish a project regarding company’s problems, difficulties and potential improvements. This problem solving project is expected to help student to be more focus on certain problems within the company. The project will be conducted under supervision of a senior worker and a lecturer. The worker will help them in data collection while lecturer helps with the way to solve the problems. The students itself should think critically, reading through reports and textbooks to find solution. In addition, during the internship students should go through every division to learn working environment and help them to adjust well later in their actual workplace.

#### 4.4 Assessment of Learning Outcome

Work based learning or internship should manage to deliver the following key educational criteria, according to Smith and Betts [6],

- Explicit learning outcome
- Formal assessment process
- Identification and delivery of standards
- Recognition through the awarding of credit or certifications.

Explicit learning outcomes includes improvement in knowledge and skills, theory application, problem solving, team working, effective communication, time managements and managing to work under pressure[7]. Theory application and improvement of knowledge are measurable items which are assessable through seminar or project examination in campus. Skills, nevertheless, is difficult since university should what is called competency assessment site (*TempatUjiKompetensi*) where students will be evaluated based on standardize competency. As this could be difficult to implement, recognition from a company proved by certificate is enough as an authentic prove.

#### 5. Conclusion

Internship is a crucial learning activity for students because it provides them with an insight condition of the workplace. The internship program is an ultimate learning process where students learn to implement what they have learned in campus in the actual life. This work based learning however needs to be improved to increase its effectiveness in helping students to receive early work offer or employment. First, the internship regulation should be well understood and implements. Second, on campus preparation should take place to prepare student prior to their engagement to the company. Preparation can be either theoretical and skills including soft-skills such as communication, and teamwork. Third, on company arrangement is basically setting up a project where students learn to focus their attention on certain aspect of the company. Finally, the assessment can be both in form of seminar or competency assessment. With this attempts the proper internship program are expected to give students enough provisions to become a professional workers who meet company expectations.

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# DEVELOPMENT FUNDING MODEL IN THE IMPLEMENTATION OF EDUCATION IN VOCATIONAL HIGH SCHOOLS IN THE FIELD OF THE CONSTRUCTION ENGINEERING STUDY PROGRAM

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## Abstract

This study aims to: (1) find out a funding model in the implementation of vocational education in the Public Vocational School (VHSs) especially in the fields of Construction Engineering study program; (2) investigate the contributions of each funding source to each component of the financing; and (3) investigate the effect of each funding source to the expenditure components.

The main activities in this study were research and development in 18 public VHSs in East Java. The respondents consisted of 11 Pilot/International Standard Schools and 7 Non-Pilot/International Standard Schools. The analysis technique is a Structural Equation Modeling (SEM) by means of the Partial Least Square (PLS).

The research findings are as follows. (1) The funding model in the Pilot/International Standard and Non-Pilot/International standard were the same relatively. The model is formative is a function of total school funding is sourced from the central government (the government's budget), the provincial government (the P budget), the district government (the D budget), and the school committee (COM), (2) the contribution of each source of funding to meet the needs of the cost of providing vocational education are as follows: the government's budget (93.1%), the P budget (71.2%), the D budget (48.6%), and COM (82.8%), (3) based on the results PLS analysis of beta coefficient for each construct are as follows: the government's budget (0.97), COM (0.91), the the P budget (0.84), and the D budget (0.7) which showed a significant positive effect on the fulfillment of the cost of providing vocational education.

**Keywords:** funding model, vocational education, Construction Engineering study program.

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## 1. Introduction

Education funding is a major factor implementation of education, while the cost is kind of investment to improve the intelligence of human resources as an obligation of government and society as stipulated in the Law on National Education System No. 20 Year 2003. The limited resources owned by central and local governments in providing education services to the public, then the use of educational funds for the development of education should be as optimal as possible in order to achieve national education goals effectively and efficiently.

According to Bolman and Deal (1991), Kazamias and Schwartz (1977), and Townsend (1994) in Cheng (1996:9) classify the potential school functions in five types are as follows: (1) the function of technical / economic development, (2) social functioning, (3) political function, (4) cultural functions, and (5) the function of education. Referring to the function of the school, the school effectiveness is the capacity of schools to maximize the function of the school or school level that can perform at school functions given certain amount of school input.

The allocation of subsidy funding by the Central Government and Local Government for the

activities of vocational education in schools as long as this is not based on a financing plan based on competence activities, but based on consideration of the amount of unit cost levels of education and the financial ability of each Local Government. The learning process between the general high school and vocational high school was different. According to Gill (2000:184) the average unit cost of vocational high schools is 40% higher than the general high school. It makes its own problems for the management of schools to provide education to the demands of the competency level of the education curriculum. It makes its own problems for the management of schools to provide education to the demands of the competency level of the education curricula "KTSP".

Relevant to the issue's, it is important to do study to formulate funding models in vocational education funding, especially in the Construction Engineering study program as referred to Regulation No. 19 Year 2005 and Government Regulation number 48 Year 2008. Development of vocational education funding model is based on the existing funding pattern of activity-based learning in schools in the establishment of competency. Funding model is a principal consideration and decision makers at Central Government, Provincial Governments and District Government in

determining the funding strategy that effectively and efficiently.

The main problem in the study is haven't funding model of effective implementation of vocational education based on learning activities in schools to support the establishment of competency achievement. The study aim to: (1) find out a funding model in the implementation of vocational education in the Public Vocational School (VHSs) especially in the fields of Construction Engineering study program; (2) investigate the contributions of each funding source to each component of the financing; and (3) investigate the effect of each funding source to the expenditure components.

## **2. Basic Philosophy Funding**

Development of vocational education is based on the philosophy of existentialism and essentialism (Djojonegoro; 1998: 34) and Pragmatism Miller (Stroom, 1996: 77-82). This view gives you the freedom to individuals in determining the path of life, especially in equipping their lives through education and training so that individuals will gain the knowledge experience and skills (prior learning) obtained from anywhere in the neighborhood. VHSs providing the option for individuals to develop capability cognitive, affective, and psychomotor. Vocational outcomes are expected to contribute the growth and development of young people in capturing opportunities in the community, so that the social problems of unemployment at a young age can be resolved. In this regard, the implementation of vocational education requires huge funding as part of the investment in human resources to be productive human.

The source of the funding in education-process and the amount of funding allocation is ruled according to Amendment Constitution of 1945 Republic Indonesia number fourth, National Education System of Law No. 20 year 2003, and government regulation No. 19 year 2005 about Standard National of Education. It is stated that the nation provide at least 20% of their national and local income to commit education national learning process. The funding for the education needs become the responsibility between state and local government, and community. Moreover, the sources of the funding have to determine according to justice, sufficiency, and continuity. According to Government Regulation No. 48 year 2008 on Education Funding Article 2, stated that funding education is a shared responsibility between government, local governments, and communities which include: (1) an established community education providers, (2) the students, parents or guardians of students, and (3) the other party except those referred to in items (1) and letters (2) who have interest and role in education. Besides, it also stated that education funding is determined based

on the principles of equity, adequacy, and sustainability.

Referring to the Indonesian Government Regulation No. 48 of 2008 on Education Funding Article 1, paragraph 5, the funding of education is the provision of financial resources required for implementation and management of education. Related to this statement, the VHSs as an education provider unit will provide and manage the financial resources for the implementation of vocational education. To meet the funding needs of education, VHSs are required to be able to explore and spend effective and efficient education based on the competency of graduates for each expertise program.

## **3. Funding in the Vocational High Schools**

Funding of vocational education is generally assumed to require a greater cost than other forms of the learning (Klein, 2001). The statement must be based on the theoretical and empirical studies in accordance with the facts that occurred in the field of study program. The high cost of funds needed for the implementation of vocational education is a crucial issue because of the formation of skills, competencies through learning practices is greater than the cognitive-competencies given by the theory. The implementation of learning practices require costs more than learning theory, it is caused by the cost required to purchase practice equipment, practice materials, maintenance equipment, instructor salaries, and for the purchase of energy sources. The need for higher funding and limited availability of funds for the providing of vocational education, the vocational skills particularly in the field of Construction Engineering study program should be planned budget that is a systematic, effective, and efficient for learning sustainability.

According to Cohn (1979:61) the financing of education are all expenditures or expenditures that are not only for the current activity, but also for shopping in the next period. Funding is also included to build infrastructure, procurement of laboratory equipment, improvement and renovation, and maintenance. In addition, depreciation of buildings and equipment are also taken into account in the financing.

Financing the implementation of vocational education can be defined as the amount spent of money by the school for various purposes which include the cost of education: the procurement of facilities and infrastructure investment of learning, operational of human resources (teachers and staff) and operational of non-human resources, improving professional skills of teachers, maintenance of facilities and infrastructure of learning, management education, extracurricular activities, certification activities, and supervision activities.

The source of the funding in education-process and the amount of funding allocation is ruled according to Amendment Constitution of 1945 Republic Indonesia number fourth, National Education System of Law No. 20 year 2003, and government regulation No. 19 year 2005 about Standard National of Education. It is stated that the nation provide at least 20% of their national and local income to commit education national learning process. The funding for the education needs become the responsibility between state and local government, and community. Moreover, the sources of the funding have to determine according to justice, sufficiency, and continuity.

According to Gasskov (2002: 204), generally the education funding mechanisms of vocational high school have to portray their principle that education or training is a service and the student or the training must carry on the fund. Finally, the aim of this skill-learning process could make a benefit for the person as well as the society. This personal and social benefit lead us for the concept of funding basis which could be as the answer of some questions such as "Who have the responsibility in financing vocational education or vocational training?" According to the social impact, there is stated that the government has the responsibility in financing the educational or training process. Meanwhile, according to personal benefit, there is a concept that there should be a private financing.

#### **4. Government Financing**

Refer to nation financing, the government big priorities to create social benefit are social development, manpower factor, and income or increase the nation income for the social benefit. According to Gasskov (2000: 193), the government position in giving equal access for the vocational education is unique, equality in education process and training can be reached through these following financing mechanism: 1) giving learning or training and giving free job offer or with a low fee for everybody who wants to get a skill in public school around the country, 2) training voucher in the form of education service and training for the young people for the short future, and 3) giving the scholarship for them who have low income and have not access to follow the program.

The government funding for the vocational high school in Indonesia could be categorized into: (1) operational subsidy for vocational education process which given regularly and equal to every school according to the variable of the student in every grade, and (2) grant funding to the school according to their program in a competitive way. However, government financing support is relative smaller to fulfill the educational-learning process needs. Therefore, there should be another financing alternative which more excessively and continue.

#### **5. Private Financing**

Concept of private finance by the student and the employer is a kind of direct contribution of the learning process or training process, the contribution of employer as the impact of profit from this learning or training program. According to Gasskov (2000: 197), individuals finance training through; (1) fees paid for courses, (2) accepting reduced wages during training periods at enterprises, (3) training after working hours, and (4) repayment of training loans. Private financing is very susceptible because it is depends on parents' financial ability, meanwhile most of the students of vocational high school come from under middle-class which see that education is not their priority in life. This fact is reinforced with UNESCO's data, that %GDP of Indonesia's education (0.9%) is the lowest in Southeast Asia.

#### **6. The Existing Financing Pattern**

The overall pattern of funding that is formulated from the research findings on the State Vocational High School field of Construction Engineering study program as follows: the largest source of funding is dominated by source of funds from the Central Government is 83.33%, the source of funds from the Provincial Government is 3.43%, the source of funds for District Government is 5.53%, and the source of funds from Local Community's 2.32%. In detail, the funding can be described as follows: (1) source of funds from the central government used to meet the cost of building infrastructure investment is 93.65%, to personnel expenditure is 16.40%, to non-personnel expenditure is 0.27%. (2) sources of funds from the provincial government used for building infrastructure investment spending is 3.30%, to meet procurement of instructional material is 11.47%, to operational cost of personnel is 0.50%, to operational of non-personnel is 4.19%, and to meet maintenance infrastructure learning is 0.52%. (3) sources of funds from the District government more widely used for operational costs teaching-learning process consisting operational costs personnel cost is 71,73% and non-personnel operating costs is 38.78%, and 36,27% used to maintenance infrastructures learning. (4) sources of community funds used to cover the shortage of school operating expenses directly or indirectly covering the sharing fund of procurement of learning facilities is 13.46%, to covering personnel operating costs is 11.37%, and to covering non-personnel operating costs is 56,76%, and maintenance costs of infrastructure learning facilities is about 64.21%

#### **7. Development Funding Model**

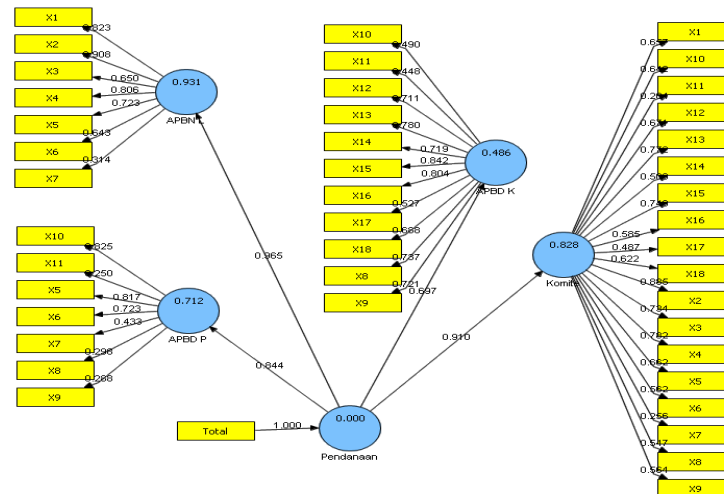
Vocational education funding model is developed based on existing funding pattern as

shown in figure 1 is the result of analysis of the Structural Equation Model (SEM) by mean Partial Least Square (PLS). The results of testing the structural funding model using PLS analysis was able to explain the contribution of each source of funding for educational needs to establish the competence of students in the field of Construction Engineering. The test funding model structural results is presented as model funding diagram in the Vocational High School overall category include Pilot/International Standard Schools and Non-Pilot/International Standard Schools.

Funding of vocational education at the Public VHS comes from the central government budget, provincial government budgets and the district budget, and School Committee. It may therefore be measured precisely with formative models by variable total funds. However, the utilization of these funds, each school has a large selection of use in accordance with program funding and program

priorities as outlined in RKAS school. Utilization of resources can't be measured with certainty through the formative models, but can be reflected by the various expenditures (spending) made the school so that the measurement is performed with reflective models.

Some consideration of the data analysis using PLS analysis to develop a funding model of vocational education in the public VHSs in the field of the Construction Engineering study program expertise are as follows: 1) a combination of modeling between formative and reflective indicators, 2) the number of objects a little research, and 3) of the funds of each component cost is determined by the percentage that lead to dynamic so it is not difficult to assume normal distribution. The analysis using the PLS analysis for funding of the public VHSs Pilot/International Standard Schools and Non-Pilot/International Standard Schools presented in figure 1 below:



Cost Components:

- |    |                                      |     |  |
|----|--------------------------------------|-----|--|
| X1 | Land investment.                     | X10 | Teachers' salaries                     |
| X2 | Supported Infrastructure Room        | X11 | Staff salaries                         |
| X3 | General Infrastructure Learning Room | X12 | Stationery and consumables Cost        |
| X4 | Special Infrastructure Learning Room | X13 | Energy cost                            |
| X5 | Supported Facilities                 | X14 | Consumption Cost                       |
| X6 | General Facilities Learning          | X15 | Transportation Cost                    |
| X7 | Special Facilities Learning          | X16 | Student Development Cost               |
| X8 | development of teachers              | X17 | Procurement goods and material practic |
| X9 | development of staff                 | X18 | Maintenance Cost                       |

Figure 1. Funding Model In The Implementation of Education In Vocational High Schools

PLS analysis based on non-parametric components and different to other structural analysis based covariance (Ghozali, 2008), so that the goodness of fit models can be directly evaluated from the value of R squared (R²). Sources of funding as formative models, the 100% funding of education is influenced by the total funds held by the school. While the use of funds for education in schools can be explained through a model of reflection by the construct of the source of the government budget, P budget, D budget, and

COMM. Constructs D budget was reflected the moderate in the range of 48.6%, while for the other constructs more than 70% even reached > 90% (see table 1). Based on the results of testing the structural funding model can be explained that the funding model has an acceptable Goodnes of Fit (GOF). All constructs have a t-value is large enough to indicate significant. These results confirm previous acceptance of a model based on the GOF, because in addition to having a relatively large R² is also meaningful or significant. Reflections of



each source of funding to total funding of school education, financial resources derived from the D budget of 48.6% reflects the meaning that the utilization of these funds is the smallest when compared with other funding sources. The greatest source of funds utilization is reflected by funds from the government budget by 93.1% and 82.8% of the school committee, and then the P budget amounting to 71.2%.

Analysis of the funding model repetitions done with objects that are separated between the VHSs was classified into Pilot/International Standard Schools and Non-Pilot/International Standard Schools. as presented in Table 2. Determination funding from all sources shown to increase overall (combined with VHSs Pilot/International Standard Schools and Non-Pilot/International Standard Schools) when compared to the terminated on a separate object, but a decline in funding from a source terminated in the state budget funds belonging VHS Pilot/International Standard Schools for 0.111 or 11 071%. The findings of this study indicate that increased funding is terminated linear sourced from the government budget the D budget. Empirical data shows that there was any subsidy grant or block grant from the central government, especially the many who belong to VHSs obtained Pilot/International Standard Schools as strengthening the implementation of the Pilot/International Standard Schools program there is always a matching fund to be provided by the district government where VHS get grant.

Table 1. The Results Testing of Structural Funding Model

Construct	Coefisien	SEError	t-val	R <sup>2</sup>
Total	1.000	0	-	1.000
Gov. Budget	0.965	0.006	173.337	0.931
P Budget	0.844	0.025	35.698	0.712
D Budget	0.697	0.039	18.730	0.486
COM	0.910	0.014	65.115	0.828

Source: Results of data processing

Referring to the summary of the results of testing the structural funding model in VHS Pilot/International Standard Schools had a determination is smaller when compared with non-Pilot/International Standard Schools on all sources of funding available in VHS is presented in table 2. Characteristic value of R<sup>2</sup> explaining that's contribution of all sources of funding to fund the implementation of vocational education, especially VHS non-Pilot/International Standard Schools in the fields Construction Engineering study program is the higher than Pilot/International Standard Schools.

The results of the quantitative analysis of data obtained a conclusion that answers the following research issues are as follows:

1. Results of testing the structural model of funding that has been awakened found a significant relationship between variables. Sources of funding as formative models is a function of total school funding, while the utilization of financial resources is reflected by funds from the government budget is used for land investment, investment in infrastructure and supporting facilities, the general facilities learning, and special learning. P-budget sources of funds in the form of the special assistance to poor students "BKSM" and operational support of quality management "BOMM" used by schools to finance the procurement of facilities supporting, general facilities learning, specific facilities learning, the cost of human resource development for teachers and staff, personnel and direct operating costs (salaries of teachers and staff). Sources of funding from the P budget and D budget utilized to support the needs of human resource development costs of teachers and staff, salaries of teachers and staff, procurement of stationery and consumables, energy, consumption, transportation manager of travel agency school in coordination with relevant agencies, monitoring the implementation of the transport industry internship (PRAKERIN), and transportation assistance operational learning activities. The other hand, the utilization of education funds from the P budget and D budget is also to meet the cost of student development, the material procurement practices, and maintenance cost for infrastructure and facilities schools. While the source of funds from COM is more flexible utilization than the others sources. COM fund more as complementary funding to meet the operational cost and investmen of the implementation education.
2. The contribution of each source of funds to the total compliance cost of providing vocational education needs is reflected in the funding model. The government budget is reflected of the implementation of education the most powerful education (93.1%), the second is the School Committee (82.8%), the third is the P budget (71.2%), and the last is D budget (48.6%).
3. The effect of source of funding for each utilization can be directly evaluated from the value of R<sup>2</sup> in the PLS analysis. The formative model of 100% funding of implementation vocational education is

influenced by the total funds that owned the school. Funds from the D budget may reflect a moderate in the range of 54.1%, while for the other constructs more than 70% even reached more than 90%.

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Table 2. Summary of Structural Funding Model Based on School Classification

Construct	Coefesien			t-val			R <sup>2</sup>		
	Full	R/SBI	Non-R/SBI	Full	R/SBI	Non-R/SBI	Full	R/SBI	Non-R/SBI
Total	1.00	1.00	1.00	1.00	1.000	1.000	1.000	1.000	1.000
Gov. Budget	0.96	0.97	0.98	173.34	121.761	204.571	0.931	0.950	0.953
P Budget	0.84	0.77	0.90	35.69	65.395	66.194	0.712	0.601	0.817
D Budget	0.69	0.72	0.89	18.73	36.847	15.471	0.486	0.517	0.797
COMM	0.91	0.94	0.91	65.11	135.269	70.759	0.828	0.881	0.932

Source: Results of data processing

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# UTILIZATION OF QUALITY MANAGEMENT SYSTEM OF ISO 9001:2000 IN ELECTRICAL ENGINEERING EDUCATION DEPARTMENT OF ENGINEERING FACULTY OF YOGYAKARTA STATE UNIVERSITY

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## Abstract

As the educational institution, Electrical Engineering Education Department of Engineering Faculty of Yogyakarta State University constantly improves its educational quality, such as by utilizing the Quality Management System (QMS) of ISO 9001: 2000. The problem brought into this paper: how was the utilization of QMS of ISO 9001 : 2000 implemented into the education process in this department especially the period of both 2009 and 2010 concerning to the programmed-quality target, implementation, obstacles, results and its impact? According the discussion on this paper can be concluded include as the following. Quality target in this department: (1) Improving the learning quality; (2) Improving the learning evaluation quality;(3) Improving the academic atmosphere quality; and (4) Improving the academic services quality. Implementation of quality target: (1) Founding team of target quality and developing of commitments; (2) Dissemination of target quality; (3) implementation of target quality on daily activities; (4) Controlling ISO recording documents; (5) ISO internal quality audit; and (6) ISO external quality audit. The main obstacles : (1) The need of sufficient funding; and (2) Commitment and self awareness by some lectures and staffs should be well-improved. The results of the implementation of quality target can be classified as good category. Impact of implementing target quality: (1) This department has won the PHKI competitive grant; (2) Electrical Engineering Education Study Program was accredited A category; (3) Students of this department have won Indonesia Robot Championship as the 2<sup>nd</sup> winner in the Region of Central Java and Yogyakarta; and (4) Some graduates were approved to work in some bona fide company such as PT. Freeport Indonesia, PT. United Tractor and PT. Pertamina.

**Keywords:** utilization, quality management system, ISO 9001: 2000.

## 1. Introduction.

The nowadays global era is automatically bringing various consequences. The information flow which moves intensely and be supported by the development of sciences and technology presents to accelerate the globalization. World seems narrower, the limit among countries is so absurd, and the mobility among people from one country to another is now turning as a common style. An issue in one region would be easily informed to the people in around the world, shortly, all human in the world, slowly but sure would be grouped as the part of world society.

One of the consequences of globalization is the existing of free competition in all aspects of life. The competition of business opportunities, job seeking, art and craft, mastering of science and technology and so on, and no longer during local or national scope but international. The effortless people, who have no leading competences or people who feel great locally, would be eliminated from this wild world stage slowly or fast. Only people

with high quality of competencies will win and can keep playing their roles among the global era.

In creating the excellence and competitive human resources through the global era, participation in educational sector can be one of the keys. It is automatically that the educational institution must have an excellence quality as well. The educational institution with low quality would only be a sector that produces the low quality of human resources which have no leading competences. When they want to move forward and play a great role during the global era, so they need to improve the quality. Without those kind of development and effort, the educational institution would be ignored and be crushed by the globalization whirlpool.

Electrical Engineering Education Department of Engineering Faculty of Yogyakarta State University (EEED of EF of YSU) which is an education institution that educate its student to be a teacher candidate for both Bachelor (S1) or Diploma (D3) has been continuously improving its quality of learning. The method in improving the quality is by using the Quality Management System

(QMS) ISO 9001 : 2000 in their process of learning. Machine Engineering Education Department and Electrical Engineering Education Department, Engineering Faculty of Yogyakarta State University have achieved the acknowledgment by receiving the Certificate of ISO 9001 : 2000 in 2007 from Sucofindo International Certification Services (SICS). In 2008, another department of Engineering Faculty of Yogyakarta State University have also achieved the same acknowledgement from SICS. The problem brought into this paper is about how was the utilization of QMS ISO 9001 : 2000 implemented into the education process in EEED of EF of YSU especially the period of both 2009 and 2010 concerning to the programmed-Quality target, implementation, obstacles, results and its impact?

## **2. Discussion.**

Few years ago, the educational world had been surprised by the industrial-based of educational maintenance model. According to reference [9], this model was an effort held by the educational institution managers in improving the educational quality based on the organization management known as Total Quality Education (TQE) which was developed from the concept of Total Quality Management (TQM). Philosophically, this concept emphasizes on the consistent searching toward the continuous improvement to achieve the customer's needs and satisfaction.

Furthermore, reference [9] states that an institution which moves of services sectors, include the educational institution, must have a quality standard. An institution can be pronounced to have an excellent quality, in the concept of total quality management, must accomplish the established specification. Operationally, quality was determined by two factors, they were the quality in fact and quality in perception. The quality in fact was the accomplishment of specifications established previously. This quality standard was measured by criteria appropriate to specification, appropriate to purposes, zero defect and right first time every time. Quality in perceptions was the accomplishment of specification requested by the customer's demands. The quality in perception can be measured by the customer's satisfaction, interest and hope improvement.

There are some approach model which can be used in implementing the academic quality guarantee system in the educational institution, that is the approach of P-D-C-A, Kaizen approach, QMS ISO 9001 : 2001 approach and so on. QMS of ISO 9001 : 2001 is a management system with the customer's satisfaction approach. The customer in this quality management system is internal customer, external customer and some part of importance. Reference [1] states that in order to apply the accomplishment of customer satisfaction,

there were eight basic principles, they were: (1) Customer focus; (2) Leadership; (3) Involvement of People; (4) Process approach, (5) System approach to management; (6) Continual Improvement; (7) Factual-approach to decision making; and (8) Mutually beneficial supplier relationship.

According to reference [5], QMS of ISO 9001 : 2000 was a package of quality standard which helps an organization to identify, improve and prevent errors and to achieve the continuous improvement. Educational institution in all over the world apply the QMS of ISO 9001:2000 whenever they face the external forces to maintain their quality. According to Reference [8], the interest in applying the QMS of ISO 9001:2000 nowadays in the sector of education in Malaysia was classified as high, it was because the ISO standardization was viewed more objective. Also, EEED of EF of YSU utilize the QMS of ISO 9001:2000 into the learning process so that the education quality could be continuously improved.

### **2.1 Programmed-Quality Target in Utilization of QMS of ISO 9001:2000.**

Reference [3] state that in order to apply the QMS of ISO 9001:2000 in university, an institution was needed to form the quality management to make sure that all activities and process of teaching-learning can meet the appointed-requirements. According reference [2], in the utilization of QMS of ISO 9001:2000 in university, the quality targets was needed to be well-planned. It was because this activity was such a big investment in both funding and time aspect. A good quality target was the key of implementation succeed. Through the quality target planning, a management system may coordinate the strategies and efforts, prepare the changes and maintain the improvement in order to facilitate and enhance the implementation of QMS of ISO 9001 : 2000.

The quality target of department in university is arranged according to vision, mission and department purposes. Quality target is made by the agreement through forum of lectures and staffs, especially in the process of education and learning in EEED of EF of YSU. According reference [4], the quality target especially in period of 2009 and 2010 are as follows:

#### **2.1.1 Improving the learning quality.**

The quality target of improving the learning quality consist of some sub-activities, they were : (1) The development of multimedia-based learning tools; (2) Improvement in utilizing the multimedia-based learning tools; (3) Improvement in utilizing the innovative learning strategy; (4) Improvement the quality of learning material; and (5) Development the e-learning-based learning.

### **2.1.2 Improving the learning evaluation quality.**

This quality target consists of some sub activities : (1) Improvement of final exam quality; (2) Acceleration in submitting the exam score in final semester; (3) Implementation of remedial exam; and (4) Improvement of exam supervisor participation in the final exam of semester.

### **2.1.3 Improving the academic atmosphere quality.**

This quality target consists of some sub activities : (1) Improvement of student attendance in the library; (2) Improvement of lectures and student attendance in class; (3) Improvement the number of lecture's publication; (4) Improvement the student participation in the scientific events and (5) Improvement of English accomplishment among the students.

### **2.1.4 Improving the academic services quality.**

This quality target consists of some sub activities: (1) Acceleration of Industrial Practice counselor proposal accomplishment, final project and final task for students; (2) Improvement of services quality for student counselor by lectures of academic supervisor; (3) Improvement of library services for students and lectures; (4) Acceleration of college score accomplishment in the department; and (5) Services of coaching process in final project and final task for students.

## **2.2 The Implementation of Quality Target of QMS of ISO 9001 : 2000.**

In implementing the quality target of QMS of ISO 9001 : 2000, as programmed above, then the first step to do was by forming the team of quality target and building the commitment among the member of the team. This commitment was very important in order to build the QMS of ISO 9001 : 2000. The commitment of the quality target team need to be determined before any further action was taken to implement the quality target of QMS ISO 9001:2000. Without any clear and strong commitment from the team, the implementation of QMS of ISO 9001:2000 was relatively difficult to achieve well. The commitment of the team should be performed since beginning, and then be followed by behavior and attitude of the team consistently in applying the procedures of tasks.

Further, the programmed-quality target above needs to be socialized to all member of EEED of EF of YSU. This socialization was importance to spread wide the quality target so that the commitment to implement the program can be optimally achieved. The socialization was held through meeting among lectures and staffs in the society of EEED of EF of YSU and by gluing the paper advertisement in the some appropriate places.

After being socialized, then the next step was to apply the quality targets into daily activities in EEED of EF of YSU by holding the principal of operational procedures determined in every programmed-quality targets. All member of team coordinate the role so that the quality target can be realized as their basic responsibilities.

In every quality target was completed by the procedures of record control so that all things relating to the quality goal can be well monitored, tracked in order to facilitate in taking any remedial action whenever the lack of procedure fulfillment was existing. Besides, the record controlling was aimed to give evidences of requirement compatibilities and the effective performance of quality targets. Record must be easy to read, ready to perform and easy to take. The procedures of record controlling consists also the identification, storage, protection, attempt, period of storage and record demolition. Records that become tool to present the effective operation must be formed, in order to fulfill the procedure of certification and costumer improvement whenever it is needed.

In the period of certain quality target implementation, it needs the internal quality audit toward the existing quality target performance. Internal audit was one of requirements which has to be fulfilled by EEED of EF of YSU to monitor the appropriateness and effectiveness toward the quality target implementation. The quality internal audit was held twice a year. The leader of team shall ensure the determination of effective and efficient internal audit process in order to access the strength and weakness of the quality target. The process of internal quality audit can be used as the management tool for the independent access of any process or activities appointed in the quality target. The process of internal quality audit was held by providing some tools in order to gather some objective evidences which show that all requirement have already been fulfilled. It was important for EEED of EF of YSU to ensure the improvement actions according to the internal quality audit result. The planning of internal quality audit should be flexible so that the emphasizing changes according to the objectives data and evidence can be possible to perform. The relevant input from the audited field, and other part with importance, should be wisely considered to improve the quality target in order to meet the external quality audit activities.

In certain period of quality target performance, the external audit was importance to bring about. This type of audit was generally performed once in two years. The implementation of quality target in EEED of EF of YSU has been audited twice, during 2007 and 2009. The external quality auditor comes from Sucofindo International Certification Services as 3 persons. During the

audit, they perform the evaluation of quality target appropriateness which was programmed with the performance of quality target in the relating field. The result of the external audit was whether they find any inappropriateness of the quality target of either major or minor. Evidence could be major when they find any fatal mistakes of quality targets, and when it exists, the certificate which previously be given would be legally revoked. While the minor finding was when they find any light inappropriateness among the data and performances, and when it happens, they still may improve the quality of findings, so that the certificate still can be sustained.

### 2.3 Obstacles in Implementing Quality Targets of QMS of ISO 9001: 2000.

Although the implementation of quality targets of QMS of ISO 9001 : 2000 in EEED of EF of YSU is generally well-performed, but writer still can find any obstacles, relating to its performance. Those main obstacles during the implementation of QMS of ISO 9001:2000 in EEED of EF of YSU were as follows.

Firstly, to implement the quality targets of QMS of ISO 9001:2000, the sufficient funding was basically needed. While the ability of in EEED of EF of YSU gathering funds was limited. To handle this problem, then the management of EEED of EF of YSU has proposed the funding support to the faculty, and try to gather funds from production unit or other income generating.

Secondly, the commitment and self awareness among lectures and staffs still need to be improved in order to perform the QMS of ISO 9001:2000. To handle this obstacle, then the department management and team of quality target always try to perform any kind of personal approach toward lectures and staffs, so that the improvement of self awareness and commitment can be achieved.

### 2.4 The Implementation Result of Quality Targets of QMS of ISO 9001:2000

The quality targets of QMS of ISO 9001:2000 programmed in 2009 and 2010 has completely finished. According reference [6] and reference [7], the implementation result of quality targets of QMS of ISO 9001:2000 were as follows. The implementation result of quality targets concerning to improving the learning quality are shown by Table 1. According to Table 1, it shows that all performance indicators in quality target of improving the learning quality, in both 2009 and 2010, all the planned targets could be achieved and completed, except the performance indicator of number of developed-learning material based on multimedia, which covers 100% of the target, while other are more than the targeted number. It

automatically shows the improvement of lectures spirit in renewing the learning material in college. The quality target result concerning to improving the learning evaluation quality, will be shown as Table 2.

Table 1. The implementation result of quality target concerning to improving the learning quality.

Performance Indicator	Year 2009		Year 2010	
	Target	Achievement	Target	Achievement
The number of developed multimedia-based learning.	6 pcs	6 pcs	8 pcs	8 pcs
The number of lectures who utilize the multimedia-based learning.	6 persons	7 persons	8 persons	9 persons
The number of lectures who develop and utilize the strategy of innovative learning.	2 persons	3 persons	4 persons	6 persons
The number of improved-learning material in every semester	8 pcs	9 pcs	10 pcs	12 pcs
The number of subject that uses supplement through the e-learning-based learning.	2	3	4	6

According to Table 2, it shows that in both 2009 and 2010, all the performance indicator achievement can exceed the targeted performance indicators. The highest percentage of performance indicator achievement was the percentage of exam supervisor attendance in final exam of semester. It shows the higher lecture's awareness to fulfill their responsibilities in supervising the semester final exam.

The result of quality target performance concerning to improving the academic atmosphere quality is shown by Table 3. According to Table 3, it shows that in both 2009 and 2010, all the performance indicator shows the above-target-achievement. On the performance indicator of lectures attendance frequency in class in a semester,

there was an improvement of higher achievement in the end of 2010, that was 95%. Also, in the performance indicator of the number of publication by lectures, in fact in the end of 2010 it was extremely raising into 25 titles. It shows that lectures are more active in teaching and writing publication. In the other side, in the performance indicator of student attendance in library raises into the high achievement, that is in 2010, 250 students utilize the major library.

Table 2. The implementation result of quality target concerning to Improving the learning evaluation quality.

Performance Indicator	Year 2009		Year 2010	
	Target	Achievement	Target	Achievement
The number of student's violation in performing the final exam of semester.	10 persons	1 person	1 person	0
Time of final exam score submission.	2 weeks	1 week	1 week	1 week
The percentage of graduated-student in every semester	60%	75%	80%	80%
The percentage of graduated-student who has the remedial exam in every semester.	60%	75%	80%	80%
The percentage of supervisor attendance in final exam of semester.	80%	85%	90%	95%

On the performance indicator of TOEFL score or TOEFL like minimum for student, as the requirement to enter the final project or final task exam, it shows the high improvement among students, that was in the end of 2010 with the average of TOEFL is 430. From the explanation it shows that the quality of academic atmosphere in EEED of EF of YSU was pronounced as good.

The result of quality goal performance concerning to improving the academic services

quality is shown by Table 4. According to the Table 4, it shows that in both 2009 and 2010, all the performance indicator can exceed the determined target. The highest improvement of achievement indicator of the number of session with the supervising lectures in one period of final project or final task classical accomplishment shows the high improvement, which in 2009 the achievement was 8 to 10 time, so therefore in 2010 it turns into 13 to 16 times. It shows that the quality of academic services in EEED of EF of YSU was good.

Table 3. The implementation result of quality target concerning to improving the academic atmosphere quality.

Performance Indicator	Year 2009		Year 2010	
	Target	Achievement	Target	Achievement
Frequency of student attendance in major library in a semester.	100 persons	150 persons	200 persons	250 persons
Frequency of lecture attendance in class in a semester	75%	85%	90%	95%
Number of lecture's publication in a year	10	15	20	25
Number of student who joins the scientific activity held by department.	10 persons	18 persons	20 persons	27 persons
The TOEFL score or TOEFL like minimum of student as the requirement to enter the final project or final task exam.	360	420	425	430

The result of performance indicator achievement as a whole, as shown by tables above, writer can find the synchronic value with the ISO external quality audit. The external quality audit was held by the assessor of Sucofindo International Certification in July 31<sup>st</sup> 2009, and the result was good and there was no major evidence existing during the audit. The external audit could only find 1 minor evidence, that the question from 2 subjects were not verified yet by using the absolute evidence

paper. Then the management soon repairs the minor fault, and luckily it was then approved by assessor.

## 2.5 Impact of Quality Target of QMS of ISO 9001:2000.

The excellent result of quality target performance as mentioned above, in fact, cause some positive indirect impact to EEED of EF of YSU, they were as follows.

Table 4. The implementation result of quality target concerning to improving the academic services quality.

Performance Indicator	Year 2009		Year 2010	
	Target	Achievement	Target	Achievement
Length average of supervisor proposal accomplishment of Industrial Practice, Final Project, and final task for student.	3 days	2 days	2 days	1 day
Number of minimum frequency of student supervising services by the lecture of academic supervisor in a semester.	1	2	2	2
Number of the problematic student handled by the department and well-solved.	30 students	15 students	12 students	8 students
The number of meeting session with the supervising lectures in one period of final project or final task classical accomplishment.	8-10	10-12	12-13	13-16
Length of time need until the submission score of final project or final task issued by department.	21 days	17 days	12 days	7 days

Firstly, after the ISO external quality audit from Sucofido International Certification in July 31<sup>st</sup> 2009, it was coincidentally that EEED of EF of YSU earned the visit from the assessor of Competitive Grant of PHKI of the National Education Ministry which then, in fact, giving the positive score to the Department, so that EEED of EF of YSU could achieve the Competitive Grant of PHKI for 3 years. Secondly, the visitation result of accreditation of the Study Program of Electrical Engineering Education of Engineering Faculty of Yogyakarta State University in 2010 shows the implementation of ISO quality target, so that the data needed by National Accreditation Body could be well accomplished, which result the study program to gain the accreditation of A. Thirdly, the student team of robot of EEED of EF of YSU in 2009 and 2010 succeed to gain the 2<sup>nd</sup> winner in the scope of Yogyakarta and Central Java regional for the Indonesian Robot Contest. Fourthly, in 2009 and 2010, some graduates are approved to work in some bona fide company such as PT. Freeport Indonesia, PT. United Tractor and Pertamina.

## 3. Conclusion.

According to the discussion of this paper, writer concludes that the utilization of QMS of ISO 9001:2000 into the educational process in Electrical Engineering Education Department of Engineering Faculty of Yogyakarta State University especially the period of 2009 and 2010 are mentioned as follows :

- 3.1 Quality target in this department: (1) Improving the learning quality; (2) Improving the learning evaluation quality; (3) Improving the academic atmosphere quality; and (4) Improving the academic services quality.
- 3.2 Implementation of quality target: (1) Founding team of target quality and developing of commitments; (2) Dissemination of target quality; (3) Implementation of target quality on daily activities; (4) Controlling ISO recording documents; (5) ISO internal quality audit; and (6) ISO external quality audit.
- 3.3 The main obstacles: (1) The need of sufficient funding; and (2) Commitment and self awareness by some lectures and staffs shall be well-improved.
- 3.4 The results of the implementation of quality targets could classified as good category.
- 3.5 Impact of implementing target quality: (1) This department has won the PHKI competitive grant; (2) Electrical Engineering Education Study Program was accredited A



category; (3) Students of this department have won Indonesia Robot Championship as the 2<sup>nd</sup> winner in the Region of Central Java and Yogyakarta; and (4) Some graduates are approved to work in some bona fide company such as PT. Freeport Indonesia, PT. United Tractor and Pertamina.

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# PRINCIPAL ROLE IN STRENGTHENING THE SCHOOL CULTURE OF VOCATIONAL HIGH SCHOOL

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## Abstract

The school principal is the key to the success of learning in the Vocational High School. As the holder of the management, he is the creator of the learning process, including the development of school culture. School culture, the best medium of learning to implement character education, is being promoted today. In order for the effective learning process, the principal must be able to develop a school culture adapted to the characteristics of learning in Vocational high School.

The components that must be developed by the principal within the school culture called PRIDE that consists of: (1) Policy and personnel, (2) Resource deployment, (3) Incentives and Accountability, and (4) Data and assessment. To develop the PRIDE, the principal may refer to the Educational Leadership Constituent Council (ELCC) Standards that consists of: (a) Visionary Leadership, (b) Instructional Leadership, (c) Organizational Leadership, (d) Collaborative Leadership, (e) Ethical Leadership, and (f) Political Leadership,

For strengthening school culture, the principal must integrate PRIDE with ELCC standard. The principal must be as educational leader and has the knowledge and ability to promote the success of all students by: (1) facilitating the development, articulation, implementation, and stewardship of a school or district vision of learning supported by the school community; (2) promoting a positive school culture, providing an effective instructional program, applying best practice to student learning, and designing comprehensive professional growth plans for staff; (3) managing the organization, operations, and resources in a way that promotes a safe, efficient, and effective learning environment; (4) collaborating with families and other community members, responding to diverse community interests and needs, and mobilizing community resources; (5) acting with integrity, fairly, and in an ethical manner, (6) understanding, responding to, and influencing the larger political, social, economic, legal, and cultural context.

**Keywords:** Principal role, School culture, PRIDE, ELCC Standard

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## 1. Introduction

At each organization, including school organization requires an organizational culture that will guide the organization's members to behave. Organizational culture consists of the rules and believed to be the truth professed by members of the organization. to define school culture can be done through a holistic approach, a variable approach, and cognitive approaches <sup>[1]</sup>.

Holistic approach is also called a pattern approach. These approaches cover all phases of culture and integrate with the historical development of evolutionary traits of interest. In this approach culture defined as an organization described as a general constellation of beliefs, tradition, habits, value systems, norms of behavior, that establish patterns of behavior and emotions of life the organization.

Variable approach is also called the behavioral approach / behavioral focus on cultural expression that can be found in the form of verbal and physical behavior or practice. In this approach culture is defined as a way of doing things around us.

In the cognitive approach focuses on ideas, concepts, designs (blue print), the beliefs, values

and norms are seen as the core of the culture. Organizational culture according to this approach provides a conceptual design that contains standards for taking a decision about what to do and how to implement them. Conceptual design appears in a process of social interaction is mainly oriented to the solution of the problem and passed on to the next generation continuously. This is the most appropriate approach is used to describe the culture of the school.

Through a cognitive approach, Malinowski <sup>[2]</sup> argues that culture is the integral whole consisting of implements and consumer's goods, the constitutional charters for various social grouping of human ideas and crafts, belief and customs. Completing this opinion, Schein <sup>[3]</sup> explains that the culture of a group can be defined as a pattern of shared basic assumptions That was learned by a group as it solved its problems of external adaptation and internal integration, that has worked well enough considered to be valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems.

Schein divides organizational culture into three levels consisting of artifacts, values and

beliefs, and basic assumptions. Artifact is the outermost layer, and the basic assumption is the deepest layer.

Artifacts include all phenomena that can be seen, heard, and felt in the school. At this stage construction is done through physical and social environment. At this level everyone can see on: (a) architecture of the physical environment, (b) language, (c) technology and products, (d) creation, (e) the style of dress, (f) behavior, (g) visible emotion, (h) the myths and stories of the organization, (i) the published values, (j) ritual (k) ceremony, (l) an organization chart, (m) a formal description of how the organization works as listed in vision and mission. The physical artifacts of the building is including room layout to reflect the organizational culture. The artifact can be illustrated as the entry point for outsiders to understand the culture of an organization and culture is a form of communication with fellow members of organizations and people outside the organization. Artifact is a tangible element and easily observable by a person or group of people both inside and outside the organization (visible and observable).

In the artifact layer, there are three interrelated dimensions, namely: (a) the manifestation of verbal / conceptual, (b) the manifestation of behavior / behavioral and (c) the manifestation of physical / material<sup>[4]</sup>. In more detail the elements that can be grouped into verbal manifestations are: (1) the direction and goals, (2) curriculum, (3) language, (4) metaphor, (5) institutional history, (6) institutional leaders, (7) institutional structure.

Elements of the behavioral manifestations are: (1) ritual activities, (2) rituals, (3) teaching and learning activities, (4) operational procedures, (5) traditional and regulations, penalties and sanctions, (6) psychological support and social, (7) patterns of interaction with parents, and community. The elements that can be grouped into physical manifestation / material are: (1) equipment and facilities, (2) layout of buildings, (3) motto and decorations, (4) uniform

Values in the school culture defined as something that is believed by the citizens of the school as something that is right and wrong. The belief is an attitude about the way it should work within the organization.

The essence of organizational culture is the basic assumption that guarantees one finds little variation in the culture unit. On the basis of the assumptions contained clues that must be complied with regarding the organization's members to explain the real behavior including members of the organization how to feel and think of everything.

The school principal has a major role towards the formation of the basic assumptions. Achmad Sobirin<sup>[5]</sup> explained that the conviction of the leaders of the organization actually become a

source of inspiration to find a variety of ways in order to resolve various issues and organizational development. In other words, the conviction of the principal is sources of the formation of the basic assumptions in the life of the school organization.

According to Robbins<sup>[6]</sup>, school culture was initially formed by philosophical of the organization founder. Further organizational culture will greatly affect the criteria used in hiring or moving the organization's members. Behavior of top management also determine the general climate of acceptable behavior and unacceptable. Level of success in disseminating the organization's culture will depend on the suitability of the employee values with organizational values.

## 2. Principal Role for Developing School culture

School culture can't be separated with leadership in the school because the school culture to grow and evolve along with the founder and leader of the school. The presence of a leader of the organization environment is a crucial factor for the decline of the organization forward. Therefore, the principal is the most influential person to determine the activity and the policy pursued by the entire academic community.

Jerome Want<sup>[7]</sup> explains that the role of the principal to be able to develop the school culture of the organization are:

- (1) *Become a student of culture.* In each member of the organization including organizational leaders must learn the culture in the organization.
- (2) *Renewal.* Leaders are uniquely positioned to build a culture as a process of renewal. With a renewed culture, talent and commitment of members of the school will re-energized in the name of the school organization.
- (3) *Communication.* The leader must maintain open communication has always existed among the members of the organization at the school to be used to exchange ideas and resources.
- (4) *Inclusiveness.* The leader must explain to all members of the organization in developing a culture that required the involvement of all members of the organization and its leaders.
- (5) *Trust.* Leaders must foster a sense of trust to each member of the organization that they will remain secure in his ideas.
- (6) *Accountability.* Leader is the only person most responsible for whether of the process of cultural development that has been running in the right direction and have completed the actual destination.

In the meantime, to develop a school culture, according to Deal and Peterson<sup>[8]</sup> the principal can perform the following five roles:

- (1) *The principal as symbol: affirm values through: dress, behavior, attention, routines.*

- (2) *The principal as potter: shape and be shaped by the school's heroes, rituals, ceremonies, symbols.*
- (3) *The principal as poet: use language to reinforce values and sustain the school's best image of itself.*
- (4) *The principal as actor: improvise in the school's inevitable dramas.*
- (5) *The principal as healer: oversee transitions and change in the life of the school.*

To develop the school culture, there are three conditions, we believe, are essential if educators are to apply what we know about school culture to the challenge of bringing about deep and enduring improvement in our schools<sup>[9]</sup>. Principals need to facilitate the implementation.

**a. Schools need measures of success and areas for improvement that go beyond test scores.**

The school principal shall be responsible for external standards, and standardized tests that are part of accountability. Some states use standardized tests in math and reading to address the real and urgent problem. However, test scores should not be the only measure of school success. If they do, they have unintended negative consequences that limit the vision of a good school. Because the preoccupation of many schools with high-risk students prepare for tests in math and reading, they tend to ignore important curriculum areas such as science, social studies, art, physical education and health.

The solution is not to eliminate testing, but keep in proper perspective so as not to reduce the mission of holistic education. Schools and classrooms should approach the assessment and all their work by developing the whole person, including skills such as creative problem solving, teamwork, respect for diversity, ethical decision making, and commitment to human rights and social justice.

**b. Educators must have a comprehensive understanding of what “school culture” is.**

While there is a growing understanding and evidence of the importance of school culture, we still need to develop a common national vocabulary to define and discuss it. Many educators and researchers use the term school climate as a basis for conversations about school improvement.

School climate is often used as a phrase and broad umbrella term to cover various aspects of the school experience. Framework that describes the environment of safety, respect, support and challenge for all member schools in different domain: physical, emotional, social, ethical, public, and intellectually.

Be dangerous if every school to adopt a standard school climate using a narrow definition of school climate. For example, the new guidelines only focus on creating a safe social climate and attentive without adequately address the intellectual and cultural climate of the larger schools are required to student achievement. We will miss important opportunities. A more meaningful approach to climate or culture of the school will assess the breadth and depth, with benchmarks that cover a variety of academic and social factors that make for quality schools.

**c. Tools for developing and assessing school culture.**

Many schools shape their culture by accident because they do not have the tools to do so. Actually many of the tools to shape the school culture by using the ideal test developed over several weeks or even months with input from school leaders, staff, students and parents.

To assess the school culture is as important as the culture of the school building. There is a standardized test that measures the performance of students in subjects such as math and reading, but there is no systematic way to measure a school's culture, the school will be less clear about what the school culture, is less incentive to make the cultural construct of priority, and there is no sure way to monitor their progress in developing a positive culture and use assessment data for continuous improvement.

**3. Educational Leadership Constituent Council Standards**

To be able to develop a school culture, the principals of Vocational High School must have a certain ability. One of the requirements to become a good principals contained in The Educational Leadership Constituent Council standards (ELCC standards<sup>[10]</sup>. ELCC Standards are research-based, widely used standards for advanced programs in educational leadership for principals, superintendents, curriculum directors, and supervisors. The ELCC standards are defined here.

Standard 1.0: Principal have the knowledge and ability to promote the success of all students by facilitating the development, articulation, implementation, and stewardship of a school or district vision of learning supported by the school community.

- (1) Develop a vision
- (2) Articulate a vision
- (3) Implement a vision
- (4) Steward a vision
- (5) Promote community involvement in the vision

Standard 2.0: Principals are educational leaders who have the knowledge and ability to promote the success of all students by promoting a positive

school culture, providing an effective instructional program, applying best practices to student learning, and designing comprehensive professional growth plans for staff.

- (1) Promote a positive school culture
- (2) Provide an effective instructional program
- (3) Apply best practices to student learning
- (4) Design comprehensive professional growth plans

Standard 3.0: Principals are educational leaders who have the knowledge and ability to promote the success of all students by managing the organization, operations, and resources in a way that promotes a safe, efficient, and effective learning environment.

- (1) Manage the organization
- (2) Manage operations
- (3) Manage resources

Standard 4.0: Principals are educational leaders who have the knowledge and ability to promote the success of all students by collaborating with families and other community members, responding

to diverse community interests and needs, and mobilizing community resources.

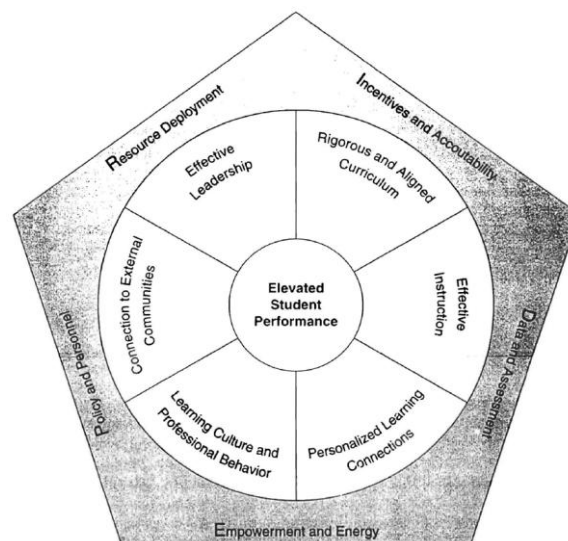
- (1) Collaborate with families and other community members
- (2) Respond to community interests and needs
- (3) Mobilize community resources

Standard 5.0: Principals are educational leaders who have the knowledge and ability to promote the success of all students by acting with integrity, fairly, and in an ethical manner.

- (1) Act with integrity
- (2) Act fairly
- (3) Act ethically

Standard 6.0: Candidates who complete the program are educational leaders who have the knowledge and ability to promote the success of all students by understanding, responding to, and influencing the larger political, social, economic, legal, and cultural context.

- (1) Understand the larger context
- (2) Respond to the larger context
- (3) Influence the larger context



**Fig. 1. PRIDE: Key elements of a high performing school culture<sup>[10]</sup>**

#### 4. PRIDE for Developing School culture

*PRIDE* is the major levers available to a leader for constructing an effective school culture. These levers include: (1) policy and personnel, (2) resource deployment, (3) incentives and accountability, (4) data and assessment, and (5) empowerment and energy. It is important for a leader to have a vision of the desired culture. The structure of pride can find in figure 1<sup>[10]</sup>.

##### (1) Policy and Personnel

It is important for principals to determine goals and expectations. Some things are less effective in leadership is prescribing too intense.

However, those working with and for schools eligible for a real taste of what to expect. This is what is meant by the policy. A good policy also serves to provide a template against which the performance of subordinates that can be assessed.

##### (2) Resource Deployment

###### People

When people comes to personnel, there are a few simple, but remarkably practical and powerful, messages to be emphasized here.

- (a) No principal who can work effectively without the help of others. Converting intention into reality requires commitment, knowledge, and skills of others.

- (b) Selecting, motivating, and the rate is one of the most important practical tool for principals.

### **Money**

Educators are not comfortable and be quiet in addressing the issue of money. They are rarely trained in finance. A school budget process greatly affects the organization and change.

Here are the steps productive to pursue in order to take advantage of the organization's budget process as a tool to understand and then influence the organization as a whole. The following steps may be met with resistance from the political and social factors.

- (a) The principal must put in the process of planning school organization. If the principal has a full understanding of the organization and budget, through the allocation of its resources it will be easier to achieve the vision and mission
- (b) Make sure the principal is fully in the loop of information on this important budget planning such as enrollment projections, teacher turnover and recruitment projections, assuming the class size, facilities requirements, revenue projections, and changes in government funding procedures.
- (c) The principal is responsible for the dissemination of government regulations relating to the program, school, department, or related activities. Knowing the rules is very important for deal with change.
- (d) The technical information will clarify the rules. For that the principal may take a while, rearrange the criteria to be closer to practical steps.
- (e) Gradually, principals need to move the organization from the salary setting up with things that have little effect on performance and student achievement.
- (f) Maximize the budget policy for teachers and employees. This is a way to empower and encourage their creativity.
- (g) Pursuit of efficiency and organizational incentives. For example, place the budget for replacement teachers who are not dating. Little action has been proven reduce teacher absenteeism.

### **Time**

Time is the most difficult factor to be set for the principal. Actually this can be fixed. There are certain hours of the day. In general, sleep a night is not a productive way to solve the problem of scarcity of time. Similarly, time should be set aside for the reality of the logistics such as shopping, personal tasks, physical exercise, interaction with family and friends, and, on

occasion, holiday. The latter can be a tremendous rejuvenation point and irregular to be earlier on the grounds that it was too busy. During the time off could be used for recreation.

### **(3) Incentives**

The school principal must understand that individuals working in schools tend to perform activities that they consider there are rewards and punishments. As a result, the person must exert great care to ensure that what is being incented in the organization. Skeolah head is that will contribute to an effective school culture.

### **(4) Data and Assesment**

In a new era in America, the principal is seen as an individual who can identify, define, and solve problems. Although there are many approaches to making decisions and solving problems, an important first step in troubleshooting is to identify and understand, and one powerful mechanism to define and understand the problem is to collect and analyze data.

When the school principal to compile, evaluate, and use data on schools and communities, they are in a better position to serve as a catalyst for solving problems in the school community. While some of the problems clearly present themselves, others are not immediately obvious or explicitly defined and thus must be found, carefully analyzed based on available data. Given the current policy context, educators are increasingly recognizing the value of the data and the need to gain a greater understanding of data analysis and decision making

### **(5) Empowerment**

If the principal is not ready to delegate authority to subordinates enough so that they can freely and fully perform their assigned work, he has squandered its resources in their employ. If he can't trust their subordinates to do the job, then he probably could not do it alone.

Principals make decisions, create a vision, setting priorities, selecting subordinates, and allocate resources. However, he has determined the right thing to do, almost all leaders will likely take place finish by persuading others to take action. Leader will be powerless, if not effectively communicate with the public, parents, professional colleagues, and subordinates and persuade them of the usefulness of pursuing the necessary tasks.

By creating a good impression from the beginning, the principal can form a trend that may help in gaining acceptance message, persuasion makes it easier. However, sometimes a good impression and effective communication is not enough. Sometimes mistakes happen, and uncomfortable conversations. Regardless, there are

ways to handle negative discomfort and can even save something positive. Confrontation does not have to result in unresolved conflicts and can be converted to a constructive outcome.

## 5. Conclusion

For strengthening school culture, the principal must integrate PRIDE with ELCC standard. The principal must be as educational leader and has the knowledge and ability to promote the success of all students by: (1) facilitating the development, articulation, implementation, and stewardship of a school or district vision of learning supported by the school community; (2) promoting a positive school culture, providing an effective instructional program, applying best practice to student learning, and designing comprehensive professional growth plans for staff; (3) managing the organization, operations, and resources in a way that promotes a safe, efficient, and effective learning environment; (4) collaborating with families and other community members, responding to diverse community interests and needs, and mobilizing community resources; (5) acting with integrity, fairly, and in an ethical manner, (6) understanding, responding to, and influencing the larger political, social, economic, legal, and cultural context.

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# REDESIGN OF VOCATIONAL EDUCATION IN INDONESIA AS A DISCOURSE IN THE FUTURE

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## Abstract

The purpose of the article is to give discourses on redesign in the area of Vocational Education and Training (VET) in Indonesia to prepare graduates who will play a role in the global era. Professional education is a form of education, where people are equipped with practical skills that will enable them to participate in careers that include manual or practical skills. School-to-work represents a significant development of policies for employment training. Development of technology and professional education shall consider the relationship between multiple technocultural factors. These four factors: (1) labor (industrial relations), (2) changes in technology (innovation), (3) organization of work (the work), and (4) formation of competences (skills). Rapid changes in the economic, social and technology demand of society need to develop knowledge and skills on an ongoing basis. So, they can live and work in creating a society. Education and training contribute to personal development, increase productivity and incomes in the workplace, and encourage participations by all in the economic and social life. Secondary school vocational and professional in Indonesia is an integral part of the economic sectors that have contributed to the growth of national economy. So it is necessary to develop the quantity and quality. The quality of vocational college/professional work will reflect the quality of Indonesian worker that must be built to increase the competitive advantages of human resources in Indonesia. Responding to public demand for high-level expertise and skills, it will be more effective to integrate general and vocational education by providing basic knowledge enrichment in vocational education / vocational school to strengthen more and more the power of thought to the graduates of vocational education in Indonesia. For the existing systems we can prepare the discourse as follows: the implementation of vocational education and vocational mainly carried out in eight semesters. First four semesters is for placing the basic knowledge and skills. Semester 5-6 are for placing them into majors and for the implementation of the UAS and UNAS. Semester 7-8 are to enrich skills in industry/field and OJT, and tests of competence. Annexes redesign must be a way to prepare for postgraduate vocational education/training in Indonesia through curriculum development, teaching, teacher evaluation and partnership working world.

Keywords : redesign, vocational education

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## 1. INTRODUCTION

Vocational education is a form of education in which people are provided with practical skills which will allow them to engage in careers which involve manual or practical abilities. Some examples of careers for which people can receive vocational education training include: aviation mechanics, hotel management, hairstyling, plumbing, air conditioner installation, and cab driving. Vocational education is also known as Vocational Education and Training (VET), or “[technical school](#)”<sup>(1)</sup>. *School-to-Work opportunity* is a very significant policy development in preparing labor <sup>(2)</sup>. The key element of this policy is the integration of vocational and academic education programs for all students. School-to-work program includes an extensive program in secondary schools, especially for vocational schools. A popular program is a partnership education (apprenticeships and school-based enterprises).

VET innovation should focus on the inclusion of work-oriented education, by defining quality criteria for a work-oriented educational place, and designing a curriculum which is integrated with the world of work.

The development of the vocational and technological education considers the relationship between several factors that are technocultural. They are (1) labor (industrial relations), (2) changes in technology (innovation), (3) organization of work (the work), and (4) formation of competences (skills). Technological changes will reciprocally influence the work organization, meaning that any changes in technology will impact on the structure of the existing jobs in the world of work. On the other hand, the technological change will also alter the formation of competencies and skills needed by industry. The change of the competency and work organization clearly needs to be anticipated by the educational institution to upgrade each program according to the needs of industry and technology



changes. All the innovation and change processes will be accommodated if the relationship between institutions are well-established (the relationship between the industry and the educational institutions). Basically the source of the changes can occur in each factor and will be refracted on other factors. The important message from the description of the relationship of these various factors is that the technology education curriculum or vocational education, in general, is very dynamic and has a high sensitivity to changes. Therefore, the institution must have an interconnection such as a magnetic field with the world of industry. Awareness of the important role of technical and vocational education in the economy in Southeast Asia has been developed<sup>(3)</sup>. Similarly, it will happen when the depth of the meaning of the new thinking has emerged in the Organization for Economic Cooperation and Development Countries (OECD) and Latin America about the role of technical secondary education and the higher one for economic support and knowledge. Indication of resurgence of interest in TVSD is the emphasis on the goal of Education for All Monitoring (PUS) Global Report (GMR) 2010. If it is examined, there is always a connection between the industrial and economic development on the one hand and labor on the other hand, while they are always related to education and training.

## **2. DISCUSSION**

### **2.1 Reorganization of the World of Work**

The use of high-technology equipment in the industry and the offices change patterns of work and qualifications of labor, from the use of hand-tools to the use of head-tools. For example the increase of the need of labor / technicians for high-technology equipments, and also the decrease of administrative and the manufacturing industry staffs.

### **2.2 The Change and The Development of Vocational Education**

#### **2.2.1 A globally fundamental change in technology, economy, and the world of work**

The development of the world to a global direction will lead to a paradoxical situation. On one side the opportunity is widely opened; on the other side the competition is getting tighter. In the context of the competitiveness, it brings together the nation's ability to maintain her existence in the global arena. Therefore, in the global context, a nation is demanded to

have her competitiveness as well as her durability to take part and triumphed.

The population growth of countries differs from one another. It results in the changing of the needs of technology, economy, and the world of work because of the condition of the country itself or due to conditions of other countries because of the interconnections. A typically hard technology are likely to lead to a typically soft one in the 21st century. Hardware technology that reaches the most complex level management can be controlled by human using software technology. Jin (2010) emphasizes an understanding on the human aspect as a very needed thing to counterbalance the acceleration in the pace of technology. Rapid changes in economic, social, and technology aspects require the whole community to develop knowledge and skills continuously, so that it can live and work well in a knowledgeable society. Education and training contribute to one's personal development, increase productivity and incomes in the workplace, as well as facilitate the participation of everyone in the economic and social life (King & Palmer, 2010).

#### **2.2.2 Competitiveness challenges of human resources (HR) Indonesia**

The quality of human resources will affect the economy. Meanwhile, economy-based knowledge needs a well-planned knowledge management and therefore the relationship between the world of work and vocational education should be increased.

The focus on the generic skills is replaced by the core skills that can be applied in the context of diverse organizations and work (Payne, 2004). OECD countries have tried to define the core competencies and skills that are often called "21st century skills" or "higher order skills" (Grubb, 2006). Besides the characterization of generic versus specific skills, there is an increased focus on hard and soft skills. Employers want that workers have skills other than hard skills or soft ones. Hard skills refer to the technical and analytical competence as well as the know-how that enables workers to perform the mechanical aspects of the job. The other way, their soft skill is "the capability for adaptive and positive behavior that enable individuals to deal effectively with the demands and challenges of everyday life."

Author, Levy, & Murnane (2001) explains further how the progress of technology may affect the types of skills demanded by the labor market. They show how computerization is

associated with a decrease in demand for manual labor that is relatively routine, cognitive tasks, and the increase of the relative demand for non-routine cognitive tasks.

In addition, the framework of the key competencies DeSeCo OECD (CHERRIES, 2010), provides another method of identification and classification of key competencies, that are divided into three categories: (a) using an interactive form, (b) interacting in a heterogeneous group, and (c) acting independently. First, using the interactive tools refers to the ability to use various physical means and social culture activities (technology and language), to interact with the environment. The second and third; the importance of life skills or soft skills. Someone not only must have the ability to interact and to work effectively with other heterogeneous groups, but also can take responsibility for their own lives and act independently (Leney, 2008; OECD, 2005). The attainment of the secondary education is considered as a minimum requirement to obtain a satisfactory position in the labor market for OECD countries. On average, the achievement of the secondary education is associated with a reduction in unemployment (unemployment among the students is not a percentage of age group) between 20-24 years of 7.3% and 7.1% for 25-29 years (OECD, 2007). Global competence can be defined as the knowledge and skills that help people to understand the world they live in, skills in integrating cross-disciplinary studies to understand the activities and the global arena, and to create alternatives to interact with the global world. The global competence is an attitude and ethics adjustment that enables us to interact with various people from different geographical places in a comfortable, respectful, and productive way.

### **2.3 Educational Redesign on Vocational Field in Indonesia**

Although there are various views about what is meant by "global expertise" that is closely related to the language and the provision of ICT for basic skills to work in a global economy, there is another evidence which recognizes that it requires the promotion of learning about globalization, sustainable development, cultural and social understanding, economy, and commitment. Vocational High School in Indonesia is an integral part of the economic sectors that contributed to the growth of national economy, so that it needs to develop the quantity and quality. The quality of

Vocational School (SMK) will reflect the quality of Indonesian labors that need to be set up to enhance the competitive excellence of the human resources of Indonesia. Thus, SMK plays an important role in suppressing the number of unemployed persons in Indonesia. To that end, students are necessary to be able to work in a particular field. Further described in the Government Regulation No. 19 of 2005 on National Education Standards (SNP), the objective of vocational secondary education (SMK) is that the vocational education (SMK) prioritizes in preparing students to enter the field of work and professional attitude. SMK according to Law No. 20 of 2003 on National Education System is defined as follows. Vocational education is an education that prepares human resources and its equipment in order to align with the economic growth of Indonesia (Directorate Restra PSMK years 2010-2014).

Advanced technology has brought revolutionary changes in all areas of life. Its influence on the industry and the economy has been considered as a proportion of the crisis. The emphasis has shifted the value of 'material' for 'information' and 'time'. The strength of muscle and the power of the engine are replaced by 'brain power' and 'thinking skills'. The knowledge about intensive and multi-skilled workers is highly needed. To address the rapid development in the life of the current system, we need a step of a development for vocational field based on the developments in the community.

Based on the study which has been done before, we can make a kind of redesign discourse in the vocational field that is expected to narrow the gap between current vocational educations in Indonesia and the existing world of work, in which case its development is very dynamic at present and future. The dynamics of the knowledge economy, followed by market developments, advances in science and technology, and globalization as well increase the internationalization, a call for the new face of skills and competencies. Skills and abilities are not only highly desirable, but it is also much needed to meet the reality of the changing demands of economic and labor market. Responding to the demand for general skills and higher level skills, it will be more effective to integrate general and vocational education by giving the students an enrichment of basic knowledge in vocational education to strengthen more and more the power of thought for the graduates of vocational education in Indonesia. For an existing system, we can prepare a discourse as follows.

Table 1. Redesign of vocational education.

Current vocational education	Redesign
Implementation for 3 years (5 semesters in school and 1 semester in the field)	<ul style="list-style-type: none"> <li>• 4 first semesters for planting the basic skills.</li> <li>• Semester 5-6 as the concentration semester related to the students' vocational interests (using the block system) in the implementation of learning.</li> <li>• School examination and UAN conducted</li> <li>• One semester for field study (PKL) based on the students' concentration/ interest</li> <li>• Semester end of On – the-Job Training (OJT) in industry</li> <li>• Exam School / competency test conducted</li> </ul>

Through the strengthening of the basic knowledge, it is expected that skills in thinking and decision-making as well as the graduates' autonomous level will be more powerful. Thus, it will facilitate the mastery of productivity competencies that are of interest; besides the ability to communicate is getting better. Here is a way of preparing graduates of vocational education in Indonesia through the curriculum development, teaching-learning process, educators, evaluation, and cooperation the world of work.

### 2.3.1 Curriculum Development

Retrainability is the ability that is to be emphasized. It is necessary to do to adjust to the rapid growth of innovation and change from time to time. Providing broad-based education programs for career development should also not be overlooked.

Priority in planning the curriculum includes: (a) preparing students to have a multi-skill: *high order cognitive skills, practical skills, programming skills, decision-making skills, communication and interpersonal skills*, (b) flexible: entry, duration, sequence of content, place of study, operation mode, graduate-students-have-the-ability-to-be-retrained centered; (c) giving the content of

entrepreneurship; (d) credits that can be transferred: because the skills and knowledge can be obtained not only in schools but also in the workplaces or through the internet; and (e) continuing education. Meanwhile, the four elements of curriculum and instructional strategies, including: (a) broad-based academic to raise the standards of science, (b) basic training and specialized training, (c) industry skill improvement, and (d) training modules that contain a mix of theory and practices that need to be prepared to support its appropriateness.

### 2.3.2 Teaching Learning Process (PBM)

Teaching learning process or PBM obliges the existence of a flexible curriculum and an interactive instructional. The development which is associated with the PBM includes: (a) tasks that facilitate the student learning, resource-based learning, discovery-oriented experiments, (b) integrated learning, performance-oriented tests, (c) CAI (Computer-Aided Instruction) (d) training using computer-based video; (e) open learning system, and (f) CMI (Computer-managed instruction). As a consequence, there will be changes in the school environment which include: teacher-centered learning comes to be student-centered one; content orientation turns to be goals orientation; group into individual basis; a rigid curriculum to be flexible one, and the instructional of teachers turns to be interactive.

### 2.3.3 Educator or Teacher

Several attempts were made to improve the competence of teachers to enable them to get a chance to grow. The following is the teacher's role and function that current teachers are expected to: (a) the teacher as a specialist knowledge, (b) as a practitioner of vocational teachers, (c) teacher as a program designer; (d) the teacher as a curriculum developer, (e) the teacher as a material source (f) the performance evaluator, (g) the teacher as a counselor; (h) the teacher as facilitator, and (i) the teacher as a manager.

### 2.3.4 Evaluation

Evaluation should be conducted by an independent body to see the mastery of competencies (certification bodies, BAN-PT, BNSP, industrial, and BSNP).

### 2.3.5 Cooperation with the world of work

Strong collaboration between education and industry for *on-the-job training* aimed at preparing a skilled workforce. *Trends of Collaboration in Industry-Education Institution* (UNESCO, 1992) can be done through four stages: (1) academic learning, (2) Basic training, (3) special training (specialist), and (4) skills improvement. Steps 1-3 are implemented at schools; the implementation of stage 4 is in the industry, but at the end of the year students are contracted (treated) as an employee.

### 3. CONCLUSION

The development of vocational and technology education need to consider the relationship between several factors that are technocultural. These four factors are: industrial relationships; changes in technology (innovation); organization of work (work organization), and the formation of competencies (skills).

Vocational education (SMK) in Indonesia is an integral part of the economic sector which contributed to national economic growth, so that it needs to develop the quantity and the quality. SMK quality will reflect the quality of Indonesian labor that need to be set up to enhance the competitive excellence of human resources of Indonesia. Responding to the demand for general skills and higher level ones, it will be more effective to integrate the general and vocational education by giving the students enrichment of basic knowledge in vocational education to strengthen more and more the power of thought for the graduates of vocational education in Indonesia. For a description of the existing system we can prepare a discourse that is: *the implementation of vocational education, especially SMK, is carried out in eight semesters*. Four semesters are for the cultivation of basic knowledge and basic skills. Semester 5-6 is for their concentration, the implementation of UAS and UNAS. Then, semester 7-8 is for the enrichment of skills in the industry or field, and for On-the-Job Training (OJT), as well as the competency test.

In the application of the redesign implementation, it should be done by preparing graduates of vocational education in Indonesia through the development of curriculum, teaching-learning process, educators, evaluation, and cooperation the world of work, such as:

1. Curriculum development, namely retrainability. It focuses on the emphasized ability. It becomes necessary to adjust to the changes that often comes from the rapid growth of innovation from time to time.

Providing broad-based education programs for career development should also not be overlooked.

2. Teaching and learning process, namely: a flexible curriculum and interactive instructional.
3. The teachers have to perform multiple roles and functions in the context that they are far from simple information distributor to become facilitators of learning.
4. Evaluation. Evaluation should be conducted by an independent body to see the mastery of competencies.
5. Cooperation in the world of work. This is realized in which there is strong collaboration between education and industry .

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# STUDENTS' SKILLS COMPETENCY ASSESSMENT MODELS ON VOCATIONAL HIGHT SCHOOL (SMK) IN CENTRAL JAVA

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## Abstract

This study aims to describe the students' skills competency assessment models on Vocational Hight School (SMK) in the machining program. The method used was descriptive with a population on Vocational School in the machining program in Central Java, while a purposive sampling. The results obtained in Central Java there was three models. The first model (01) was a widely used, where the model was a whole set of management competency test from planning, organizing, implementing, reporting and evaluation set by Kemdiknas in this case is BSNP and DPSMK. Industry's role in planning at the level of the education (SMK) does not exist, only the involvement of assessors at the end of the competency test and certification expertise. The second model (02) is a model of the whole set of management competencies and certification test starting from planning, organizing, implementing, reporting and evaluation set by Kemdiknas in this case is BSNP / DPSMK; but to take advantage of the vocational school assessment potential in the production unit (UP) as a substitute for the role industry. Assessment are applied to the pattern: (a.) The test material as needed UP, (b) The material used as required UP, (c) Instructor Assessor by the UP and (d) Results / workpiece was used by the UP. The third model (03) was SMK that has a teaching factory as representation of the industry. At the planning stage for a test of competence: (a) Content Test, assessment criteria, as required graduation standards UP, (b) The material used as required UP, (c) Instructor Assessor by the UP and (d) Results / workpiece was used by UP.

**Keywords:** Students' skills Competency, Assessment Models, Vocational Hight School (SMK), The Machining Program.

## 1. Introduction

Including the organization of vocational education Vocational School (SMK) is entering a crucial phase, the phase in which the graduates of vocational education will stake its readiness in the workfore of labor in regional and global levels, both in the context of China-Asean Free Trade Agreement (C-AFTA) and the Asean Free Labor Agreement (AFLA), and demands the use of technology based on new findings for productivity efficiency requires that its renewable competence. As recommended by Paryono (2006: 55) to the policy makers that in order to improve the image, vocational education programs must be responsive to labor market needs and technological advances as well as vocational education should be more proactive in developing its program. Similarly, Enoch (1992: 90) asserted that in educational planning approach uses the concept of education for employment, in which attempts to direct the educational activities to meet national needs / areas for labor. Approach prioritizes linkages graduates with employment needs, both in terms of the number (quantity) and quality (quality).

Coombs in Gunawan (2006: 4) explains that the quality of vocational education if the students who have experienced the educational process is unacceptable in the workplace according to their

expertise. Based on these statements can be argued that the SMK as a producer of graduates should be able to make each individual student has the ability, skills and expertise relevant to the demands and needs of the workforce. Thus, vocational education can not be separated from the development of the existing world of work. Development of marketable labor must be performed by the vocational education based on the needs of the market (demand driven) through increased competency.

Statistics February 2011 (BPS, 2011: 39) suggests that the formation of industrial sector employment reached 13.71 million (12.32%) of the total number of 111.28 million people work. This suggests that the labor market needs in the industrial sector is still quite large and these conditions provide opportunities for vocational skills especially in the fields of Technology and Mechanical Engineering Machining competency skills to be able to take part in the fulfillment of labor in Indonesia. In Central Java in 2008, the number of state and private vocational school graduates in Central Java between 95% to 100%, of the passing range that is absorbed into jobs that match the skills program is 30% to 50%, the waiting period to get a job The first average is 1-6 months, the rest went to the university, as well as some unknown activities. Graduates of the vocational areas of study skills and Engineering Technology in Mechanical Engineering courses

required by the industry is the operator manual machine tools, CNC machine operators, electric welding, argon welding, and metal casting, in addition to that the soft skills needed in the form of persistence, commitment, discipline, as well as the ability to work together (team work) (Balitbangda Central Java, 2008: 21).

Graduation standards imposed on schools is the students' skills competency assessment by standards created by BSNP (BSNP under the Ministry of National Education), while the business / industry has a Indonesian Standards of National Occupational Competency (SKKNI) developed by the Department of Labor, so that two standards should be met to avoid the "mismatch" between competence skills produced by education with competency skills needed by the world of work. Standardized difference is also related to (a) type of work that is real (real world) while the school is the practice of simulation, (b) the quality of jobs in the industry is measured by accepted or rejected, while schools with a number (0-100), and (c) the risk of financial failure, while at school is still a lot of tolerance for repeat job (Sidi, 2000: 3).

The students' skills competency assessment vocational are expected to meet the standards implemented (relevance) World Business / Industry so that vocational graduates could be absorbed by a short waiting period, up to the challenge of global competence and the needs of current and student's competency assessment can be reached by learners. Specific competencies based on the spectrum of machining engineering expertise SMK (Mustagfirin, 2009: 25) This skill competencies provide a very important role in technology and industry, and based International Labor Organisation (ILO, 2008: 46) pointed out that 53.4% of students in the field of potential technology and industry, while the other fields of tourism by 7.0%, livestock 0.4%, agriculture 1.5%, business and management 35.3%, 1.4% of social work, fishing for 0, 3%, and arts and crafts by 0.4% and in the structure of the work until the year 2007 the manufacturing sector by 12.4% of sector employment is available.

### 1.1 Competency

The word 'competence' is reviewed from the perspective of estimology derived from the competent or capable. The word can mean a capability or expertise to do a job or activity. Broader review of the competencies associated with the word labor terminology, is an ability/skills based on knowledge, skills and attitude to do a job. Some definitions related to the definition above, among others: "Competence" is defined as a combination of relevant skills, understanding and

ability knowledge and to apply them ". (National Vocational Qualifications (Nvqs), United Kingdom). (Dit. Dikmenjur, 2002:3). Competence can be defined as the ability of individuals to show their work in accordance with required standards. In a more specific, competence can be defined as the capacity, qualifications or behavior brought about an employee / staff to carry out its duties and functions effectively. Australian National Training Board (NTB) to explain more about the competencies are:

Competencies bring all these elements of task, skill and knowledge together and add a performance standard. Thus a competency is written in the form of a task to be carried out, the skill required to do it and the standard to which the task must be performed. .... competencies can be motives, traits, self-concepts, attitudes or values, content knowledge, or cognitive or behavioural skill -any individual characteristic that can be measured or counted reliably and that can be shown to differentiate significantly between superior and average performers, or between effective and ineffective performers (Smith,1995:97). Furthermore, Spencer and Spencer (1993: 11), categorized the competencies into two threshold competencies and differentiating competencies,

Threshold competencies. These are the essential characteristics (usually knowledge or basic skills, such as the ability to read) that everyone in a job needs to be minimally effective but that do not distinguish superior from average performers. A threshold competency for a salesperson is knowledge of the product or ability to fill out invoice.....

Differentiating competencies, these factors form the superior distinguish average performers. For example, achievement orientation expressed in a person's setting goals higher than Those required by the organization, is a competency differentiates superior from That average salesperson. By using these two criteria, graduates of vocational competence can be directed to the two goals of minimal competence to perform the work (performance) and other professional competencies can be developed for the promotion of important positions. Competence can be linked to performance, with an indication of motive, character, self-concept, knowledge and skills that characterize the individual. Competence can influence behavior in the act and the impact on the performance in office. Chronology of competence described above is shown in Figure 1, starting from the expected personal characteristics (intent), the behavioral act (action), and impact (outcomes) on the performance of the work.

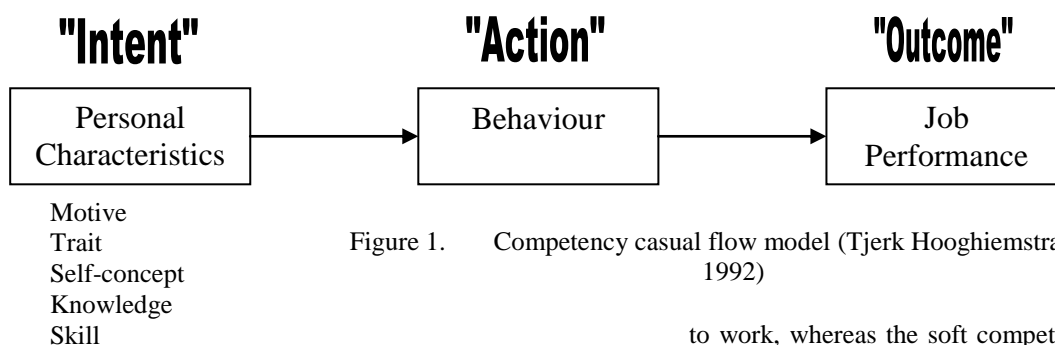


Figure 1. Competency casual flow model (Tjerk Hooghiemstra, 1992)

Currently, the concept of competence is increasingly being used in a wide range of organizations, especially in educational institutions and business organizations, and is believed to be part of the renewal approach to education and human resource development. According to Parry (1996: 50), the dimensions of competence distinguished competencies (soft competence) and hard (hard competence). Competence refers to the ability of the hardware-specific, based on the knowledge and skills related

to work, whereas the soft competence refers to the personal qualities, values, and disposition. Competence and performance of software affects the performance of a person, but is considered as a dimension that can not be built through learning and training. In more detail Spencer & Spencer (1993:9-11) there are five dimensions in detail the competence, namely: (1) motive (motive), (2) disposition (trait), (3) the concept of self (self-concept); (4) knowledge (knowledge), and (5) skills (skills). In the chart, Spencer & Spencer called it a model of the iceberg (The Iceberg Model) or the core and surface models (Central and Surface Competencies).

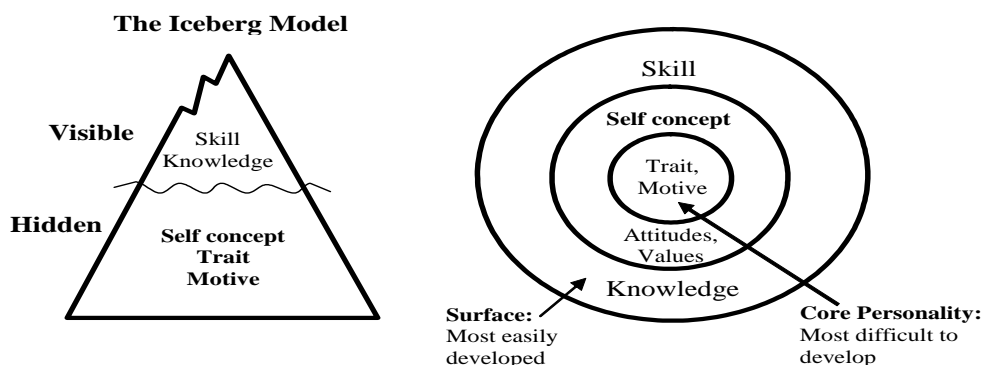


Figure 2. The Iceberg Model, and Surface and Core Competencies (Spencer & Spencer, 1993: 11)

In this model described the dimensions of knowledge and skills that are visible on the surface (surface) and more easily developed through learning (teachable). Learning and training is the most effective way to develop this dimension. Instead dimensional motives, traits, and self-concept is a fundamental dimension, and more difficult to develop through training and learning (non-teachable). In the context of vocational competency development, it is necessary in a comprehensive assessment of competence leads to competence (soft-competence) and hard (hard-competence). Competence of graduates of vocational high schools thus have a sense of ability or competence of graduates work based upon the

knowledge, skills and attitude to do a job, a measurement using a specific reference (criterion-referenced).

## 1.2 Competency-Based Assessment (CBA)

According to Australia's National Training Framework (NTF), competency-based assessment is defined; whether a person has the skills, knowledge and experience required to perform specific tasks in the workplace, or to gain credit vocational education and towards a qualification training or course. Assessment is based on industry determined competency standards. Meanwhile, according to Cumming (2004), the factors that influence the success of assessment in vocational



education include: (1) a strong curriculum base Influencing assessment, (2) the incorporation of school-based assessment in all certification, (3) preference for standards- referenced assessment, real respect for teacher judgment, (5) Increasing vocational education delivery within schooling, (6) multiple pathways to future study and careers, (7) school-based assessment in the compulsory years of schooling, (8) moves towards outcomes-based frameworks, (9) issues Relating to national benchmark data, and (10) equity issues.

According to the Ministry of Education (2004:1), the purpose of competency-based assessment of learning outcomes include: (a) provides a reference tool evaluation study of students in accordance with curriculum-based vocational competence (Competency-based curriculum), (b) improve the quality of assessment study of students either directly related to the learning process in schools and in industry, as well as those relating to the assessment of mastery of competencies, (c) develop a model of competency-based assessment (competency-based assessment) which involve an element in the implementation of relevant internal and external. Assessment of learning outcomes in the learning system is basically a competency determination process to ensure that learners are already competent or not competent. The determination is carried out by the evidence compare learning outcomes (learning evidence) obtained a learner with the performance criteria (performance criteria) set forth the standard of competence

## 2. Method

The method used is descriptive method. The subject is the Vocational School (SMK) Mechanical Machining expertise competence in Central Java. While the sample is taken with the principle of purposive sampling is based on a model category that was formulated by the Ministry of National Education (Depdiknas, 2004: 5) and based on the pre survey that has been done then the sample is determined to be 3 group implement vocational competency assessments and certification: (1) shall by the school along with industry is a partner institution, (2) held industry that has national recognition, and (3) conducted by the Institute of Professional Certification. So that the sample is N 7 Semarang SMK, SMK N 4 Semarang, SMK 2 Adiwerna Tegal, SMK 2 Navan, SMK Michael Surakarta, SMK Warga Surakarta, SMK SMK Ganeshatama Boyolali and BK 2 Simo Boyolali. Data collection tools and techniques used are: (1)

questionnaire, was used to reveal (ask) the understanding of the implementation of the competency assessment and certification expertise, models are implemented, carried out assessment student competence and certification expertise, relevance and competence generated and the contributing factors inhibitors, either through open-ended questions (open question) or closed (closed question), (2) check-list, is used to observe the passing standards and SKKNI, benchmark assessments and certification of skills competency testing of students, as well as enabling and inhibiting factors to the achievement of achievement of competence, (3) interview, used to support / complement the disclosure of the model is applied, especially input from stakeholders in order to formulate skills model competency assessment and certification of students effectively and efficiently, (4) documentation, used to support the disclosure of the entire model , especially documents used in student skills competency assessment. Target field data collection and triangulation of data is to reveal the described purpose of the competency assessment models of existing expertise, while the description and analysis (meta analysis) findings (model) is used as a reference in formulating the design of the model (factual / existing).

## 3. Results and Discussion.

Research in order to find a model that has been done on the existing vocational skill competency Machining Techniques in Central Java has been able to reveal any models. There are 3 (three) model of vocational competency assessments students' skills competency skills Machining Techniques. Of the three models can be explained as follows. The first model (01) is a model formulated by the Ministry of Education and Culture, where the model is a whole set of management competencies and certification assessment starting from planning, organizing, implementing, reporting and evaluation set by Kemdiknas in this case is BSNP/POS UN publishes by DPSMK and technical guidelines. The role of industry the planning at the unit level of education (SMK) does not exist, only the involvement of assessors at the end of the competency assessment and certification expertise. Model 01 is more widely used by SMK, and for more details can be seen in the following figure.

## Students' skills Competency Assessment Models (UKK)

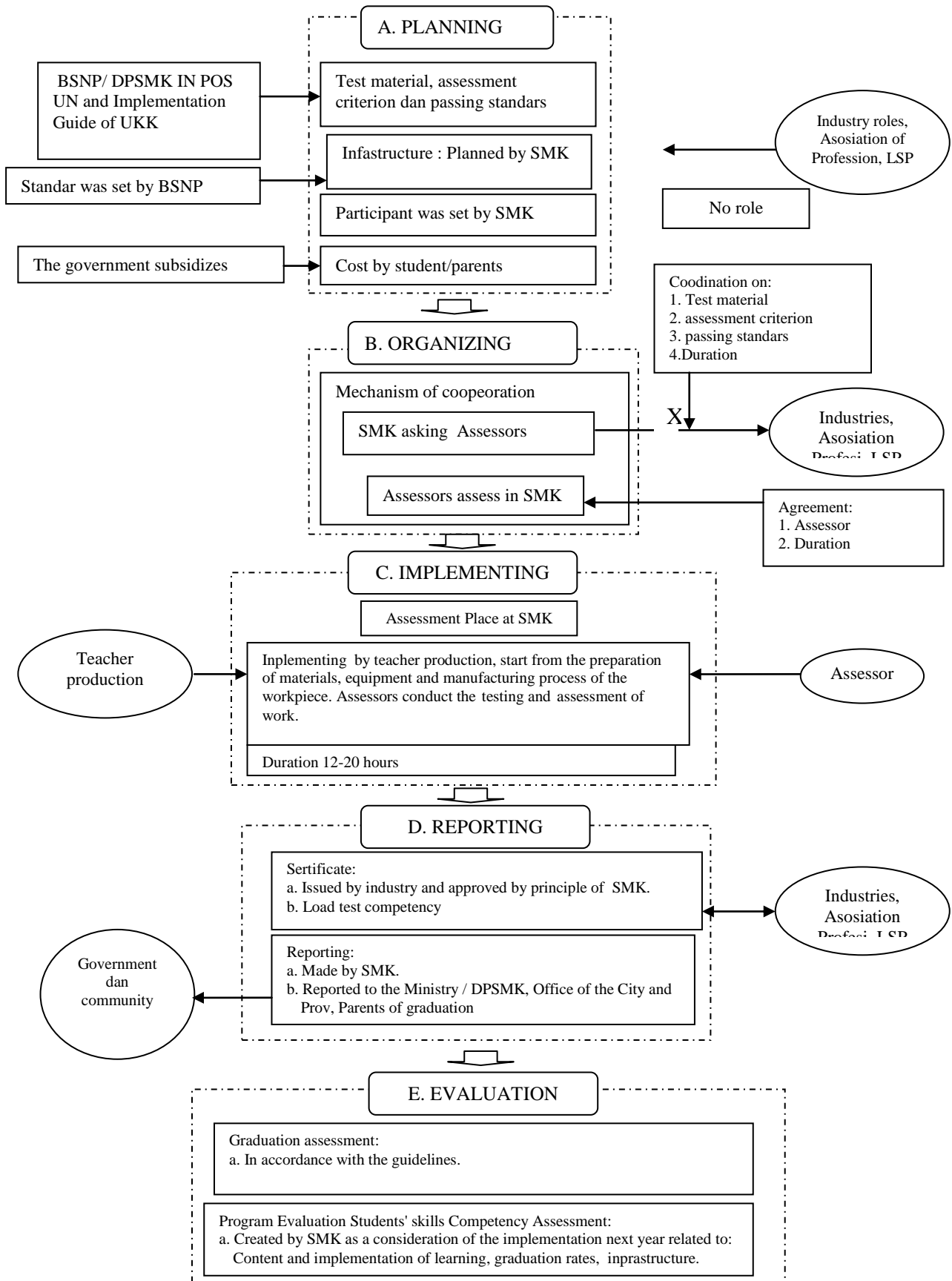


Figure 3 Model 01

# Students' skills Competency Assessment Models (UKK)

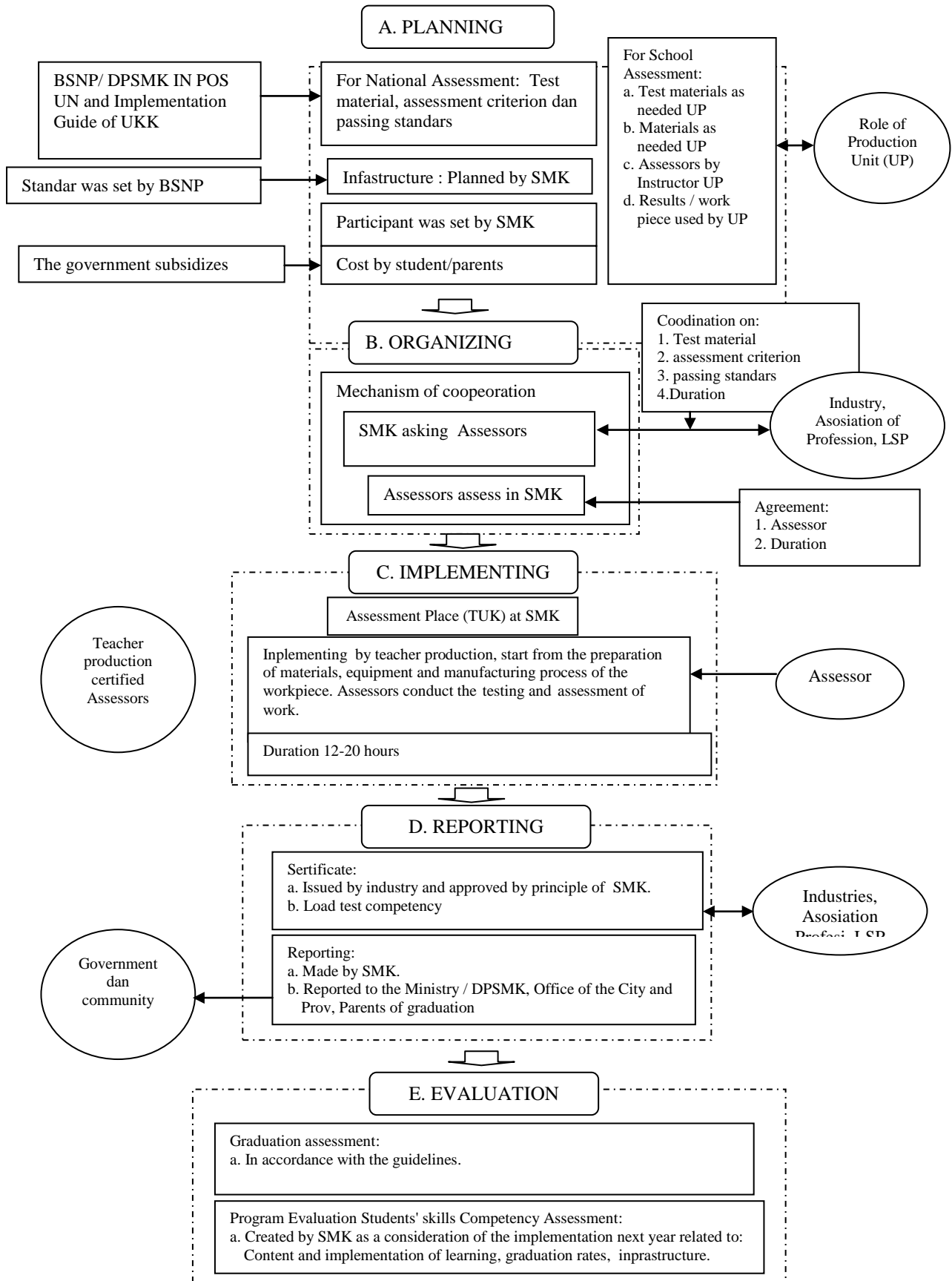


Figure 4 Model 02

## Students' skills Competency Assessment Models (UKK)

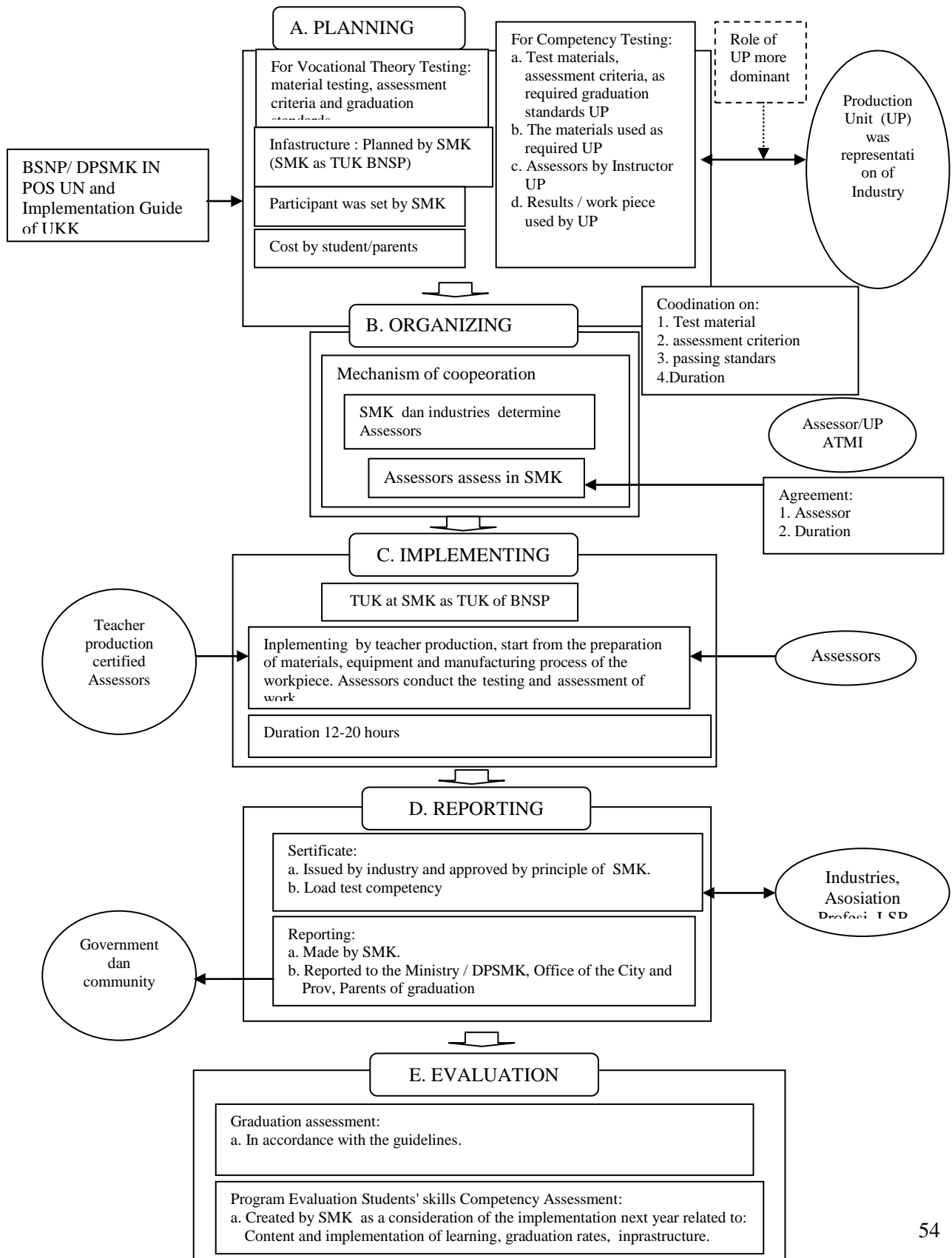


Figure 5 Model 03

The second model (02) is a model of the whole set of management competencies and certification assessment starting from planning, organizing, implementing, reporting and evaluation set by Kemdiknas in this case is BSNP / POS UN and the technical guidelines issued UKK: but to take advantage of the planned school exams potential in the production unit (UP) in the SMK. UP who has worked both as a substitute for the role of industry the planning, especially for the competency assessment conducted by the school outside the National Exam. Exams are applied to the pattern: (a.) The assessment material as needed UP, (b) The material used as required UP, (c) Instructor Assessor by the UP and (d) Results / work piece is used by the UP.

The third model (03) is a teaching model that has a factory as representation of industry. In addition workshops have been defined as owned by TUK- BNSP. At the planning stage for a assessment of competence: (a) Content Assessment, assessment criteria, as required graduation standards UP, (b) The material used as required UP, (c) Instructor Assessor by the UP and (d) Results / work piece is used by UP. UKSK done by the exercise of its Earning a Master Assessor from the preparation of materials, tools and processes of manufacture, testing and evaluation of the work. Certificate issued by the industry a note by the Head of SMK that includes competencies tested while passing judgment in accordance with the guidelines, with input: Value of School Practice Exams, Exam Skills Theory and Practice Exams Practice Areas. For more details, both models can be observed on the following figure.

#### 4. Conclusion

Model of competency assessment students' vocational skills competency on Machining Techniques in Central Java can be summarized as follows:

- a. There are three models of competency assessment vocational students in Central Java.
- b. The model most widely used model is a whole set of management competencies and certification assessment starting from planning, organizing, implementing, reporting and evaluation set by Kemdiknas in this case is BSNP / POS UN, DPSMK and the technical guidelines issued UKK. The role of industry. In the planning at the unit level of education (SMK) does not exist, only the involvement of assessors at the end of the competency assessment and certification expertise.

- c. The second model is the model that have tapped the potential that exists on the production unit (UP) in the SMK. UP who has worked both as a substitute for the role of industry the planning, especially for the competency assessment conducted by the school outside the National Exam.
- d. The third model is a model that emphasizes the role of teaching factory or production unit (UP) as representation of industry at any stage. Competency exam at the planning stage: (a) material testing, assessment criteria, as required graduation standards UP, (b) The material used as required UP, (c) Instructor Assessor by UP and (d) Results / work piece used by UP . The exercise of skill competency assessment conducted by Guru Earning its assessors start of preparation of materials, tools and processes of manufacture, testing and evaluation of the work.

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# SCHLUSSFOLGERUNGEN FÜR DIE BERATERQUALIFIZIERUNG AN DEN UNIVERSITÄTEN NIGERIAS

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## Abstract

Professional Vocational and Career Counsellors prepare young people for integration into the world of work. Counsellors have the duty of guiding these young minds as they struggle to discover their talents, abilities, disabilities, interests, competence and job requirements. To achieve these objectives, counselors work in cooperation with relevant teams in Education, Human Resources and of course in Government at different levels.

The discipline known as "Guidance and Counselling" has been introduced in Nigerian Universities since the 1980s. As my research has revealed however, these Universities (Ibadan, Lagos and Ife) have not undertaken any major revision of their programmes since the subject was first introduced as a major area of study. Rather, their syllabuses are dominated with theories that were first developed in the 1980s., with little or nothing done to re-work the syllabus so as to align them with current demands in vocational counselling.

In this paper, I present a comparative analysis of curriculums of three Nigeria Universities and two Universities in Germany, following which I proffer broad suggestions on how to improve on the programmes of study in Nigeria Universities. This, in such a way that vocational and career counseling will become truly professionalized, with adequate opportunities provided for specialists to discharge their responsibilities fully and effectively.

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## 1. Einführung

Die Bildungs- und Berufsberatung im Prozess der Entwicklung der individuellen Laufbahn gewinnt gegenwärtig an Bedeutung. Der Arbeitsmarkt stellt neue Anforderungen und verlangt bessere Fähigkeiten und Fertigkeiten von den Arbeitnehmern. Um diesen Ansprüchen gerecht zu werden, muss das Individuum angemessene Entscheidungen bei den Übergangsprozessen von der Schulbildung zur Ausbildung oder zum Studium, beim Eintritt in das Arbeitsleben und während der Erwerbstätigkeit treffen. Dadurch lassen sich soziale und ökonomische Probleme (in Schule, Ausbildung, Studium und in der Erwerbstätigkeit, wie z. B. Berufsabbruch oder Arbeitslosigkeit) vermeiden oder vermindern. Dies trägt zur individuellen und gesellschaftlichen Zufriedenheit bei.

Der erfolgreiche Übergang in eine Arbeits-Gesellschaft in Nigeria hängt entscheidend vom Gelingen beruflicher Transitionsprozesse ab. Denn unmittelbare Folgen nicht gelingender Berufswahl- und Übergangsprozesse sind strukturelle und friktionelle Arbeitslosigkeit.

Ohne eine professionelle Unterstützung und Orientierung durch Berufsberatungskräfte können angemessene Entscheidungen jedoch kaum umgesetzt werden. Ertelt & Schulz (2011, S. I ff.) teilen diese Meinung und machen deutlich, dass die individuelle und gesellschaftliche Bedeutung von

Beratung im Feld Bildung, Beruf und Beschäftigung angesichts der Individualisierung und Brüchigkeit von Berufsbiographien in den letzten Jahren bzw. Jahrzehnten erheblich gestiegen sind. Daher vertreten sie den Standpunkt, dass Qualität und Professionalität der Beratung in diesem Feld zu verbessern sind. D. h. unter anderem, dass die Qualität der Berater-Ausbildung, insbesondere der Studiengänge von Bildungs- und Berufsberatung erhöht werden muss. Die Studierenden der Bildungs- und Berufsberatung müssen ausreichende Kompetenzen für ihren späteren Beruf erwerben. Im weiteren Absatz wird das konkrete Fazit zur besseren Beratungsqualifikation an den Universitäten Nigeria erläutert.

## 2. Schlussfolgerungen für die Beraterqualifizierung an den Universitäten Nigerias

Diese Schlussfolgerung unterstützt auch die in der Dissertation (2012, 52ff) der Autorin analysierten Meinungen von internationalen Organisationen und Autoren sowie empirischer Forschung (siehe Kapitel 3 und 4 der Dissertation).

Entsprechende wissenschaftliche Forschungen sind in Nigeria gegenwärtig kaum erkennbar, wie die erhobenen Daten im Rahmen der Dissertation belegen (Kapitel 6 der Dissertation von Verfasserin).

Im Kapitel 3 der Dissertation wurde deshalb ein eigenes Kompetenzmodell für die Laufbahnberatung Nigerias entwickelt, um einen Beitrag für die Professionalisierung der Bildungs- und Berufsberater zu leisten. Für die Qualitätsentwicklung der Studienprogramme von Bildungs- und Berufsberatung finden sich in den Kapiteln 3 und 4. Diese lassen sich in diesem Artikel wie folgt zusammenfassen (für detaillierte Inhalte, siehe Dissertation der Verfasserin, 2012)

- Verbesserungsvorschläge zum Handlungsbedarf für die Praxis der Bildungs- und Berufsberatung in Nigeria sowie zu theoretischen und praktischen Inhalten der Studienprogramme sowie deren Umsetzung anhand von handlungsorientierten Methoden und Organisationen des Lehrens und Lernens (durch internationale Standards mit festgelegten Kriterien für die Studienprogramme von Bildungs- und Berufsberatung).
- Hinweise zur Notwendigkeit der stärkeren praxisbezogenen Beratung des Laufbahnberaters, um die Professionalisierung der Laufbahnberater in Nigerias zu realisieren und zu Weiterbildungsmaßnahmen für Dozenten und Berufsberatungskräften in Gymnasien, um deren Kompetenzen zu stärken, zu erhöhen bzw. zu aktualisieren sowie für eine effektive nationale und internationale Zusammenarbeit zwischen den Akteuren der Bildungs- und Berufsberatung, auf der Basis einer gezielten Zusammenarbeit aller.

Diese Vorschläge und Hinweise sind Ausgangspunkt für die im Folgenden aufgeführten konkreten Orientierungen zur Verbesserung von Bildungs- und Berufsberatung Nigerias

Diese Orientierungen konzentrieren sich auf vier Bereiche:

1. Inhalte der Studienprogramme,
2. Methoden und Organisation des Lehrens und Lernens
3. Weiterbildungsbedarf für die berufstätigen Beratungskräfte mit und ohne Hochschulabschluss (Bildungs- und Berufsberatungskräfte in Gymnasien und Dozenten an Universitäten) und
4. Kooperation zwischen diesen Akteuren.

### **Zu 1 Inhalte der Studienprogramme**

Die theoretischen Ansätze, die seit den 1970er Jahren entwickelt wurden, müssen in den Studienprogrammen aktualisiert und den nationalen Gegebenheiten Nigerias angepasst werden. Diese theoretischen Ansätze der analysierten drei Curricula Nigerias sind rationale, lineare, kognitive und normative Entscheidungsmodelle der Laufbahnberatung, die einer Weiterentwicklung bedürfen in Richtung subjektiver, flexibler,

heuristischer Ausrichtung. Sie sollten eine Anlehnung an internationale Anforderungen der Bildungs- und Berufsberatung beinhalten. Der Praxisanteil der Curricula im Verhältnis zum theoretischen Anteil ist viel zu gering. Die Studenten haben kaum Einblick in die Praxisarbeit eines Bildungs- und Berufsberatungslehrers am Gymnasium. In jedes Studienjahr sollte ein vierwöchiges Praktikum für Fachunterricht und Berufsberatung eingebettet sein, im vierten Studienjahr (z. B. im 7. Semester) sogar 8 bis 12 Wochen mit abschließender praktischer Prüfung in beiden Bereichen. So ist es den Studierenden tatsächlich möglich, Schüler über eine längere Zeit zu begleiten, effektiv praktische Arbeit kennen zu lernen und eigene berufliche Fähigkeiten zu entwickeln.

### **Zu 2 Methoden des Lehrens und Lernens**

Es dominiert immer noch die Vortragsmethode (frontaler Unterricht bzw. Vorlesung). Der handlungsorientierte Unterricht muss bei der Neugestaltung der Studienprogramme stärker berücksichtigt werden. Eine Kombination von modernen Unterrichtsmethoden und Organisation des Lehrens und Lernens trägt dazu bei. Aktivitäten für einen handlungsorientierten Unterricht wären etwa Projektarbeit, Gruppenvortrag, Rollenspiele, Exkursionen zu Betrieben, Praktika im Studium. Diese wären wichtig, um die Kompetenzen der Studierenden während ihres Studiums zu entwickeln.

### **Zu 3 Weiterbildungsbedarf für die berufstätigen Beratungskräfte**

Die Professionalität der Dozenten sowie die der Bildungs- und Berufsberatungskräfte an Gymnasien muss weiterentwickelt werden, was nur durch eine ständige Weiterbildung erfolgen kann. Diese muss sich wiederum am aktuellen Arbeitsmarkt und dessen Anforderungen orientieren. Nur so können aktuelle theoretische und praktische Ansätze im Studienprogramm entwickelt werden. Für diese Zielgruppen sind Kenntnisse neuer Informations- und Kommunikations-Technologien (IKT) sehr notwendig, da hier ein großes Defizit besteht. Ein gezieltes Weiterbildungsangebot wäre z. B. der Umgang mit modernen Medien, wie PC in Verbindung mit Internet, um nationale und internationale wissenschaftliche Quellen zu nutzen, mit den Gegebenheiten am Studienort zu vergleichen und Aktualisierung bzw. Verbesserung zu erreichen. Ein weiteres Weiterbildungsangebot könnte sich auf die Methodenvielfalt bei der Vermittlung von Bildungs- und Berufsberatungstätigkeiten auf multikulturellem Gebiet richten. Das wäre ein wichtiges und umfassendes Thema mit weit reichendem Forschungsbedarf.

Formen der Weiterbildung können sein: In-Service-Trainings, Austauschprogramme (regionale, intra-nationale und internationale), E-learning (weil die Zeit für ein intensives Direktstudium zu knapp dafür ist).

Die Weiterbildungsangebote sollten für den Einzelnen kostenfrei sein. Die materielle Unterstützung dafür sollte von dem jeweiligen Bundesland (36 in Nigeria) und der Landesregierung übernommen werden.

#### **Zu 4 Kooperation zwischen Akteuren der Bildungs- und Berufsberatung**

Um die Ziele der Bildungs- und Berufsberatung zu realisieren, ist eine regelmäßige Zusammenarbeit der Experten mit anderen Beteiligten der Bildungs- und Berufsberatung auf national regionaler, überregionaler und auf internationaler Ebene notwendig. Die genannten Akteure aus Wissenschaft, Beruf sowie die Schüler und Eltern (an den Gymnasien) brauchen einen Erfahrungsaustausch, um Bildungs- und Berufsberatung aktiv und nutzbringend zu bewerten. Dieser sollte in Form von Workshops, Seminaren, Konferenzen und Symposien stattfinden. Dies betont die Wichtigkeit der Bildungs- und Berufsberatung und motiviert die Akteure, diese praktisch umzusetzen.

#### **2.1 Verbesserungsvorschläge auf der Basis ausgewählter Studiengänge in Deutschland**

Die folgenden Vorschläge sind geeignet, die Qualitätsanforderungen für Studiengänge der Bildungs- und Berufsberatung in Nigeria, unter Beachtung internationaler Standards, zu erhöhen.

Die beiden untersuchten deutschen Studiengänge wurden in Bezug auf folgende Merkmale analysiert (Kapitel 4):

1. Hochschulzugangsberechtigung, Ausbildungsvertrag
2. Struktur der Bachelorstudiengänge mit Erwerb des Bachelorgrades und Master-Studiengang mit Erwerb des Mastergrades (international anerkannte Abschlüsse) nach Modulkatalog;
3. Praktika (auch im Ausland) in der HdBA und theoretische Prüfungsleistungen an beiden Hochschulen
4. Organisationsformen und Rahmenbedingungen
5. Kooperation mit anderen in- und ausländischen Hochschulen (vgl. Studienführer HdBA 2010, S. 102 und ma/bob-Modulhandbuch, Universität Heidelberg 2010, S. 1 ff.).

Hierbei taten sich große Unterschiede zu den Studiengängen in Nigeria auf, doch die untersuchten Universitäten Nigerias haben momentan kaum die Möglichkeit für eine radikale Umstrukturierung ihrer Studienpläne. Deshalb

kommt nur eine schrittweise Vorgehensweise in Frage. Zuerst müssen Organisation des Lehrens und Lernens verändert und neue Rahmenbedingungen geschaffen werden.

#### **Mögliche organisatorische Veränderungen wären**

- kleinere Gruppen in Seminaren zur Auswertung und Vertiefung von Vorlesungen
- Präsentationen seitens der Studierenden und deren Auswertung (inkl. Hausaufgaben)
- ausreichende praktische Übungen mit intensiver Begleitung durch die Lehrkräfte (Dozenten)
- Selbständiges Erarbeiten von Unterrichtsmaterial, mit Betreuung durch den Dozenten, gezielte Aufgabenstellung und Auswertung (selbständiges kreatives Arbeiten).

#### **Veränderte neue Rahmenbedingungen**

- zuverlässige Stromversorgung
- Bereitstellung aktueller Fachliteratur in den Bibliotheken der Universitäten
- Angemessene Raumausstattung mit lehr- und lerngerechtem Mobiliar und Unterrichtsmaterialien (ausreichend Tische und Stühle, Computer mit Internetanschluss und interaktive Tafeln, Aufnahme- und Wiedergabegeräte für Praxisübungen usw.).

Durch die Ausweitung praktischer Übungen und Praktika können auch Kompetenzen der Selbstständigkeit und Selbstverantwortung während des Studiums gefördert werden.

1. Die Praktika spielen eine große Rolle bei den Leistungsbewertungen im Studium in Deutschland (Kapitel 4). Die Studienpraktika an den untersuchten nigerianischen Universitäten werden dagegen nur unzureichend betreut. Um die pädagogischen und berufsberaterischen Fähigkeiten und Fertigkeiten der Studierenden während des Praktikums gut einschätzen und entwickeln zu können, ist eine umfangreichere Betreuung durch Dozenten und Lehrkräfte absolut notwendig.
2. Ausreichende und gute didaktische Arbeitsmittel fehlen in den untersuchten Universitäten Nigerias weitgehend. Sie sollten unbedingt zur Standardausrüstung gehören. Es gibt zum Beispiel in Deutschland Mikroberatung (Microcounseling) mit Videoaufzeichnung, die den Studierenden die Möglichkeit zur Selbstanalyse und Selbstevaluation geben. Das stärkt das Selbstbewusstsein und die



Selbstverantwortung, die Selbstständigkeit wird gefördert.<sup>1</sup>

3. In Nigeria muss jeder Studierende für ein Lehramt nach Beendigung seines obligatorischen Studiums ein praktisches Jahr an einem Gymnasium eines anderen Bundeslandes absolvieren, ähnlich dem Referendariat in Deutschland. Wichtig ist es nach Meinung der Verfasserin nicht nur, den Fachunterricht sondern auch die Bildungs- und Berufsberatung zum Gegenstand des Referendariats zu machen und erst danach einen staatlich zertifizierten Abschluss für beide Fachgebiete zu vergeben, was bisher nicht der Fall ist.

### 3. Zusammenfassung

Es bedarf einer radikalen Reform der Studiengänge für Bildungs- und Berufsberatung in Nigeria. Eine vollständige Übertragung der Erkenntnisse aus den beiden analysierten deutschen Studienprogrammen ist dabei aber nicht möglich. Wenn Nigeria jedoch die dargestellten Ziele der Bildungs- und Berufsberatung im eigenen Bildungsgesetz verwirklichen will, müssen alle wichtigen Beteiligten der Bildungs- und Berufsberatung zusammenarbeiten und sich daran orientieren. Nur so können neue nationale und internationale Anforderungen des Arbeitsmarkts in die Studieninhalte der Bildungs- und Berufsberatung eingebunden werden. Die Bildungs- und Berufsberatungskräfte an nigerianischen Universitäten würden somit eine qualifiziertere Ausbildung erhalten. In der Bevölkerung gäbe es eine stärkere Akzeptanz für diese Berufsgruppe, da sie dann geeignetere Orientierung und Unterstützung für Bildungs-, Ausbildungs-, Studien- und Berufsentscheidungen geben kann.

Dies wäre auch ein Beitrag zur Bewältigung von Problemen wie Schul- oder Studienabbruch, Kriminalität und Asozialität in Nigeria.

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<sup>1</sup> Die Verfasserin erlebt während ihres Studienaufenthalts dieses in Mannheim entwickelte Verfahren.

# SPIRITUAL TEACHING STRATEGIES TO RECULTURE STUDENTS' CHARACTER IN VOCATIONAL SECONDARY SCHOOLS

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## Abstract

This paper is arranged as part of ideas contribution to apply spiritual teaching strategies for vocational teachers in reculturing students' character. As we all know, globalization changes affect all aspects of our live, including our schools. On the other hand, rapidly technological developments have an impact on students' character shift in learning process at schools. The implementation of vocational education is always kept abreast of art, technology, science, and workforce development. Vocational teachers have an important role in achieving their success in teaching and learning. Teachers who can choice a teaching strategy appropriately to changes will able to improve the quality of students' character. In teaching and learning process, teachers are not only working to build students' intellectual and emotional intelligence but also their spiritual intelligence. The brain and the hands are used to enhance the intellectual and emotional intelligence in students learning process, while the heart is used to hone their spiritual intelligence. Those three intellectuals will get three kinds of capital: material, social, and spiritual. It means, intellectual and emotional capital orientation is very different than spiritual capital when they apply to students learning process. Spiritual capital reflects personal characters, what an individual exists for, believes in, aspires to, and takes responsibility for. So that, spiritual teaching strategies can be chosen as an alternative to culture students' character, especially in vocational secondary schools. In spiritual teaching strategies, teachers are more emphasis in aspects of religious, humanism, and teacher leadership than other aspects.

**Keywords:** spiritual teaching, vocational education, character education

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## 1. Introduction

One of the goals of national education is to form an Indonesian intelligent human being have noble character and morality. But, recently, we have seen frequently fighting among students in different regions in our country through newspapers and electronic media. Reference [1] reported, for example in Jakarta, the police data were quoted by Kompas showed the incidence of students clashed in the past three years increased, recorded 11 times in 2009, 28 times in 2010, and up to 31 times until the month of June 2011. Many factors that could cause students engaged in a gang fight behaviors among students, such as emotional, family, neighborhood, and school factors. Among these factors, schools are supposed in our society to be a strong factor was highlighted causing fights. Fighting among students can be occurred because they forgot the values of character education have been learned in their school. Ironically, character education is not as major priority in the framework of holistic nation development that reflected in national education curriculum development. Character education program can be implemented properly and effectively in case teachers can able to apply a concept of whole character education in

teaching and learning through appropriately an approaches, methods and strategies.

Vocational Secondary School (VSS) is one of secondary education level in National Education System which is equivalent with general secondary school (GSS) but it has a specific education objectives. In [2], The Government Regulation of National Education Standards, Number 19 year 2005, Chapter V, Article 26 regarding the graduated student competency standards was explained that VSS aimed to improve intelligence, knowledge, personality, noble character, and skills to live independently, and also to follow further study accordance with his or her expertise. It means that VSS as a sub system of national education is required to prepare learners to be able to choose a career and entry to workforce that rapidly changing and able to compete and develop themselves to achieve his or her further study. Of course, the VSS objectives will be attained if the qualities of learning process relate well to demand market. Here, selecting an appropriate teaching strategy by teacher has a central role to improve learning quality.

On the other hand, globalization has an impact on all aspects of our life also in schools. The main

effect of globalization has directly impacted to VSS is increasing technological development accompanied with free trade market that consequences change to shift an employment structures. It means, VSS curriculum development should be able to adapt to each changes needed demand market. Rapid technological development may also an impact on students' behavior and character shift in learning process at schools. So that, teachers are faced with a formidable challenges in developing curriculum and managing learning process that applies the principles of character education to deal with those changes. Teachers who can choice a teaching strategy appropriately to changes will able to improve the quality of students' character.

In teaching and learning process, teachers are not only working to build students' intellectual and emotional intelligence but also their spiritual intelligence. The brain and the hands are used to enhance the intellectual and emotional intelligence in students learning process, while the heart is used to hone their spiritual intelligence. Those three intellectuals will get three kinds of capital: material, social, and spiritual. It means, intellectual and emotional capital orientation is very different than spiritual capital when they apply to students learning process. Spiritual capital reflects personal characters, what an individual exists for, believes in, aspires to, and takes responsibility for. So that, teachers can chose spiritual teaching strategy as an alternative to culture students' character.

## **2. Secondary School Level Characteristics**

In Indonesia national education system, educational orientation is split into academic education and professional education. Academic education is the implementation of educational programs aimed to prepare students to develop their academic potential to get higher education level or to go university or college. Professional education conduct educational programs that prepare students to increase competence potential relevant to their expertise. Professional education is included in work-based education category. It means the graduates for academic education can not directly enter to workforce; they must pass through one stage of education to provide competence in accordance with a job market. The graduates for professional education may directly enter to workforce in accordance with their expertise and can be developed their professionalism through further education and training. Clearly, the process of VSS and GSS is very different in preparing their graduates.

In accordance with reference [3] that the main aim of vocational education prepared to work with competency-based education approach that interrelated to three components: learning for work,

learning about work, and understanding the nature of work. Above statement shows vocational education is closely related to manpower preparation that needed by industries and businesses. There are two kind of work-based education in formal education in Indonesia, Firstly, vocational education carried out at secondary education level, called vocational secondary school. Secondly, vocational education held in higher education, such as: polytechnic and diploma program. Referring to [4], The Act of National Education System, Number 20 year 2003, Article 15 stated vocational education in secondary education level prepare students primarily for employment in a particular field, while vocational education in higher education prepare students for a job with a specific applied skills that maximum equivalent to an undergraduate program.

As stated in [5] that vocational education should be able to integrate strategies of learning process in classroom and laboratory relate to workplace condition. To catch those goal, in [6] Ministry of Education and Culture, at that time, issued new policy which is called "link and match policy" associated with changes in vocational education paradigm. The new paradigms of vocational education approach ware shift from supply-driven to demand-driven, school-based programs to be dual-based programs, subject matter-based learning move to competency-based learning, change formal education system that embraces the principle of multi-entry and multi-exit, and changes in the educational system that recognizes students' prior learning. Currently, those policies are still continued with some changes and adjustments connecting to work world and technology development.

Above statements can be stated that the success of vocational education is determined depend on the ability of schools to adapt any changes taking place around the school. Here, teachers have a key role in face to all changes.

This is as defined in reference [7], vocational education teachers are change agents in schools. Furthermore, reference [8] delivered the profession profile of vocational teachers, i.e. (1) teachers are teach in formal schools and they are vocational subjects, and (2) teachers have an industrial experiences in order to improve their skills and ability. As we know that the implementation of vocational education is always kept abreast of art, technology, science, and workforce development.

## **3. The Role of Teacher Leadership in Teaching and Learning**

Each a person in this life has a function as a leader. Just how we interpret a person's leadership is inherent with himself or herself whether leadership is able to give meaning to others. Leader

is like pilots who carry passengers on a particular goal. Physically, a pilot's success can be determined when he can be given a good service and safely deliver passengers to their destination. Similarly, a teacher, he was a leader as well as a pilot. The difference is that, the size of teacher successfulness determined how he or she could convey his or her students into an intelligent human being and a certain character. In reference [9] described six traits of leaders in general are drive, honesty and integrity, knowing the business, desire to lead, self-confidence, and high-level intelligence. Drive means leader exhibit such as achievement, motivation, initiative, and tenacity. Honest and integrity are characteristic enable leaders to form trusting relationships with followers. Knowing the business means leaders enables informed decisions to be made and its implications. Desire to lead means leaders want to lead. Self-confidence means leaders were displaying emotional stability, being even-tempered and able to deal with stress. High-level intelligence means leaders need to be able to gather and process information, formulate strategies, and solve problems.

Considering a teacher as a person as well as leader, in reference [10] suggested six indicators associated with quality of teacher as person. Those indicators are caring, fairness and respect, attitude toward the teaching profession, social interactions with students, promotion of enthusiasm and motivating for learning, and reflective practice. Caring means teachers understand and value students as unique individuals. Fairness and respect involves treating students in a balanced and open-minded manner that is considerate of their circumstances. Attitude toward the teaching profession is undoubtedly the pivotal quality that determines a teacher's willingness to develop and grow as a professional. Social interactions with students can take place within the classroom but also beyond. Promotion of enthusiasm and motivating for learning means teachers encourage students to work and reach their potential. Reflective practice means teachers aware that all professionals develop expertise.

The above statement as taught in the context of the religion of Islam that ideal leaders should have four characteristics of leadership, that are honest (*shidiq*), intelligent and knowledgeable (*fathanah*), trustworthy (*amanah*), and convey what it is (*tabligh*). *Shidiq* means dare to convey things that are true and honest in all conditions. *Fathanah* means identical with the cleverness and ingenuity as well. So, not only smart but also bright. *Amanah* is a reflection of the attitude of honest and trustworthy. *Tabligh* means that we must be willing to share what we have gained to others. Of course, universally, the four traits of leader can be applied to everyone, especially for teachers who have a

main duty to provide knowledge and skills to the students.

#### **4. Spiritual Teaching Strategies and Reculturing Students' Character**

In the concept of teaching, the role of a teacher is measured not only just teaching, but also as a mentor, teacher leadership, facilitator, as well as other attributes are attached to her or him. A teacher that is smart, professional and meaningful not only just transfer of knowledge but also should able to convey moral values, so that they can educate students to be as individuals who have a personality with more valuable attitude and behavior.

Teachers should be aware that the process of education is not only knowledge transfer, but more than that, educating is an effort to implant a good values and a universal religious values. Thus, teachers should consider all of three aspects of intelligence: intellectual, emotional, and spiritual intelligence, proportionately in their learning process. Intellectual intelligence which is not accompanied with emotional and spiritual intelligence will only result in damage and destruction to the lives of students in the future.

A genuine teacher in the learning will insert the divine values (*tauhid*) that is good and robust, so students will grow have self-awareness that each action he commits will be accounted to God. By a mature individual in terms of science and divine, students will automatically give positive influence to themselves and their environment. Students will have the attitude and behavior controlled themselves without other people supervising them. These descriptions are a fundamental for thought of spiritual teaching strategies. Thus, the spiritual teaching strategies are is a plan through carefully a process of delivering and cultivating of knowledge and skills related to teaching and learning process by teachers in terms of devoting to God using an approach of universal religion values by way of love their profession and their students. So that, students will be get love and idolize to teachers by placing teachers as an authoritative figure that they can encourage students' enthusiasm and delight in learning.

In teaching and learning process, teachers are not only working to build students' intellectual and emotional intelligence but also their spiritual intelligence. The brain and the hands are used to enhance the intellectual and emotional intelligence in students learning process, while the heart is used to hone their spiritual intelligence. Relevance to [11] those three intellectuals will get three kinds of capital: material, social, and spiritual. It means, intellectual and emotional capital orientation is very different than spiritual capital when they apply to students learning process. So that, spiritual capital

reflects personal characters, what an individual exists for, believes in, aspires to, and takes responsibility for.

Teaching is closely related to the pedagogic skills. According to [12] defines pedagogic as the system of principles and method that supports and facilitated effective teaching. Furthermore, teachers use pedagogy to prepare and guide their own and students' participation in teaching, learning, and activity performance. In teaching, there are three processes in helping students learning: (1) teacher must access the students' learning zone through joint activity in order stimulate the learning process, (2) the teacher must assist the student within activity what student knows or needs to know, (3) the teacher and student must work together to expand the students' understanding for use in new situations. If these principles can be implemented consistently by the teacher then the teacher will implement what is called an effective teacher.

In [13] summarized under four overarching statement describing an effective teacher for students of all ability level and backgrounds: (1) the effective teacher cares deeply, (2) the effective teacher recognizes complexity, (3) the effective teacher communicate clearly, and (4) the effective teacher serve conscientiously. A caring teacher cares deeply enough to help make the verbal encouragement become reality. The caring teacher recognized that challenges at home affect a students' performance at school and works with the student and the family to overcome those challenges. The effective teacher must have sufficiency knowledge of content, of pedagogy, of context, and students to appreciate the intricacies that are bound up in teaching and learning process. The effective teacher also recognizes each as a unique individual, understanding that each one brings his or her own set of experiences and perspectives to the classroom. In a word, the effective teacher understands and can successfully navigate complexity. Communication is a key to success in any profession, including teacher that requires interaction among people and within an organization. Effective communication in teaching requires that teacher have a clear understanding of subject matter and of how to share that material with students understand it deeply. The effective teacher is concerned with his or her own continuous learning process and reflects on all elements of performance in an effort to continuously improve.

The above descriptions show that teaching is closely related to the implementation of character education. It means that if teachers can understand deeply the principles of character education, they can be expected to do their job better as well. In reference [14], Ministry of National Education of Indonesia in early 2010 acknowledged the community needed on the cultural education and

the nation's character. Culture is defined as the whole a thinking system, values, morals, norms, and belief that produced human society. The thinking system, values, morals, norms, and belief are resulted from a human interaction among each other and the natural environment. Furthermore, the character is traits, morals, or personality which is formed from the internalization of various virtues which is believed and used as a basis for perspective, think, attitude, and act.

In line with above statements, in reference [15] informed Character Counts as organization promoting character education suggested to advance character education in teaching by the Six Pillars of Character, i.e. trustworthiness, respect, responsibility, fairness, caring and citizenship, while reference [16] had a notion that character education involves teaching children about basic human values including honesty, kindness, generosity, courage, freedom, equality, and respect. The goal is to raise children to become morally responsible, self-disciplined citizens. Also in [17] stated that moral development is linked for many with religious belief that refer to changes in the individual in relation to their personal and social behavior. Moral development and value are influenced by home and school, culture and faith, people and society.

In detail, reference [18] also defined that character education is the intentional effort to develop in young people core ethical and performance values that are widely affirmed across all cultures. To be effective, character education must include all stakeholders in a school community and must permeate school climate and curriculum. Based on the practices of effective schools, they have proposed the Eleven Principles of Effective Character Education, i.e. (1) promotes core values, (2) defines "character" to include thinking, feeling, and doing, (3) uses a comprehensive approach, (4) creates a caring community, (5) provides students with opportunities for moral action, (6) offers a meaningful and challenging academic curriculum, (7) fosters students' self-motivation, (8) engages staff as a learning community, (9) fosters shared leadership, (10) engages families and community members as partners, and (11) assesses the culture and climate of the school. Above description can be concluded that the definition of character education has a different point of view among each others that dependent on the way of life their society or their nation.

Based on above descriptions, associated with this paper, spiritual teaching strategies can be used as an alternative to reculture students' character in the teaching and learning process. Spiritual teaching strategies can be conducted by combining the principles of teacher leadership and character

education approach in the process of learning and teaching with keep in touch on a universal religious value in accordance with respectively their religious. Spiritual teaching strategies that submitted in this paper can be described as follows:

1. Be a teacher who has a spirit of teacher leadership. Here, a teacher as a leader who should have a personality trait as leader, such as: *shidiq*, *fathanah*, *amanah*, and *tabligh* as described in advance.
2. Be aware that a teacher profession is a field of charity, a whole in working with the principle work that today working should be better than yesterday did, and solve problems based on priority.
3. Understanding pupil differences. Each pupil brings to school with unique knowledge, skills and abilities formed by interaction with parents and peers, through their everyday experience of their world, and through the media. All pupils bring a view based on the acceptance of particular culture values; such values may represent a recognized religious faith or humanistic principles.
4. Within teaching and learning, teachers should conduct a humanistic values, examples: firstly, give a noble paragon, such positive thinking, empathy, keep temper (anger in undercontrol), and forgiving. Secondly, tenderness senses, such love and friendly. Thirdly, nurture affection, such attention, helping trouble, give praise, physical touch and heart, and pray.

## 5. Conclusion

Implementing vocational education is always kept abreast of technology and workforce development. Globalization also changes affect all aspects of our live, including our schools. Consequently, those developments have an impact on students' character shift in learning process at schools. Here, vocational teachers have an important role in achieving the success of the education in school.

Vocational secondary schools (VSS) as a subsystem within the national education has the goal to educate and prepare students to have the competencies in particular expertise, so that they can work in accordance with a labor market demand.

Here, the competencies consist of three domains: knowledge, affective, and skill. Knowledge and skills domain can be taught to students by managing their intellectual intelligence, while the affective domain can't only be carried out just their intellectual intelligence but also managing their emotional and spiritual intelligence. The brain and the hands are used to enhance the intellectual and emotional intelligence in students learning

process, while the heart is used to hone their spiritual intelligence. It means, intellectual and emotional capital orientation is very different than spiritual capital when they apply to students learning process.

To achieve those learning goals, the learning process in VSS requires a particular strategy. Spiritual teaching strategies can be used as an alternative to reculture students' character in the teaching and learning process. Spiritual teaching strategies can be conducted by combining the principles of teacher leadership and character education approach in the process of learning and teaching with keep in touch on a universal religious value in accordance with respectively their religious. In spiritual teaching strategies, teachers are more emphasis in aspects of religious, humanism, and teacher leadership than other aspects.

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# ETHNIC MINORITY PUPILS IN INDONESIAN SCHOOLS: SOME TRENDS IN OVER-REPRESENTATION OF MINORITY PUPILS IN SPECIAL EDUCATIONAL PROGRAMMES AT THE VOCATIONAL

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## Abstract

The way categories, labels, and taxonomies are used depends upon national ideologies and nationally specific conceptions of citizenship and normality. Ethnicity, differences, disability and deviance are social constructions. Underachievement or overachievement in social (cognitive) performance or overrepresentation in special educational placements of certain groups of students is as much the product of categorisation or definitional processes as it is the workings of institutional procedures, patterns, and intransigence. In particular (Vocational), schools' inability to accommodate difference and diversity causes exclusion and alienation. Globalisation and hegemonic neo-liberal ideology make it difficult to create a genuinely inclusive society, to produce complete citizens, and to promote equity. This study analyses the placement of ethnic minority students in special education programmes. It begins with a review of empirical reports that problematise the phenomenon of overrepresentation of students with immigrant background in special schools for intellectually disabled students. The analysis that follows is conducted through the prism of a number of perspectives, including sociocultural/historical theory, the inclusive education movement, multicultural education, and critical pedagogical theories. While there is no evidence to suggest that such overrepresentation is nationwide, the phenomenon can be identified in large cities where there are concentrations of immigrants. Analysis demonstrates that the problem is related to, among other factors, unreliable assessment procedures and criteria for referral and placement; lack of culturally sensitive diagnostic tools; the static nature of tests, including embedded cultural bias; sociocultural problems, family factors, and language problems; lack of parental participation in decision-making; power differentials between parents and school authorities; institutional intransigence and prejudices; and large resource inequalities that run along lines of race and class.

**Keywords:** Ethnicity, differences, disability and deviance are social constructions.

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## 1. Introduction

### *Construction and Deconstruction of Ethnicity*

Social science research of the last two decades strongly points to a more social construction view of difference and diversity (Gergen, 2001; Hacking, 1999). This view of diversity, disability, and difference is not just a *humanistic* approach, but is, rather, grounded on valid research and evidence that lends support to the conclusion that conceptions of differences are deeply entrenched in language use, discourse, history, context, culture, and ideological forces and power relations (Gergen, 2001; Thomas & Loxley, 2001). With regard to this, one good example is the way Great Britain and France define/understand ethnicity and how that conception is related to official taxonomies, educational policy, and practices. These are, in particular, linked with nationally specific conceptions of citizenship. Based on ethnographic research and a closer examination of the relevant research carried out on the two aforementioned countries, Raveaud (2003) revealed that the treatment of immigrants and their descendants is related to national ideology. The UK through its Multicultural Model uses typologies and

classifications related to ethnic minority, colour, and race, whereas France avoids these terms and prefer to use the term *immigrants* or *nationality* as a marker (Raveaud, 2003; also van Zanten, 1997). The French Republican Model refuses to recognise the existence of majorities and minorities (van Zanten, 1997). Whether or not the French *indifference to difference/diversity* or the British emphasis on multiculturalism, diversity, and difference is the appropriate measure remains to be seen and is hotly debateable on both sides of the Channel. As two big European nations with a long history of colonialism and immigration, it is imperative that we use their experiences as a point of departure for our analysis of the Swedish experience here. Sweden appears to find itself somewhere in between these two countries' ideological spectrums. It explicitly adopts multiculturalism and cultural diversity in an atmosphere of mutual tolerance; however, terms such as ethnicity, colour, and race are obscure both in official taxonomies, educational policies, and practices in schools. In fact, it is during these 10 years that the terms, in particular the term *ethnicity*, began to be widely used in academia as well as in the media. The most common typologies/categories



used to refer to minority ethnic groups are immigrants, students with immigrant background (*elever*), and foreigners.

While the concept of ethnicity is not new, its widespread use in Swedish social and educational policy discourse is a very recent phenomenon. In that sense there is some similarity with the French model. Accordingly, the research landscape, taxonomies, discourses at different levels, and political intentions are shifting rapidly with regard to policies aimed at the integration and inclusion of immigrant students in the mainstream educational process. A good example in this domain is the reasons given for the underachievement or overrepresentation of ethnic minority students in special educational placements. In a recent report issued by the Swedish school authority (Skolverket, 2004), it is indicated that most of the academic difficulties ascribed to immigrants can be attributed to socioeconomic factors. When such factors are being controlled for, most of the group differences are eliminated.

It is interesting to note the similarities of findings that came out of the educational authorities in France (Ministry of Education statistics department, 1995 in Vallet and Caille, 1995) and the diametrically opposite conclusions drawn from the British studies (see, e.g., Gillborn & Youdell 2000; Gillborn & Mirza, 2000; Gillborn & Gipps, 1996; OFSTED, 1999) about the causal factors attributed to underachievement of ethnic minority students, which emphasised the significant role ethnic belonging plays and that social class accounts for only part of educational inequality. The above three studies were conducted by researchers financed by their respective ministries/authorities of education. It is safe to conclude that Sweden appears to be entangled along this continuum between constructing ethnic differences and deconstructing ethnic differences to an extent considering it to be a social artefact as in the case of French Republican traditions. In this paper by leaning on the use of such terms as ethnicity, difference, and diversity, I am embarking on a *social construction* philosophical flight. The above introduction is simply to illustrate how national ideologies and research directions *influence each other* and that both are social constructions that, in turn, shape the conceptualization of difference.

In this paper, *ethnic minority pupils* and *pupils with immigrant background* are used interchangeably. Actually, most of the studies analysed here, when referring to overrepresentation of ethnic minority pupils in special educational placements, usually meant those immigrants who had migrated to Sweden within the past 20 years. In many cases, these pupils were born outside Sweden and can be termed as new arrivals. (It is notable that Sweden has five National Minorities: Jews, Roma,

Sami (also an indigenous people), Swedish Finns and Tornedalers. The historical minority languages are: Yiddish, Romany Chib (all varieties), Sami (all varieties), Finnish, and Meänkiel (Tornedal Finnish).

#### *Current Swedish Educational Policies and Their Contradictory Messages*

The decrees, statutes, and policies that have evolved in the early 90s in Sweden are characterised by contradictory messages related to conception of knowledge, social justice and equity and equality issues. This has also had an effect on student achievement profiles and marginalized a large segment of the student population from ordinary educational settings. This is not an accidental phenomenon. It is part and parcel of global phenomena in our late modernity (Bauman, 1992), high modernity (Giddens, 1990) and /or late capitalism that is deeply entrenched with values of effectivity, competition, standardisation, freedom of choice, and increasingly individualist and elitist culture. The notion of *special needs* is intimately linked to the rise of the worldwide inclusive education movement, in Sweden named *A school for all* in the 1980s. Paradoxically, in the footsteps of the introduction of inclusive education, the number of pupils labelled as having special needs increased dramatically (Persson, 1998; Rosenqvist, 2007; Skolverket, 2002). Teachers found themselves incapable of dealing with pupil diversity in the classroom and to meet everyone's individual needs. This has often been regarded as schools' failure to meet the diverse needs of pupils, manifesting itself in resignation and distress among teachers and pupils not achieving set targets. However, it might be questioned whether *the inclusive school* is anything more than a structural or organizational phenomenon resting upon political rhetoric with little or no anchorage in public policy (Barton, 1997; Emanuelsson, Haug, & Persson, 2005; Nilholm & Björck-Åkesson, 2007).

This *fragmentation* of educational policymaking has excluded in particular the already vulnerable groups such as the disabled, ethnic minority students, and the socially disadvantaged segments of the population. Bauman (1992, 1998, 2001) argues eloquently that globalisation has produced a shift from social rights to competition, productivity, standardisation, and efficiency, and a shift from public to private and from social responsibility to individual (or family) responsibility. As a process, globalisation is not linear, but contradictory and contested. Its impacts are unequal and differ on the basis of regions, classes, and people. The neo-liberal economy is dominating the world especially after the end of the cold war, and its particular form of capitalism is characterised by deregulating markets, reducing or changing the role of the state and most importantly,

reducing social expenditure, including expenditure on education. This phenomenon has also been witnessed in the past 15 years even in Sweden in tandem with rising unemployment, issues of security, alienation, marginalisation and exclusion, creating a discourse of resentment along the lines of *them versus us*. I presume, on the basis of a large number of indicators, that over the next decade Swedish society will become increasingly multiethnic and multilingual and the number of disadvantaged children will substantially increase. An estimated 20 % of the Swedish population has an immigrant background. It is expected that the demographic landscape in the year 2020 is that 30% of all working age individuals in Sweden will have had their roots outside of Sweden (Leijon & Omanovic, 2001; Statistics Sweden, 2004).

Many, many students are at greater risk of needing special education services when they are poor or of a minority race or language. The need for addressing and reviewing scientific and methodological problems explaining overrepresentation and educational outcome differences related to race, ethnicity, socioeconomic status becomes imperative. (The rule of thumb is that a group is considered overrepresented if their enrolment in special education is equal to or greater than 10% of their proportion in general education; CEEP, 2004, Nov.).

Problems that need to be addressed will include (a) defining terms with precision and accuracy, (b) examining epistemological considerations such as ethnic/race categorisation and explaining group differences, and (c) developing unbiased research methodology and procedures for sampling, instrumentation, and measurement (see Obiakor, 1994; Obiakor & Utley, 1997).

#### *Theoretical Perspectives and Research Genres*

This analysis is anchored within a two-pronged theoretical perspective. The first is the perspective of inclusive education within discourses on special educational research and provisions (Clark, Dyson, & Millward, 1995; Thomas & Loxley, 2001) and the second is a sociocultural perspective within Vygotskian as well as neo-Vygotskian tradition. In the first vein, the last two decades of research shows not only the lack of well founded and sound theories in special education (see, e.g., Clark et al., 1995; Emanuelsson, 1998, 2000a, 2000b; Persson, 1998; Skrtic, 1991, 1995) but also the *crisis* in special education knowledge. In particular, the overrepresentation of minority pupils in special educational programmes has been a cause for concern and debateable issue. It has been noted in a number of countries that ethnic minority groups are disproportionately represented in special classes and schools. (See Berhanu, 2001; Brady, Manni, & Winnikur, 1983; Coard, 1971;

Gillborn, 1990; Losen & Orfield, 2002; Dyson & Gallannaugh, 2008). Also some Swedish reports, e.g., Bel Habib, 2001; Bloom, 1999; Hahne Lundström, 2001; Lahdenperä, 1977; Skolverket, 1998, 2003, 2005a; SOU, 1977, and a number of student theses). (Although, in the case of Sweden, a very recent study conducted by Jerry Rosenqvist and associates (2007), commissioned by The Swedish Institute for Special Needs Education, has not supported the hypothesis that there is overrepresentation at a *national level*).

Although these studies show that marginalized, subaltern, and ethnic minority groups are overrepresented in those special services all out of proportion to their number, they do not tell us much about the possible causal factors that can be accountable for their *lag* in the regular school system. One purpose of this article is, therefore, to elucidate the process of special educational placement and to highlight the major causal factors that may be responsible for the *observed* overrepresentation based on some experiences from Sweden. For the purpose of this study, the term *special educational placement or programme* refers to schools and classrooms for students with severe learning disabilities (*särskolan*). The paper also discusses the paradox and dilemmas that characterize the changing identities of special education in the light of the current catchy phrase inclusive education.

Most of the above studies and a large number of other similar studies indicated the significance of inclusive education, cultural diversity and intercultural education as central themes in the educational arena. As cultural pluralism becomes increasingly a social reality, education authorities are grappling with the new phenomena to reconcile the conventional monolithic educational approach with the emerging pluralistic trends – cultural, racial and ethnic diversity – that require accommodation to the cultural norms of pluralism. The conflicts between the culture of the school and the culture of the home, minority-majority relationships, values, identity matters, and language and cognitive styles and strategies have become a new focus of attention (Berhanu, 2001, 2005a,b, 2006). Artiles (2003) recently noted that *minority overrepresentation and inclusion pose important challenges to special educators* understandings of culture, the role of culture in visions of disability, and the creation of a research ethos that is mindful of cultural differences (p. 165).

The second perspective applied in this study is a combination of the sociocultural-historical theory of cognitive development (Vygotsky, 1934, 1978; Valsiner & Van den Veer, 2000) and the social theory of learning model (Wenger, 1998). Both perspectives take social interactions into account and focus on the structure of activities as historically constituted; and meaning, practice,

community, and identity are treated as major components necessary to characterise social participation as a process of learning and knowing. The particular relationship between culture/ethnicity, special education, exclusion/control, feeling of rootlessness, and family disintegration is complex and deserves close scrutiny and thoughtful analysis. The issue of over identification of minority students for special education is not a new concern and has been discussed in special education literature for some time. However, it is important to remember in the context of what we are discussing here that many of the problems with special education are outgrowths of larger problems with education generally and must be treated as such. It is no coincidence that many of the communities struggling with special education challenges are the same communities plagued by general education deficiencies.

Disproportionality in special education placements occurs through a process of social construction by which decisions about disability and its appropriate treatments are negotiated according to official and unofficial beliefs and practices. To discover what lies behind disproportionality, research must use methods that can document the social processes that lead to it. Statistical analysis can be used to provide a powerful teasing out of the variables that are associated with disproportionality (see Losen & Orfield, 2002). Oswald, Coutinho, and Best (2000) proposed two general hypothesis on the phenomenon of disproportionality; the first one being tied to real differences in socioeconomic outcomes between social groups. That some groups (or minority students) are deeply disadvantaged (in social and economic experiences), marginalized, susceptible to diseases, and disabilities; and the second hypothesis is that a significant portion of the over-representation problem may be a function of inappropriate interpretation of ethnic and cultural differences as disabilities (p. 2). As we see later in the paper there is sound evidence to support the hypothesis (See also Dyson & Gallannaugh, 2008 for similar observation in England).

#### *The Phenomenon of Over-Representation of Minority Pupils in Special Educational Placements*

One in five compulsory school pupils in Sweden are judged to be in need of special needs education according to Persson (2002). At the same time, the number of pupils enrolled in special schools for the intellectually disabled (*särskolan*) has increased from .9% up to 1.4% during the last 5 to 6 years (Skolverket, 2002). *From 1992 to 2001 the number of students registered in schools and classrooms for students with severe learning disabilities . . . has increased by 67%* (Rosenqvist, 2007, p. 67). This means that around 200,000 pupils in Sweden receive some kind of special

educational support during the school year. Besides, as mentioned earlier, the Swedish society has become and will become increasingly multiethnic and multilingual. Reports indicate that the number of children and youth living in poverty has substantially increased over the last few years, and there is a significant increase in the number of homes where children speak a primary language other than Swedish. Students are at greater risk of needing special needs education services if they are poor and/or belong to a minority group.

Segregation at the metropolitan level creates an effective barrier between people. Suspiciousness, a mutual sense of outsidersness, and the construction of We/Them boundaries can be nourished by the separation of social spaces. For many native-born citizens, places like Alby, Bergsjön, Fittja, Rågsved, Ronna, and Tensta surely sound as far away as Istanbul, Addis Ababa, Santiago, and Teheran. They are places one has never visited but whose names make their way through the media buzz, often associated with negative news. . . (T)he segregated city ought to be regarded as much the cause of social processes as the result of residential and moving decisions made by different groups (Andersson 1997, p.20). *There are currently 6,579 people dwelling in Hammarkullen (a suburb of Göteborg). Seventy percent are of foreign background. Unemployment in the area is estimated at 90 percent (Holm, 1997). At the same time, unemployment among Somalis in Hammarkullen was put at 99 percent.* (cited in Allan Pred, 2000).

Although the situation of immigrant children and youth in Sweden is not as extreme and dramatic as experienced by ethnic minority students as in, for instance, Israel and USA, some parallel patterns and aspects of the phenomena can be discerned even in Sweden (Berhanu, 2001). Some recent studies conducted in Sweden indicate over-representation of immigrant students out of all proportion to their numbers in special schools and classes (see, for instance, Bel Habib, 2001; Hahne Lundström, 2001; Lahdenperä, 1997; SOU, 1997, 2003). However, extensive and longitudinal studies have yet to be carried out in this specific problem area (see Rosenqvist, 2007) and there is a need for a coherent cumulative body of disproportionality research.

A few decades ago, special education was focused on addressing the special needs of physically, mentally, and socioemotionally *affected* segments of the student population. Currently, the needs to be addressed by special education have widened. And in fact as some sporadic Swedish statistics showed, two decades ago minority and immigrant students were slightly over-represented in special education programmes. The over-representation has not only persisted but has also

dramatically increased (see the references in the paragraph above).

The over-representation is not a new phenomena. What is new is that new forms of exclusionary measures are taking place while the force of rhetoric toward inclusive measures is gaining substantial momentum in the pedagogical discourse. This Swedish experience is exactly similar to the practices in England as captured in the words of Florian and Rouse (2001): *whilst the government calls for more inclusion and a greater recognition of diversity, it continues to promote social and educational policies that are not supportive of the development of inclusive schools. Indeed, many of the existing market place reforms ignore diversity and stress priorities that make it hard for schools to accept children who will not help them to meet their academic targets* (p. 400). Although extensive studies have yet to be carried out, the already existing but sporadic studies (see, e.g., Bloom, 1999; Ilic-Stanasic, 2006; Källstigen, Riviera, & Özmer, 1997; Källstigen, Ohlin, & Setkie, 2002; Nilsen & Ström, 2003; Skolverket, 2005a,b; SOU, 2003; Tideman, 2000) indicate that immigrant students are over-represented in special educational settings out of all proportion to their number. That observation is documented in big cities with large immigrant enclaves. My analysis of the phenomenon of over-representation is based on these limited materials.

#### *General Factors: Sociocultural Problems, Budget Slash and Institutional Intransigence*

In a recent report of the Swedish National Agency for Education (SOU, 2003; Skolverket, 2003) the over-representation of minority pupils in special schools has been outlined, and the indications are that the situation is alarming and there is cause for concern. The report based its analysis of the situation on two studies conducted in two big Swedish cities, Malmö and Göteborg. The report points out, among other things, that wrong/inappropriate assessments, classifications, and procedures infiltrate placement decisions (also Dagens Nyheter, 2007). This is in part due to the educational staff's lack of knowledge of the students' home, sociocultural, and language backgrounds. As the report pointed out, the most probable reason for their misplacements, misdiagnosis, may be linked to the difficult and traumatic experiences endured by the children and their families before arriving in Sweden. And, these experiences coupled with the new acculturation process might have curbed their normal school adjustment. Both the official report and a number of other studies including student theses (e. g., Bloom, 1999; Hahne Lundström, Nilsen & Ström, 2003,2001; Ilic-Stanasic, 2006; Källstigen et al. 2002; Skolverket, 2005a ; Tideman, 2000) have pointed out that budget cuts or reduction could be

one major factor that contributes to a general increase of students placed in special schools. This rise in special school placements has equally affected native Swedish students or ethnic Swedes. Tideman (2000) reminds us that these consistent budget cuts that have beset Sweden for the past 15 years have lessened/reduced tolerance for differences/diversity.

All the materials analysed here indicated that the groups whose representation has increased by over 80 % in compulsory special schools are borderline cases, children with concentration difficulties, children with immigrant background, older students, and students with autism and autism related situations. The major reason ascribed to this increase is budget reduction. The cuts have brought about a rise in class size in ordinary schools, which in turn caused a decreased student-teacher ratio and a reduction in the numbers of special educators and special educational services at primary school level. This development takes place in parallel with the school authorities/politicians' demand to achieve the target goal designed for older students in higher grades, junior high school (6-9). The demand to fulfil the set goals, the quest for excellence, good test scores and examination results and a strong tendency for national systems of assessment and testing appear to have contributed to exclusionary pressures, ignoring issues of disadvantage, diversity, and equity.

According to the above cited studies, the decentralization process that took place in the 1990s giving local governments (municipalities) jurisdiction or full responsibilities to run schools is also said to have had an impact on the emergence of this dramatic over-representation. Accordingly, the phenomenon of over-representation also varies between municipalities. The local school authorities or schools have considerably varied evaluation parameters or procedures. Different districts have different interpretations of who is to be placed or entitled to be placed in special schools. There is generally locally designed evaluation practices of categorizing and labelling, the material basis of which is extremely questionable.

On the other hand, there are some who argue that the rise in the number of special school placements is a sign that placements in special classes/schools are dedramatized; that regular schools and special schools have come under a single school management (e.g., Nilsen & Ström, 2003; Ilic-Stanasic, 2006; Bloom, 1999; Skolverket, 2005). Therefore, the rise is more a consequence of the closer working relationship between these entities than disengagement between them.

According to Bel Habib (2001), the discourse in Sweden about ethnic minority pupils swing between a collectivized and culturalised discourse as, on the one hand, expressed in the form of special needs children and, on the other, as in the

form of pathological category, expressed as individual diagnosis tied to developmental delays. The author argues further that the school imposes its discipline-based exclusionary procedures and power techniques through turning structural/institutional-based teaching problems into cultural difference or individual focused handicap. This problem-shifting strategy (i.e., attaching the problem with the individual child or its culture or labelling procedures) has helped the school to avoid a critical evaluation of its own institutional practices and a change in its pedagogical and classroom management approach (Berhanu, 2005a). Lahdenperä's (1997) study with tens of Swedish teachers who work with immigrant /minority students strongly indicate that most of the teachers associate these students' educational difficulties with the individual students, and accordingly, the teachers' reaction to the problem is fundamentally based on how to correct the child or how to arrange compensatory mechanisms. Generally, my impressions that the studies conducted in Sweden are obviously not specific enough to explore questions of intent or that there is a purposeful discriminatory practice by which we mean blatantly discriminatory practices in policy or practice

#### *Family Factors, Parents' Educational Level and Power Distance*

My review of the literature shows a great deal of similarities between the experiences of other Western countries and Sweden with regard to the phenomenon of over-representation (Berhanu, 2001). The imbalance in power relationships between parents of students in special education arrangements and the school authorities is well documented (Gillbourn, 1990; Gillbourn & Mirza, 2000; Losen & Orfield, 2002). A similar study (Bel Habib, 2001) conducted in one city in Sweden in which there is a high concentration of immigrant families has documented the huge gap in power relationships between school authorities and these families. The families have enormous respect for school authorities and they do not argue with or confront school leaders. Many of these parents have a low level of formal education and have limited experiences as to how to deal with the authorities and usually genuinely trust the procedures that lead to placement decisions. The school tells them what is good for their children and parents accept the recommendations without questioning. The parents interviewed were not informed about the consequences of special educational placements and what these entailed for the future. It is not difficult to understand the reaction of parents and their feelings of powerlessness when the special educational evaluations are presented to them as a set of discreet decisions based on scientific analysis and assessment (Armstrong, 1995; Losen &

Orfield, 2002; Galloway, Armstrong, & Tomlinson, 1994).

## **2. Evaluation and Diagnostics Procedures**

Surprisingly, the pattern observed elsewhere with regard to evaluation and diagnostic procedures bias is becoming increasingly visible in the Swedish context. Although the study I refer to here is based on one specific city, I fear that there is a tendency even in other parts of Sweden. The very latest study (Rosenqvist, 2007) has, as its primary finding, documented this deficiency in evaluation and diagnostic procedures (also Dagens Nyheter, 2007). According to Bel Habib (2001), who used quantitative methods to map out the magnitude of the problem of over-representation, the majority of the Swedish students (native/white Swedes) in special schools have clear, visible, medically proven or *concretized* functional handicaps, whereas minority students who are assigned to these special schools, as the researcher distinguished from diagnosis and referral files, were categorised in diffused, vague, symptom-based and pedagogical-related terms such as concentration and behavioural problems, speech and language difficulties, unspecified *poor talent* or developmental retardation.

As is the case elsewhere (see, e.g., Losen & Orfield, 2002; Dyson & Gallannaugh, 2008; Harry & Klinger, 2006) the special educational placement pattern for ethnic minority pupils is that these students are *fairly* represented (or in other words their representation is comparable to their number in the general society) in *low incidence disabilities* (e.g., visual, hearing, multiple and physical disabilities) and they are overrepresented in *high incidence disabilities* (e.g., emotional/behavioural disorder and learning disabilities). That means the observed overrepresentation is in *subjective cognitive disability* categories rather than in hard/visible disability categories (see Losen & Orfield, 2002). *Not surprisingly, in light of current experience in the United States, children from different social and ethnic groups found themselves disproportionately placed in these categories.....* (Dyson & Gallannaugh, 2008, p.36/37). Dyson & Gallannaugh (2008) uses the term nonnormative categories instead of *subjective cognitive disability* though. Certainly, there is some evidence from Sweden to support this instance.

This observation testifies to the fact, as Foucault (1979, 1984) consistently argued elsewhere in his extensive writings, that institutions, in this case the schools, function to maintain and even advance the practice of normality and deviance through instruments of power and knowledge relations that not only exclude a segment of the student population but

also serve as instruments to construct identities and labels such as students with special educational needs (also Allan, 1995).

A similar study conducted by Kari Hahne Lundström (2001, in SOU, 2003) on the over-representation of immigrant students in upper secondary special schools has come to a similar conclusion, namely that many of those students enrolled in the upper secondary school for students with intellectual disabilities do *not* have a diagnosed intellectual disability. In addition, immigrant students are diagnosed far less often than are their Swedish peers. In most cases, they have undergone one single test, which in turn determines or is used as argument for their school placement.

The tests are of an ability testing type, are standardized, and are usually administered on a one time basis. This is a phenomenon that most minority students go through in many western countries (see, e.g., Berhanu, 2005a,b; Brady et al. 1983; Gupta & Coxhead, 1988; Hegarty, 1988). The tests are not culture free (Berhanu, 2007) and the evaluation does not sufficiently take into consideration the overall situation of the child. The test result tells very little about whether or not the child's inability to give correct answers has to do with his/her language skills or whether there is a sociocultural element in the way they understand and answer the question. It is a well known fact that these so called standardised testing programmes consistently discriminate against disadvantaged and vulnerable groups (see also Hillard, 1990).

The above study (Kari Hahne Lundström, 2001 in SOU, 2003), which focuses on the Göteborg area, shows that the proportion of students with ethnic backgrounds other than Swedish is 45%, which is double that of their representation at national programmes in regular upper secondary school.

The reports analysed here, including a number of bachelor level student theses, clearly indicate that the evaluation reports upon which decisions were made to send students to special schools made do not provide a full picture of the problem that besets the individual student (e.g., Bel Habib, 2001). The students who are disproportionately represented never received a proper education support at primary schools and had limited participation in their overall educational process. The situation they were in, such as being in asylum shelters (immigrant reception centres) for many years, and the socialization/acclimation process during their *temporary stay* in the *camps* and life afterward may have been serious enough to have had severe repercussion on the children's school adjustment. Lack of awareness of the complexities of these problems and their eventual outcomes plus a shortage of resources at primary school levels have aggravated the situation of these students. Their over-representation even in *secondary special*

*schools* for young adults is therefore connected to this pitfall at the start of these students' schooling rather than the students' lack of cognitive ability or deficiency in their behavioural repertoire in any sense. As Gillborn and Youdell (2000, p.4) rightly pointed out, inequality is *constructed*:

*We take the position that groups defined socially by class, gender, race, ethnicity and sexuality are inherently no less capable of educational participation and success. These groups are defined by social convention, not by inherent, fixed or natural differences.... The processes by which these constructed differences come to be related to inequalities in experience and outcome are complex, varied and stable.* (quoted in Slee & Allan, 2001)

The analysis indicates how the structure of schools as organisations creates special educational needs rather than differences or diversity between individual pupils. The lack of holistic, contextual, and ecological perspectives is visible because the measures used to send these children to special schools emerge from being entirely concerned only with pupils' cognitive, emotional, and pathological problems. To rectify this misguided practice, we need to, as Artiles (2003) correctly argued, *transcend the traditional individualistic perspective and infuse a social justice dimension so that the improvement of educational experiences and life opportunities for historically marginalized students are of central importance* (pp. 194-95).

A Swedish study by Sonnander and Emanuelsson (1993) clearly indicated how children who were not diagnosed and labelled have managed both school life and professional/work life much better than those students with similar ability level (*begåvningsnivå*) but who were defined as in need of special support. One question, therefore, is why special schools should ever exist if this is really true (see also Persson, 2001). Although more research is needed, there are already credible indications that these schools and other special educational arrangements *do more harm than good*. In particular, what is tragic here is the situation of *students with immigrant background* who were subjected to dubious procedures, classification, and evaluation criteria both at regular primary schools, which focus on their cultural and ethnic background, and special schools, which focus on individual pathology (Bel Habib, 2001; Rosenqvist, 2007). This is a fertile ground on which to create structural/institutional discrimination unless it is rectified immediately (Labi, 2001).

To summarise, both the statistical and qualitative analysis, compiled in Losen & Orfield (2002, p. xviii) suggest some similar observations in the U.S.A. as in Sweden, although the statistical figures and the magnitude of the problem between these two countries vary considerably. These American studies suggest that racial, ethnic, and gender differences in special educational

placements are due to many complex interacting factors, including unconscious racial bias on the part of school authorities, large resource inequalities that run along lines of race and class, unjustifiable reliance on IQ and other evaluation tools, educators' inappropriate responses to the pressures of high-stakes testing, and power differentials between minority parents and school officials.

### 3. Discussion and Conclusion

Throughout the different parts in this paper, there are threads that are well represented in the current tapestry of ideas associated with postmodern theorising on multiplicity of voices, the multiply constituted subject, and the social and historical construction of ethnicity and difference and its role in the distribution of power. What is too often missing in research in education is an integrated analysis. Researchers usually focus on one or the other component of a complex educational issue and give the erroneous impression that differences in social performance are due to differential cognitive differences among groups or individuals that are due to one or two factors. Some of the usual ones are linguistic factors, cultural deficits, cultural differences, and parent-child dyads (Berhanu, 2005a,b; 2006, 2007). What is often ignored are the effects of power discourse, institutional intransigence, teacher-student relationship, pedagogy, classroom interactions, and the dispositions that young people, for a whole variety of reasons, bring to their learning. The evidence produced by this work supports the conclusion that separate analysis of any one of these factors can provide neither a full picture nor an adequate explanation of problems related to something as complex as differential patterns of learning or disproportionality.

In this study, I adopted Vygotsky's theory as a general framework. That is, cognitive development (learning) is a product of interaction with others in the presence of socio-historically developed tools that mediate intellectual activity. This is also in line with the philosophy of inclusive education in which the emphasis is on learning together within the regular educational framework. Vygotsky underlines the role of culture and social interaction as opposed to just interaction (as in Piaget) in the development of children's cognitive processes. This belief in the role of social interaction led Vygotsky to formulate the *zone of proximal development* (ZPD), a concept of significant educational and instructional implications. The ZPD as a metaphor or construct has drawn great interest in the research community because of its dynamic developmental element that focuses on what a child can achieve with assistance of a more capable adult or peer. One of the implications of the ZPD in instruction

and educational practices is that the conventional practices such as IQ tests, chronological or age-graded organisation or learning environments, competition, and speed cannot be congenial to all diverse cultural groups. In cultural-historical theory, developmental stages simply index age norms in a given sociocultural space and time. Education aimed at *where the student is at* takes on new meaning in societies with increasing ethnic diversity (Portes, 1996; Moll, 1990).

Although in the works of Vygotsky and his followers, institutional/social structural domains are mentioned as having significant impact on children's dispositions towards their school performance, the process under which the impact is felt (power discourses, the subtle workings of institutional culture, which is intricately bound with the wider political, social, and economic as well as cultural meaning systems and moral, values) have not been made explicit. Thus in this work an attempt has been made to identify the influences of the institutional culture of schools that distort or retard learning progress. These include (a) an absence of knowledge, understanding and sensitivity on the part of schools to how students from different cultural backgrounds learn; (b) the application of unreliable (wrong) assessment (evaluation) procedures and criteria for referral and placements; (c) the lack of culturally sensitive diagnostic tools; and (d) the static nature of the tests, including the cultural bias embedded in the tests. The problem surrounding the overrepresentation of ethnic minorities in special educational arrangements in Sweden is complex, and some of the evidence presented here also points to problems surrounding the home environment, including poverty; sociocultural related problems, family factors, and language problems; the lack of parental participation in decision making and the huge power distance between parents and school authority; institutional intransigence and prejudices; and large resource inequalities that run along lines of *race* and class. Similarly, Dyson & Gallannaugh (2008) argued, based on a very recent research on proportionality in England, that *...although the identification of children as having special educational needs may result most immediately from the construction of difference at the school and teacher levels, that construction is itself a response to educational and social inequalities. It follows that a proper understanding of disproportionality, capable of generating effective means of combating it, requires an analysis not only of processes of construction but also of the underlying processes and structures through which social and educational inequality are produced* (p. 43).

Barbara Rogoff's statements in the concluding chapter of her widely acclaimed book (1990) parallel my observations and analysis. She

underscores the problems encountered by students who are grounded in one cultural system while attempting to function in another which, if not simply indifferent, provides no recognition that a huge cultural divide exists:

*If differences in values and practices are handled with respect, children can benefit from learning new cultural systems while maintaining their "home" approach. Unfortunately, children dealing with two cultural systems often face a less supportive contact between them. The dominant culture may be seen as competing with that of the home culture, with a goal of eradicating the features of the home culture rather than using them to build an understanding of the new approach. This eradication mentality, stemming from differences in status between two cultural approaches, may make it rare for children to have the opportunity to become bicultural (an opportunity that would be advantageous for majority as well as minority children). Rather, many children end up not becoming skilled in any culture, whether because their home culture is devalued and potential links are not exploited to help them learn the ways of the dominant culture, or because their home culture itself suffers such economic stress that the culture loses its strength and coherence, as may be the case for many very poor children. (pp.201-202)*

Bauman (1992, 1998, 2001) argues eloquently that globalisation has produced a shift from social rights to competition, productivity, standardisation, and efficiency, and a shift from public to private and from social responsibility to individual (or family) responsibility. As a process, globalisation is not linear, but contradictory and contested. Its impacts are unequal and differ on the basis of regions, classes, and people. The neo-liberal economy is dominating the world especially after the end of the cold war, and its particular form of capitalism is characterised by deregulating markets, reducing or changing the role of the state and most importantly, reducing social expenditure, including expenditure on education. This phenomenon has also been witnessed in the past 15 years even in Sweden in tandem with rising unemployment, issues of security, alienation, marginalisation, and exclusion, creating a discourse of resentment along the lines of *them versus us*. This trend is inextricably intertwined with the dramatic increase of children and young people who are referred to special schools for intellectually disabled pupils (*Särskolan*). In this connection, the drive to improve standards and set a strict grading system is one area of problem that constructs special educational needs students as *failing*. Yet at the same time, there is a drive to educate all students within mainstream schooling (i.e., inclusive education as witnessed already in post-war Swedish history). The standards agenda that emerged in the 1990s because of the changes in the political

climate, and the resulting impact on school policy, is one of the most insurmountable barriers to learning for special education needs students.

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# GRADUATES' PERCEPTION ON THE GRADUATE COMPETENCES OF THE DIPLOMA III VOCATIONAL EDUCATION OF POLYTECHNIC

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## Abstract

The public polytechnic in Indonesia has been established since more than 30 years ago. The establishment of polytechnic education system (PES) in Indonesia was preceded by the needs of skilled technicians who are capable to support the development of industries. These technicians are those who are able to work closely with engineers and are able to translate the concepts into practicable tasks. Assessing the effectivity of the learning management in relation to the learning outcomes achievement, graduate competence profile, and quality of learning is a mandatory to improve the quality and relevance of the PES and to enhance the graduate competitiveness.

Globalisation is causing changes in society as a whole and also in higher education, which is having to adapt to market liberation and to the development of a knowledge and innovation based society. The international mobility of students and teachers is in the forefront, challenging international comparability of the graduate competences of the higher education. Learning outcomes is statements of what a learner knows, understands and is able to do on completion of a learning process. There are several ways for drawing up and categorising learning outcomes in education. Under the umbrella organisation Joint Quality Initiative (JQI, 2004) higher education experts developed a series of descriptors, known as the Dublin descriptors. As a response to the ratification of the International Convention on the Recognition of Studies, Diplomas and Degrees in Higher Education in Asia and Pasific, the Government of Indonesia has developed a national qualifications framework, known as "Kerangka Kualifikasi Nasional Indonesia" (Indonesian Qualification Framework). The Indonesian Qualification Framework (IQF) consist of nine levels of qualifications. The level 9 of IQF is considered as the highest level of qualification, and the level 1 is the lowest level.

In accordance to the Indonesian Qualification Framework, learning outcomes of the Diploma III graduates is considered to be achieved at the qualification level 5, or equivalent to the "short cycles" qualification of the Dublin descriptors.

Research conducted in Politeknik Negeri Bandung (POLBAN) on the graduates' percetion of th graduate competence found that learning outcomes of the Diploma III graduates is equivalent to the 82.1 % of the short cycles qualification of the Dublin Descriptors. Based on the findings, learning outcomes of the Diploma III graduates of the vocational eduaction conducted in the Polytechnic almost reached the learning outcomes to be achieved as stated in the Indonesian Qualification Framework.

**Keywords:** Graduate Competences, Dublin Descriptors, POLBAN

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## 1. Introduction

Higher education is an important pillar of the development of a nation. As the highest level of education in the national education system, higher education become the key factor in encouraging the development of a nation. In general, education has an important role in promoting economic growth.

Higher education are expected to be a moral force that capable of shaping the character and great culture of integrity; strengthen the national unity through growing a sense of belonging and togetherness; foster a democratic society as a companion for social and political forces; a source

of knowledge and the formation of human resources that are responsive to the needs of society within all social strata (Direktorat Jenderal Pendidikan Tinggi, 2004: 7).

Globalization is happening in this century resulted in the overall change in social life, which is no exception for higher education sector, which must adjust its policy to the liberalization and restructuring of the market and the development of knowledge society and innovation by developing a variety of methods and models of education (UNESCO: 2006: 27).

Student and lecturers mobility between countries provide a challenge for higher education

to compare their quality of courses and graduate and also to the labor market needs. Learning outcomes of the education is influenced by the quality of learning of the education institution, while the quality of learning is influenced by various factors, among others, the professionalism of teachers, teaching facilities, instructional media, cultural institutions, students, teaching methods, and type of program.

Several studies on higher education conducted by the Asian Development Bank and World Bank in recent years stated that the relevance of higher education to the world of work is still low, as well as vocational education held at the Polytechnic. The Global Competitiveness Report 2008-2009 reported by World Economic Forum showed that the index of Higher Education and Training of Indonesia is in the position 71 as shown in Table 1 below.

Table 1. Table 1: Global Competitiveness Index Rankings on Higher Education and Training of Some Asian Countries and Australia

Country	Higher Education and Training		Overall Index	
	Rank	Score	Rank	Score
Singapore	8	5.56	5	5.53
Australia	14	5.44	14	5.23
Malaysia	35	4.63	21	5.04
Thailand	51	4.31	34	4.60
Philippines	60	4.10	71	4.09
India	63	4.06	50	4.33
Indonesia	71	3.88	55	4.25

This figure shows the quality and relevance of higher education in Indonesia is still lagging behind compared to some other neighboring countries. This index is a key factor to promote economic efficiency-driven.

The policy of the Directorate General of Higher Education in achieving the goals of higher education on quality and relevant is aligning the graduates competence to the needs of the community and promote a conducive environment of education and learning processes to produce a graduates who are intelligent, skilled, and good character (Direktorat Jenderal Pendidikan Tinggi, 2010: 4). Evaluation of the education performance especially in vocational education conducted in this study are highly relevant to the policy of the Directorate General of Higher Education in improving the relevance and quality of higher education in Indonesia.

Purpose of this research is to: (1) measure the level and profiles of the competence of the graduates of Diploma III program, (2) study the effect of the professionalism of teachers, learning

media, and learning facilities toward the quality of learning, and (3) study the influence of the quality of learning toward the achievement of learning outcomes of the graduates of Diploma III program at the Bandung State Polytechnic (POLBAN).

## 2. Polytechnic Education in Indonesia

Vocational education in Indonesia is also known as polytechnic education, has been established for more than 30 years. Vocational education has always been associated with the preparation of labor "ready for use". This means that graduates of vocational education must meet the competence standards in the workplace. Vocational education in Indonesia established by the government was started in 1972, when Intitut Teknologi Bandung in cooperation with the Ministry of Public Works established the Polytechnic Institute of Public Works (LPPU), in response to the challenges of manpower needs of technicians who are able to translate concepts into the science and technology into the practical tasks necessary in the workplace. In the same year Institut Teknologi Bandung established collaboration with Swiss government to set up similar education, named "Politeknik Mekanik Swiss" (PMS), then in 1979 the government established five polytechnics in 5 public universities, i.e. the Bandung Institute of Technology, University of Indonesia, Diponegoro University, Sriwijaya University and the University of North Sumatra.

In the Law Number 20, Year 2003 for the National Education System, stated that higher education is an education after secondary education program that includes the programs of diploma, bachelor's, master's, specialist, and doctoral degrees. Type of education in higher education in Indonesia consists of academic, professional and vocational education. Academic education is directed primarily on the mastery of specific disciplines, professional education prepare students for a job with the requirements of special skills, while vocational education preparing students for a job with a specific applied skills. Vocational education in Indonesia are conducted at the various higher education institutions such as Academy, Polytechnic, College, Institute or University.

Hadiwaratama (2010: 7) depicted the graduates competence level of the Diploma III Polytechnic to be acquired in the context of the education level and employment in the diagram as shown in Figure 1.

Middle-level technicians graduated from Polytechnic Diploma III should be able to translate the concept of science and technology into practical tasks required in the workplace.

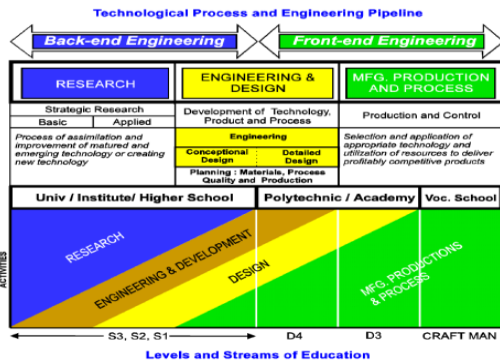


Figure 1. Diagram of Occupational Characteristic vs. Level of Education.

Learning outcomes of the Polytechnic Diploma III graduates is able to apply knowledge into a product design or process or to apply the knowledge into the planning and production control. These technicians are those who are able to work closely with engineers and are able to translate the concepts into practicable tasks.

### 3. Qualifications Frameworks and Graduate Competence

Qualifications framework defined by Tuck (2007) is an instrument for the development, classification and recognition of skills, knowledge and competencies along a continuum of agreed levels. It is a way of structuring existing and new qualifications, which are defined by learning outcomes, i.e. clear statements of what the learner must know or be able to do whether learned in a classroom, on-the-job, or less formally. The Qualifications Framework indicates the comparability of different qualifications and how one can progress from one level to another, within and across occupations or industrial sectors.

There are several ways for drawing up and categorising learning outcomes in education. Under the umbrella organisation Joint Quality Initiative (JQI, 2004) higher education experts in the European countries developed a series of descriptors, as a continuation of the Bologna declaration in June 1999. The descriptor developed by JQI is known as the Dublin descriptors. (Draft 1 working document on JQI meeting in Dublin on October 18, 2004).

As a follow-up of the ratification of the Regional Conference on Recognition of Studies, Diploma and Degree of Higher Education in Asia and Pacific on December 16, 1983, the government of Indonesia has set up a level descriptors on learning, both formal education, training or work experience in a national qualifications framework with the name of “Kerangka Kualifikasi Nasional Indonesia” (KKNI). As stated in the the Presidential Decree Number 8, Year 2012, KKNI are classification of competence and qualifications

framework that can reconcile, equalizes, and integrate the fields of education and job training and work experience in order to recognize the job competence in accordance with the occupational structure in the various sectors.

Learning outcomes is the main product produced by an educational institution. It is an expression of a statements of what a learner knows, understands and is able to do on completion of a learning process, which is represent the competence to be achieved by the learners. Competence commonly associated with the function and behavior. Competence comes from the Latin word 'competere', which means suitability, usually referred to as the conformity with specific job (Nordhaug & Grønhaug in Nilsson, 2007). In the field of vocational education and training, a person in vocational education and training, people are considered to be competent when they are able to consistently apply their knowledge and skills to the standard of performance required in the workplace. (Department of Education and Training, Western Australia, 2008). Person's competence is achieved in a structured and hierarchical learning, which is achieved within a certain time. Models of competence according to Burke (2005) at least can be grouped into six models, the two models is the model input, i.e., they are based on assumptions about aptitudes, knowledge and skills which individuals possess. Some models specifically refer to knowledge, skills, attitudes, and related concepts like personal effectiveness which are assumed to ‘broaden’ the concept of competence. These models assume that competence is an individual attribute. Two other models are models of outcomes based on a description of the aspects of the job characteristics (work role), or the result of the performance (outcomes of performance) that have characteristics, based on the description of the work roles, the interaction between technical skills and organizational environment, and dynamic in that they are able to incorporate changes in work organisation and technology since they act as a framework for identifying specific skills which contribute to the outcomes. Another model is the model of job competence. This model is based on the standard input that emphasizes narrow job descriptions and skills to work procedures.

Graduates competence of the Diploma III in this study is defined as the achievement of learning outcomes which refers to the Dublin descriptors for qualifications "short cycle" with a variable competencies include: (a) knowledge and understanding; (b) application of knowledge and understanding; (c) making judgements, and (d) communications.

Dublin descriptors for qualifications "short cycle" which is equivalent to D III Polytechnic qualifications are as follows:

- have demonstrated knowledge and understand-

ding in a field of study that builds upon general secondary education and is typically at a level supported by advanced textbooks; such knowledge provides an underpinning for a field of work or vocation, personal development, and further studies to complete the first cycle;

- can apply their knowledge and understanding in occupational contexts;
- have the ability to identify and use data to formulate responses to well-defined concrete and abstract problems;
- can communicate about their understanding, skills and activities, with peers, supervisors and clients;
- have the learning skills to undertake further studies with some autonomy.

#### 4. Quality Learning

Humans develop into an adults person and have the ability to solve various problems in life because of learning. Winkel (2009: 59) described that "learning is an activity of a mental/psychological, which took place in an active interaction with the environment, which produces a number of changes in knowledge, understanding, skills, attitudes and values. That change is relatively constant and remain in the learner behaviour. Lately, according to Hergenhahn and Olson (2008: 2), psychologists have tended to accept the definition of learning which refers to the changes in observable behavior. One of the most popular definition as proposed by Kimble in Hergenhahn and Olson (2008: 2) which defines learning as a relatively permanent change in behavioral potential that occurs as a result of reinforced practice.

Quality of learning in the context of higher education is the quality of service provided by the university in teaching-learning process which is the interaction of all components of the learning that includes lecturers (teachers), teaching facilities, learning objectives, learning materials, and students. The interaction between the components of learning have to be done efficiently and effectively. Quality of learning is effective learning as measured by customer satisfaction (students) on the learning process conducted in an educational institution. Ramsden (1991: 129-150) has conducted a research to develop a performance indicator of the quality of learning in a higher education. Research was conducted at thirteen universities in Australia, and has previously been conducted in several universities in the UK, by developing a performance indicator of the quality of learning questioner called Course Experience Questionair (CEQ). The result was reported that there is strong empirical evidence that the CEQ is an instrument that is valid and useful in explaining differences in learning performance in an academic unit. Ramsden developed the five dimensions of

measurement, which consists of: (a) good teaching (good teaching), (b) clarity of objectives and learning standards (clear goals and standards), (c) the suitability of the burden of learning (Appropriate workload), (d) conformity assessment (Appropriate assessment), and (e) freedom in learning (emphasis on independence).

In this study, the quality of learning defined as: (a) good teaching, (b) clarity of objectives and learning standards (clear goals and standards), (c) appropriate workload, d) openness to students and (e) freedom in learning.

The factors that affect the quality of learning in this study is restricted on the following three factors: (a) the professionalism of lecturers/teachers, (b) learning media used in the learning process, and (c) the learning facilities provided by the institution.

#### 5. Methodology

Purpose of this research is to study (i) the influence of teacher professionalism to the quality of learning, (ii) the influence of learning media to the quality of learning, (iii) the influence of learning facilities to the quality of learning, (iv) the influence of the quality of learning to the competence, and (v) measures the achievement of Diploma III vocational graduates held at the Bandung State Polytechnic

This research was conducted by survey method. Data were collected by means of a structured questionnaire to obtain the response of the perception of the three current years graduates from Bandung State Polytechnic (POLBAN). Confirmatory factor analyses and structural equation modeling were utilized in order to find measurement models for each of the constructs and to test hypothesized structural relations between these constructs.

#### 6. Results

Results of the analysis of the hybrid models of the structural learning management model in POLBAN shown in Figure 2 below.

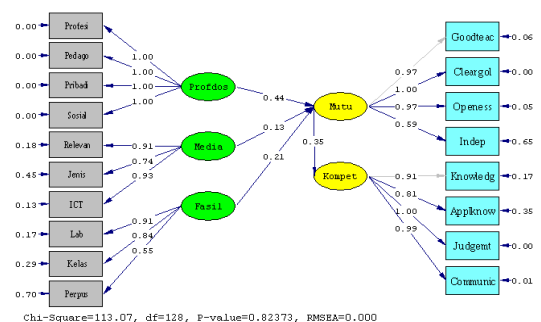


Figure 2. Structural Coefficient of The Structural Learning Management Model POLBAN

The results showed that the professionalism of teachers and teaching facilities have a significant effect on the quality of learning with the structural model coefficients indicated by 0.44 and 0.21 respectively, while the learning media has not significantly influence to the quality of learning with structural coefficient of 0.11. Competence is significantly influenced by the quality of learning with structural coefficient of 0.35.

## 7. Discussion

### *The Influence of Teacher Professionalism towards Quality Learning.*

These results indicate that the professionalism of teachers have a significant effect on the quality of learning, with a structural coefficient of 0.44. It shows that education in POLBAN more academic-oriented. Moodie (2008: 26-30) states that the academic education and vocational education can be distinguished between "knowing" and "doing", "theory" and "practice" and between "reason" and "experience". Engeström in Moodie (2008: 38) distinguish between vocational education and academic education based on education level. Engeström suggests a hierarchy of study consisting of three sequences, namely the first order of learning (conditioning, imitation and rote learning); second order of learning (trial and error or learning by doing and problem solving or investigative learning), and a third order of learning (questioning and transforming the context or community of practice). These sequences are also considered as level of education, where vocational education is at the first level and second level, while the college is located on the second level and third level. Several other authors according to the Moodies, differentiate vocational education with academic education by ways of learning.

Vocational education has historically been identified with the interns in the workplace, where the methods of teaching and learning is done by observation, imitation and correction of personal, rather than by the application of general propositions in the classroom and through textbooks. Another feature of vocational education as set forth in ISCED 97 (UNESCO 1997: paras 57-9) that vocational education or technical education emphasis on developing practical skills, practical knowledge (know-how), and an understanding of certain jobs.

Learning process conducted in POLBAN shows the portion of the theory conducted in the classroom is greater than in practical activities conducted in the laboratory and workshop, so that learners are more confident that the quality of learning is determined by the professionalism of teachers while teaching in the classroom.

Teacher professionalism scores are perceived by the graduates by 77.04% from the ideal score. This value represent a good category. Teacher professionalism scores consists of four sub-variables, namely, professional competence, pedagogical competence, personal competence and social competence. Professionalism of teachers score are highest in the values of social competence, which is 78.24%, while the lowest value is professional competence, which is 75.76%.

### *The Influence of Learning Media towards Quality Learning*

These results indicate that the learning media has not significantly influence the quality of learning. Structural coefficient of learning media on the quality of learning is 0.13. Such conditions showed that the learning media as an important factor in shaping the learning was not paid good attention. The availability and suitability of teaching materials which is relevant to the learning objective, the use of ICT in teaching and learning, providing practical guidance is still inadequate. Generally most of the learning activities in POLBAN conducted in the classroom with a method of "lecturer" so that the utilization of learning media, especially media to support learning in workshops and practical activities in the laboratory, were less utilize.

The selection of learning media in accordance with the material to be taught is explained by Brunner (Arsyad, 2011:7 and Munadi, 2008: 14), that there are three kinds of human experience in acquiring knowledge, i.e., the direct experience (enactive), the pictorial/ picture experience (iconic) and the abstract experience (symbolic). Levie and Levie (Aysyad,2011: 9) explained that learning through visual stimulus (viewing) yielded better learning outcomes for tasks such as recall, recognize, recall, and a link between facts and concepts, while learning the verbal stimulus (hearing) gave better results for learning that involves the sequential memory. Mursell (Munadi, 2008:10) explained that successful learning is learning by experience. It is also consistent with the analysis in Dale (Arsyad, 2011: 10) that direct experience (experienced by myself) have a place in the main and largest cone of experience.

### *The Influence of Learning Facilities towards Quality of Learning*

Results of this research showed that learning facility has a positive and significant impact on the quality of learning. The influence of learning on the quality of learning facilities, indicated by the coefficient of the structural model by 0.21.

According to the West and Danny (Leung and Fung, 2005: 585-594), facilities is one of the assets

of the organization to support employees to achieve business goals. Educational facilities in the organization intended to provide a learning environment for students to learn well. In his research, Leung found that facilities management (space management, teaching aids, lighting and ventilation of classrooms, a comfortable environment) affects students' learning behavior. Provision of a good learning facilities is in line with the analysis of Dale on the acquisition of knowledge through the experience described in Dale Cone of Experience, that the direct experience (experienced myself) have a place in the main and largest cone of experience.

Refers to the process of learning conducted in POLBAN, the use of time for practical activities is less than 50% of the total teaching and learning activities, so that, the perception of the graduates on the quality of learning is more determined by the process of learning conducted in the classroom than process of learning conducted in the laboratory or workshop. The obsolescence and unsuitability of education facilities in POLBAN promote the perception of the graduates to consider that the quality of learning is less influenced by the learning facility.

*The Influence of The Quality Learning towards Graduates Competence*

The results showed that the quality of learning has a positive and significant impact on the graduates competence with the coefficient of structural 0.35. According to Sutisna explanation (1989: 35) that the educational administration is a process that makes human resources and material available and effective for achievement of educational goals, as well as explained in the White Paper of the British government on the Future of Higher Education (Department for Education and Skills, 2003, p .7) identifies that "Effective teaching and learning is essential if we are to promote excellence and opportunity in higher education. High quality teaching must be recognised and rewarded, and shared best practice ". Thus, effective learning or the quality of learning will influence the effectiveness of educational goals to produce a graduates who are competent in accordance with the predetermined level of qualification.

Quality of learning in POLBAN significantly influenced by the professionalism of teachers and teaching facilities with the structural model coefficients indicated by 0.44 and 0.21 respectively, while the learning media has not significantly influence to the quality of learning with structural coefficient of 0.11.

The instrument to measures the quality of learning in this study focused more on teaching and learning in the classroom, it is represented by the

performance of teachers while teaching and learning. This situation influences the perception of the graduates, where graduates competence is influenced significantly by the quality of learning.

*Profile and Level of Graduates Competence*

Achievement of level of competence was measured using an instrument based on the research of Allen and Ramaeker (2008: 72-78) which consists of 12 measurement variables, namely, knowledge, application of knowledge, critical thinking, equipment selection, problem solving, administration and management, data analysis, speaking, reading, communication, english and writing. The results of measurement are presented in Figure 3.

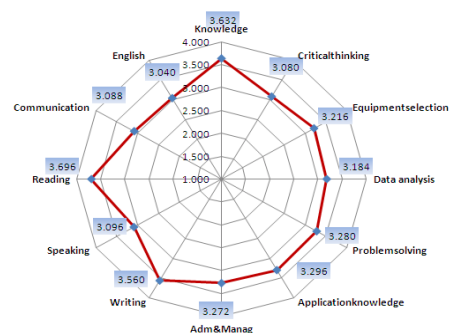


Figure 3. Score of Diploma III Polytechnic Graduates Competence

The results showed that there are three measurement variables that have a score above 3.5, i.e., knowledge, reading and writing. These data indicate that the above competencies are taught well, while the other three variables had a low score close to a score of 3, i.e., English language skills, speech, critical thinking, and communication skills.

Dublin descriptors for qualifications "short cycle" consists of five dimensions, i.e.: knowledge, application of knowledge, making judgments, communication skills, and continuous learning. The achievement of level of competence of the Diploma III graduates is presented in Figure 4

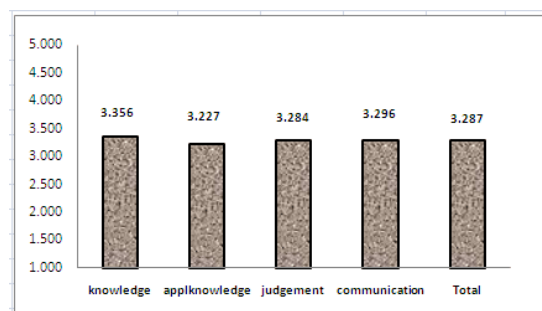


Figure 4. Level of Dिल्poma III Polytechnic Graduates Competence Compared to The Dublin Descriptors.



The results showed that the average score of Diploma III POLBAN graduates was 3.287 instead of 4 for the maximum score, or 82.10% equivalent to the qualification of "short cycle" in the Dublin descriptors, or equivalent to level 5 of KKNI.

## 8. Conclusions and suggestion for further research

The conclusion from the results of this study can be described as follows:

1. The Quality of learning in POLBAN is positively and significantly influenced by the professionalism of lecturers and learning facilities, and less influenced by learning media.
2. Graduates competence of the Diploma III in POLBAN is positively and significantly influenced by the quality of learning.
3. Levels of graduates competence of the Diploma III POLBAN is 82.10% equivalent to the qualification of "short cycle" in the Dublin descriptors, or equivalent to level 5 of KKNI.

Further research in this area will be valuable. It would be useful to develop and validate a new instrument to measure the level of competence in accordance with the KKNI.

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# ENTREPRENEURSHIP INCUBATOR INCREASE INDEPENDENCE STUDENTS

## (Case Studies Faculty of Information Engineering Program of the State Islamic University Sunan Sainstech Kalijaga Yogyakarta)

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### Abstract

The purpose of this study to determine the effect of the incubator model of entrepreneurial learning to increase student self-employment mental independence. The method used is the field trials through the application of entrepreneurial incubators in order to improve the mental independence of entrepreneurship students in the study program Information Technology Computer Science and Technology Faculty of the State Islamic University Sunan Kalijaga Yogyakarta. Entrepreneurial incubator is applied through the incubator cover components: doing, empowering, facilitating, and evaluating. Retrieval of data subjects in simple random sampling in the 30 tested students who follow the teaching of entrepreneurship in the incubator program. Collecting data through questionnaires, observations, and interviews. The method uses regression analysis to determine significant effects between the variables of learning entrepreneurial incubator (X) to a variable increase in student mental entrepreneurial independence (Y). Results of the regression equation is known that the better learning entrepreneurship incubators were applied, the greater the increase in student mental entrepreneurial independence. The magnitude of the effect of learning on the formation of an entrepreneurial incubator mental independence of 0.811 or 81.1%. Learning-based entrepreneurial incubator affect the improvement of mental independence Computer Information Technology student.

**Keywords:** learning, incubators, entrepreneurship, independence

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### 1. Introduction

Produce competitive graduates for each graduate, synergy of the various elements of education is required, either: methods, strategies, facilities, and a host of other learning inputs. Stipulated by the Law of Republic of 02 of 1989 on National Education System stated that "education is a conscious effort to prepare students through mentoring, teaching and / or training for their role in the future [1]" Education not only gives the stock of knowledge, transfer of materials and the development of science alone, it also gives provision of skills development, mental training, soul/spirit, attitudes, habits and value systems are required to work.

Prepare graduates who are competitive in the job market, it takes all the support from various education providers, educational institutions so that graduates are ready, and able to sell well in the job

market. Advances in industry and technology has always been marked by change, competitiveness, complexity of the problem demand graduates to be quick to clean up.

Not all college graduates will become employees, employee or head of the company. Early on, educational institutions need to prepare a strategy to improve the quality of graduates (graduate management) of them debriefing knowledge through entrepreneurship. Entrepreneurial science briefing is intended to develop independence and form a new business among students. Enhancement and empowerment of entrepreneurship in students not only through increased affective and cognitive level alone, it would be better enhanced at the psychomotor level.

One of means realizing these expectations through the incubator, used as a means of increasing student mental independence. Musa Hubeis (2009) development, coaching, supervision

in the sense of business incubators and technology widely in order to develop new entrepreneurs or potential entrepreneurs in a professional and independent [2].

Incubators as a means or media increased independence of students (tenant) in order to have better entrepreneurial skills. Incubators have a program to build mental human resources, able to manage and able to utilize the knowledge and technology ... "An incubator provides resources like space, goals, marketing, management, structure and financing to knowledge and technology-intensive new technology based firms" (Aaboen: 2009) [3]. Quote above explains that the incubator acts as the preparation of resources, such as place, purpose, marketing, management, composition, financing to take advantage of science and technology institutions as needed. Incubator program has a goal of "incubating Organizations are part of a wide range of initiatives aimed at stimulating and supporting entrepreneurship" (Autio and Klofsten: 1998). The incubator aims to stimulate and support new entrepreneurs to play a role in improving the quality of student entrepreneurs [4].

Grimaldi (2005) describes the concept of incubation as an effective means of increasing self-employment, which is "the incubation concept seeks an effective means to link technology, capital and know-how in order to leverage entrepreneurial talent, Accelerate the development of new companies, and Thus Spake the speed exploitation of technology. Incubators assist emerging businesses by Providing a variety of support services Such as assistance in developing business and marketing plans, building management teams, obtaining capital, and access to a range of other more specialized professional services. In Addition, incubators Provide flexible space, shared equipment, and administrative services " [5].

The target of the incubator program is increased student mental entrepreneurial independence. Patmawati (2002) independence is a "passion to do everything for themselves"[6]. Haris Mudjiman (2009) "independence is not willing to

depend on the attitude of the other party is characterized by freedom and stand-alone"[7]. Independence is a condition where a person has a passion to compete for the advanced, capable of making decisions, and initiatives to tackle the problem, confident, and responsible for what was done and encourage people to achieve, be creative, powerful and professional.

Looking at the above statement in the incubator model of entrepreneurial learning is required in order to improve the soft skills of independence for students. Informatics Computer Engineering students who take courses in entrepreneurship to get assistance, facilitation, and guidance in the concept of empowerment. Empowerment is done by training, mentoring, empowerment and explores the ability of students to have a good skill. Entrepreneurial incubator is meant in this context is the students who attend college entrepreneurial training, mentoring, empowerment as they pass through the provision of learning with real action. One of those provisions is to have the soft skills (the skills of writing a scientific manuscript). Debriefing scientific manuscript writing has a purpose: (a) a student trying to fill the days with useful things, (b) students are able to actualize the works in real terms and ideas in an article, (c) the provision of writing scientific papers when they graduate or prior to graduation; (d) as income (income) students for college or after college; (e) action in the form of mental self-employment.

Students who follow the subject provided an entrepreneurial way of doing business, the real action (doing), empowerment (empowering), facilitated (facilitating), and evaluated (Evaluating) in assistance activities, shown in figure-1 and figure -2.



Figure 1. Students get a theory of entrepreneurship in the classroom



Figure 2. Student discussions to determine the theme of scientific manuscript [8].

## 2. Methods

Quantitative methods are used as an approach to this research, this study used 30 subjects Computer Information Technology student at the independent class Sunan Kalijaga State Islamic University Yogyakarta, which was taken by simple random sampling. The research was carried out at Informatics Computer Engineering student at the second semester, in February 2012 to May 2012. Methods of data collection using questionnaires, test the validity of using the product moment correlation, and reliability testing with Alpha Cronbath formula [9]. Test by using regression analysis and t test.

## 3. Research Results and Discussion

Early data acquisition as many as 15 students to test the validity and reliability using a questionnaire instrument. Having in mind the instruments used valid and reliable then retrieve the data 30 is simple random sampling of students who received the treatment (treatment) learning model of an incubator in the field of script writing popular science books that are integrated with entrepreneurship courses, as the media establishment student mental independence. It is known that the variable X, the independent variable is the model of learning through the incubator as a model of training, coaching, counseling, empowerment, mentoring, facilitation and empowerment in students, and the variable Y, as the dependent variable, namely the mental independence of the student entrepreneurial characteristics include: the ability write well, awareness of entrepreneurship, entrepreneurial spirit, explore the advantages and disadvantages to cover herself, has a network of business and building access on the other hand, has a mental self-reliant, creative and innovative, confident, hard working and diligent, and do not easily give up.

Based on data analysis performed by SPSS statistical program version 17.0, that the incubator-

based learning model is able to influence the mental independence of entrepreneurship, this is according to Table 1 and Table 2.

Table 1. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.905 <sup>a</sup>	.819	.811	11.76552

a. Predictors: (Constant), X\_inkubtrkww

Table 2. Table 2. coefficient

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-56.218	26.055		-2.158	.042
X_inkubtrkww	.914	.090	.905	10.195	.000

b. Dependent Variable: Y\_mentalkmdirian

Based on the above analysis, there was a significant effect of learning through incubator models (X) to the mental independence entrepreneurship students (Y), with the regression equation  $Y = X -56.218 + 0.914$  Equation is interpreted that the better model of entrepreneurial incubator program is administered the better the mental of independence student entrepreneurs. The amount of influence on the formation of mental models of incubators for entrepreneurial independence 0.811 or 81.1%, based on t test, the t count > t table, (10.195 > 2.045) and significant alpha value calculated by <5%, which is 0.00 < 0.05. Thus the incubator-based learning model is able to influence the mental independence entrepreneurship

students in the Computer Information Engineering study program.

#### 4. Conclusion

Based on survey results revealed that the model-based learning entrepreneurial incubators affect significantly to the formation of mental of independence student effort. Model of entrepreneurial learning through incubators carried out simultaneously or integrated in entrepreneurship courses. The magnitude of the influence of incubator-based learning model for the formation of independence mental operations of 0.811 or 81.1%. Thus the provision of material in the field of entrepreneurship through entrepreneurial incubator capable of affecting mental improvement efforts of independence prospective graduate Computer Information Technology education.

#### 5. Suggestion

Produce competitive graduates are not only concerned with affective and cognitive aspects alone, but the psychomotor aspects must be considered. Entrepreneurial learning will produce graduates who are empowered, graduates have the mental effort if the teacher (instructor) is a principal in their field business.

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# DEVELOPMENT OF INTEGRATED TASK-BASED ENGLISH LANGUAGE LEARNING MODEL (PBTT) FOR VOCATIONAL TECHNICAL SCHOOL

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## Abstract

The study was undertaken to: (1) provide a model of learning English which can be used to improve the adaptive English competence of vocational technical students and (2) to produce its required instruments.

The method used is research and development (R & D), to pursue a particular product and to test the effectiveness of the product. The stages of development consists of four phases: (1) pre-investigation, (2) design, (3) validation, test, revision, and (4) the final product. The research subjects were the first semester students and teachers of the class XI, from 4 vocational technical schools and one of technical industry school.

The findings of the research-development are as follows. (1) The model is significantly contribute to the development of English vocational technical competency-focused on Spoken and Writing Skills, (2) The instrumentative model produced in the learning instruments (handbook/the manual model, lesson plan, model materials, evaluation tools) is contextual-effectively able to demonstrate comprehensive and optimal result, (3) The model meets the valid, practical, effective criteria, (4) The responses of students and teachers are very positive; they objectively state that this model is effective and works well as an alternative model of development of the above skills of English. Data judging the results of the learning process by quasi experiment show that Group Model is significantly faster growing than the Conventional One. Meanwhile, the qualitative data confirms that the students through this model can develop their own potential in an integrated and total progress. The model provides motivational opportunities for students to master not only knowledge but also the soft skills and maturity to be creative in accordance with the orientation of the competence of acting out; and meets the relevant conditions (real world) with a miniature world of work -going into.

**Keywords:** Development, Model, Task, English, Learning, Integrated, PBTT

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## 1. Background

Not optimal achievements of learning English in vocational technical school because of the unavailability of teaching materials for the students of such a typical vocational education, the style of the teacher-centered teaching, and evaluation which only refers to the preparation of handling the national evaluation, making learning takes place with no optimum result. Vocational learning English is to prepare a proper engineering graduates to have the technical vocational English language skills as the basic activity in communicating to enter the workforce. In line with the demands of 60% practice and 40% the theory of knowledge, these demands can be achieved by the orientation of the optimization process of learning that takes place in the classroom (curriculum SMK 2006). As an attempt to find solutions, this developmental research entitled " Development of Integrated Task-Based English Language Learning Model (PBTT) for Vocational Technical School (PBTT)" is done in order to get one of the product variations of relevant teaching materials related to instructional

activities which are integrated, effective, easy, fun and innovative as targeted in the Competence Standard and Basic Competency with student-centered approach.

In PBTT model, teaching material is the main focus of, and integrated into the teaching aspect of the task that can be a medium of interaction and student learning resources serving as an alternative to the development of English language teaching in the broadest sense. Through integrated task English language teaching materials can be packaged with the potential development of students so that students get a facility that allows for a tactical, acting out, and integrated English language competence. Exploratory behavior, inherent in the potential development and the orientation of real world language in use can be achieved through the realm of the professional learning that emphasizes vocational aspects of relevance and usefulness of teaching materials.

## 2. Problem formulation

Based on the above description of problem, research problems were formulated as follow: (1)

What systemic steps of PBTT model for competency development on vocational students adaptive which can provide alternative solutions for its stakeholders both in terms of content, the range of material, format and assignment delivery process?, and (2) How is the effectiveness of the PBTT model in improving student learning outcomes of vocational technical school students?

### **3. Theoretical and Empirical Review**

English language teaching for vocational technical school students is not different from Vocational English for Specific Purposes (VESP) which is typical English with specific vocational aims, covering: specific learning system, specific achievement orientation, and specific media. Therefore, to obtain relevant teaching materials, teaching process and the determination of the targeted outcomes, need to be understood that the English language for adaptive vocational competency has particular characteristics. These characteristics are closely linked to the basic understanding that the technical vocational English is the language that is directed to develop instrumental adaptive ability of students to the world of work orientation.

This naturally implies that English language learning in vocational technical school do not approach the English language as a linguistic discipline standard, but more towards the specific nature of applied linguistics. Here specifically implies that the English language for students in vocational technical school rather a tool only. English as a tool not a target but more a holistic approach that is to communicate with a "contemporary" communicative target (you know I know communication). This approach also contains an understanding that learners on vocational technical school to see more function than the knowledge of English. Therefore, based on the analysis of some vocational English language teaching experiences, it was found that the patterns of teaching materials should be urgently mastered are as described below:

#### **3.1 Vocabulary development**

Vocabulary looks very dominant in English language learning for the vocational technical school students. All aspects related to the field of study of students, especially those associated with the name of the tools, the types of work, and terms of certain conventional practices in the workshop / laboratory, for example, be reconciled with the vocabulary words and definitions. Example: bore means the inside diameter of the cylinder.

#### **3.2 Development of short clauses**

The books that are intended for English language learning in vocational technical school tend to rely largely on the development of vocational learners communication techniques based on short clauses. In other words, diversity of languages are spoken in more word for word, which led to the clause franca. Idiomatic expressions smells almost difficult to be found because of the nature of vocational technical language to the point and tend to "you know I know". Example: .. and check the radiator ...

#### **3.3 Development of Procedural Discourse**

Discourses used in teaching materials likely lead to a simple discourse with simple sentences, and tend to the story / script containing procedures or work on something with mechanical manual commands. Example: first, open the carburetor, then wash it ...

#### **3.4 Text Reading Development with Simple Structure**

Reading texts developed for vocational learning English tend to use simple level of language structures, instead tend to use the basic effective sentences (simple sentences). It appears that the tenses are not too complex; compound sentences tend to be still at the simple level. Compound complex sentences tend to be rarely used. Example: There are other types of structures used in building bridges, piers, and docks. Examples of these are the open caisson, the pneumatic caisson, the sheet piling, and the cofferdam.

#### **3.5 Development of the Use of Passive Sentences**

Learning English is a dimensionless techniques; many expressions are expressed in passive sentences in order to get a core understanding of uncertainty and multiple interpretations. Subjects who are treated far considered important than who about what. Understanding the logic is obvious that engineering requires a very minimal degree of deviation, so this also affects the communicative behavior in the environment. Example: Lubrication is needed, next.

### **4. The Application of Learning English through PBTT Model**

#### **4.1 Nature of PBTT model and Task**

Based on the constructivisms kicks and inspiration, the core of PBTT model is in the essence of providing teaching/learning process in integrated style and brings the context of realm into the class of teaching/learning. It is holistic, linkable, adaptable, and flexible without being untargeted. It



provides the opportunities of mastering and performing in a relevant teaching materials based on its needs analysis.

To be able to apply PBTT model properly, effectively and achieving optimal targets, teachers need to understand the meaning and characteristics of the task in teaching which is in PBTT model. Some characteristics of the task is on understanding the following: (a) The task is an activity that intentionally done by learners to engage in concrete, (2) The goal is that they have set for themselves or that have been set by the teacher, (3) Task can be done individually or (more often) in the group, (4) The task can be performed in competition with others or with the collaboration, (5) Results of duty is something concrete (eg a report or presentation) or which are not touched directly ( such an agreement or solution to the problem).

So the task is any activity that encourages students to become more involved in the process of language learning. Many teachers and practitioners to use a more restricted definition. They exclude activities where learners will focus on the formal aspects of language (such as grammar, pronunciation or vocabulary) and better interpret the term 'task' for activities related to the purpose of meaningful communication or communicative task (Nunan, 1993: 10). Thus the English syllabus of vocational schools should include features that the task is that: The tasks should involve the use of communicative language in which the learner's attention is focused on the meaning and function rather than linguistic structure. These tasks should be authentic and as close as possible leads to the real world in everyday life and in accordance with the experience of participants/learners. Task should involve learners in a variety of activities in which they are required to negotiate and make a meaningful choice: what, when and how to learn.

## **4.2 Operational Procedures of Task Based Learning**

Task-based learning operational procedures include systemic activities in which one another has mutual link, as the foundation. Edwards and Willis (2005) described three stages of the activity of the task as below:

### **4.2.1 Pre-task: Introduction to topic and task**

In the pre-task, teachers will consider what is expected of the learners in this phase of the task. In addition, teachers also equip students with the key vocabulary and grammar or structure, to encourage learners to use what they need to comfortably complete the task. Teachers/instructors can also provide a good model for the right task independently or attach pictures, audio, video or

demonstrate tasks as part of an enlightened understanding of learning exposure. During the assignment phase, the learners do the task, usually in small groups, although this depends on the type of activity. Unless the teacher plays a certain role in the task, the teacher's role is usually limited as observers, fasilitator, motivator and mentor.

### **4.2.2 Task-Cycle: Tasks, Planning and reporting**

After completing the task, the students prepare a written or oral report to the class. Teachers / instructors to post questions or otherwise is quite simply monitor learners. Students who attended then examine the information content. Follow-up, in which teachers can provide written or verbal responses, as appropriate, and students observe and do the same thing.

### **4.2.3 Post-Task (Language Focus): Analysis and Practice**

In this stage the teacher re-evaluates what is happening in the task, particularly with respect to the language. This may include forms of language used by learners who have problems, and other forms that may need to be discussed further in the language or the form--function is used incorrectly. Meanwhile, practical activities at this stage can be used to discuss the material mentioned by teachers in the analysis phase. This is an opportunity for teachers to emphasize the importance of language.

Meanwhile, the goal is to integrate the PBTT model ability to move from fluency to accuracy plus fluency. The range of tasks including reading texts, listening texts, problem solving, role playing, answering questionnaires, etc. PBTT model offers much flexibility and lead to more motivating activities for learners; it is integrated with a systematic approach to grammar and other linguistic skills that can be tailored to meet the needs of all learners. It is addressed as a system consisting of a number of supporting components, namely instructional and non instructional components. Interactions and functional relationships between components create the learning process and learning outcomes.

Moreover, PBTT model also refers to the task in the presence and learning environment which is a prominent component. It could be argued precisely that component of learner is significantly distinguish between learning English with other learning techniques. English language learners of vocational technical school figure English as a foreign language that has certain characteristics, especially: (1) personal characteristics, (2) cultural motivation, (3) field, (4) knowledge / skills, (5) interest, (6) learning objectives, ( 7) learning

strategies, and (8) the time to learn. The existence and condition of these learners will have implications for the role and relationship with other instructional components of learning English. Furthermore, the characteristics of the learner is also the material that should be considered as variables that influence the learning result of the English language learning process (Stern 1987).

### **4.3 Advantages and Limitations of PBTT Model**

#### **4.3.1 Advantages**

Through PBTT model, vocational school students get a touch of innovation and creativity so that the talent and potential asleep in his brain could optimized functionally. Utilization of the left and right brain can be stimulated as the system of self-development and performance capabilities. Additionally, learners in PBTT model (Willis: 2005) may: (1) do drills and pattern practice, (2) learn spoken rather than written, (3) get involved in individual and group work, (4) experience a useful learning activity, and (5) engage in a communicative activity. In line with this, PBTT model has academic advantages including:

- 1) Student-centered approach. The students freed from raw linguistic rules. In three stages they manage to use all the resources they have mastered on the language. Within the task, learners have a primary focus entirely on the meaning of the message-oriented and the language target to be achieved. This makes them closer to real-life communicative situations, which is also a dimension of miniaturized object that brings the real world into the classroom (Krahe 1987).
- 2) Creation of a natural context that is relevant to the daily experience of the students.
- 3) Opportunities for students to have a much more varied exposure to the language.
- 4) The establishment of exploratory languages on the basis of the needs of students. It also determines what and how the discussion of the lessons will be implemented rather than the teacher or the textbook used.
- 5) The occurrence of a chance of implementing a strong communicative approach where students spend a lot of time to communicate each other to solve problems. It is fun and provides motivation for students to achieve the task accomplishment and report back to the class as performance results. Success in doing this can increase the long-term motivation.
- 6) Adaptation of a flexible, workable setting and seems suitable for learners of all ages and backgrounds.

- 7) a natural opportunity for the revision and recycling information and also provides the opportunity for teachers to assess student progress.
- 8) a clear goal in terms of what participants will benefit from an assignment. That is, each task has clear goals and states what the participants will be able to do at the end of the task.
- 9) Cooperative support. The execution of the task is essentially done in a cooperative activity involving many students to take the initiative and contribution.
- 10) The learning process is comprehensive because it is holistically integrated
- 11) Implementation of a relatively simple without compromising the integrity and completeness of the targeted learning.
- 12) The appropriateness is quite high and not very complex because of its complementary, relevancy, and adaptability.
- 13) The content of the element of "apprentice" because of the interaction of "learning by doing" between teacher-student and student-student.
- 14) It is linkable (easily linked) with a target of learning.

#### **4.3.2 limitations**

Limitations inherent in the PBTT model can be seen from the description below that: (1) is not feasible for novice learners because there are so many potential effectiveness of this type of learning content but is more effective in carrying out the pragmatic instructions issues. And the novice learner in this age of being beginners is considered very difficult to adjust; (2) the totality of teachers required for PBTT model requires consistently high level of creativity and sustainable initiative. If the teacher is limited to more traditional roles, or do not have the time and resources to teach, PBTT model may be impossible to implement; (3) requires resources beyond the textbooks and related materials which are usually found only outside the classroom; (4) affirms that the instruction is teacher-centered, but rather on individual/group and committed learners. If students are lacking, especially in quality, task instructions might be difficult to apply (Krahe 1987); (5) it's sometimes possible returning to the learner's mother tongue when things become difficult or if the group is saturated; (6) there is a risk for students to achieve fluency at the expense of accuracy, (7) There is a time pressure that sometimes occurs forcing students to use language that can be easily accessed than trying to make the language in real time according to standard rules of grammar. (Skehan 1996); (8) The evaluation can be difficult if not

specified on a target focus of the assignment to be achieved.

By knowing the advantages and limitations in the PBTT model, it can be a common thread that PBTT remains at a very advantageous position to be applied due to limitations merely a claim that a reasonable demand of completeness. In other words, there are limitations that could be advantages if PBTT model is implemented in a proportional, consistent, and integrated manner.

#### **4.4 Characteristics of Teachers, Students, VESP Design, and Evaluation**

##### **4.4.1 Characteristics of Teachers of English Vocational Technical School**

To obtain a good human resources would have to be encouraged with good facilities. English Teacher of vocational technical school is ideally a teacher who does have a background of vocational education. It is important to remember that the nature of the technical is not only the surface especially, but the philosophy was also special. English teachers who do not have a vocational background will only create a context for vocational technical students that English is terrible. In fact, for some technical vocational students who had interviewed felt burdened by the English. These issues arise because the teachers have not been able to discover, promote, manage, and evaluate English language learning programs, typical English for vocational technical school-oriented that is not only to face the national examination (UN).

##### **4.4.2 Characteristics of Students Vocational Technical School**

Vocational students conventionally in the last few years could be argued that the practical input is in low quality averagely; and lower than the input that goes into high school. Apart from that, their culture of "learning" also tend to be lower when compared with high school students. They prefer to "work/practice" (60%) than learning in the classroom (theory 40%). It's certainly different implications and typical. Therefore it makes sense that they also should be treated with typical and terminal activities.

##### **4.4.3 Characteristics of Learning Design VESP**

The design characteristics in the development of VESP is learner-centered. This is motivated by reasons that learning a foreign language (the language studied for use) requires the target on performance of competence-based learning. In this case, the design of learning developed should be able to provide opportunities and space for the active individual learners to learn, master and use

the language learned in a real, measurable and well versed practice on the vocational level in a productive social interaction.

#### **4.4.4 Evaluation: Authentic Assessment**

Authentic assessment can involve students in authentic tasks that are useful, important, and meaningful (Hart, 1994). The same thing also described by David W. Johnson and Roger T. Johnson (2002) that authentic assessment asks students to demonstrate skill or procedure in a real world context. In line with the implementation of the PBTT model, authentic assessment is directed as an assessment of learning which refers to the situation or context of the "real world" giving the possibility that one problem can have more than one kind of solution. In other words, through authentic assessment, tasks can be monitored and measured in the ability of students in the various settings of solving the problems encountered in real world situations or contexts. In a process of learning, authentic assessment measure, monitor and evaluate all aspects of the study (which covered the domains of cognitive, affective, psychomotor, and soft skills), as the end result of a learning process, as well as the form changes and development activities, and acquisition of learning during the process of learning.

### **5. Research Methods**

The development of PBTT model, in a learning context refers to the active use of the competence of vocational English language skills is a major achievement of targets in this study. Therefore, the PBTT model is developed based on stages of development by Borg & Gall (2003) modified with the advanced design aspects of the assignment and the learning of language that is able to touch the integrated operational needs and integrated into the two main activities, namely the pre-development (Research): initial assessment, design and realization and development (Development) test.

Vocational technical schools (SMK) are used as the subjects of the pilot testing. They are: SMKN 2, SMKN 4, 7 SMK, SMK PGRI, and SMTIN Pontianak.

The study was conducted on the class XI of vocational school students, with consideration of space limitations of the authority to manage the pilot subject/grade as the consequence of classroom discipline that has been sheduled. Oral and written communication skills to be the main focus of development PBTT model. The study was not designed to be generalizable; given the sampling technique was purposive sampling to contextual conditionality on a particular setting.

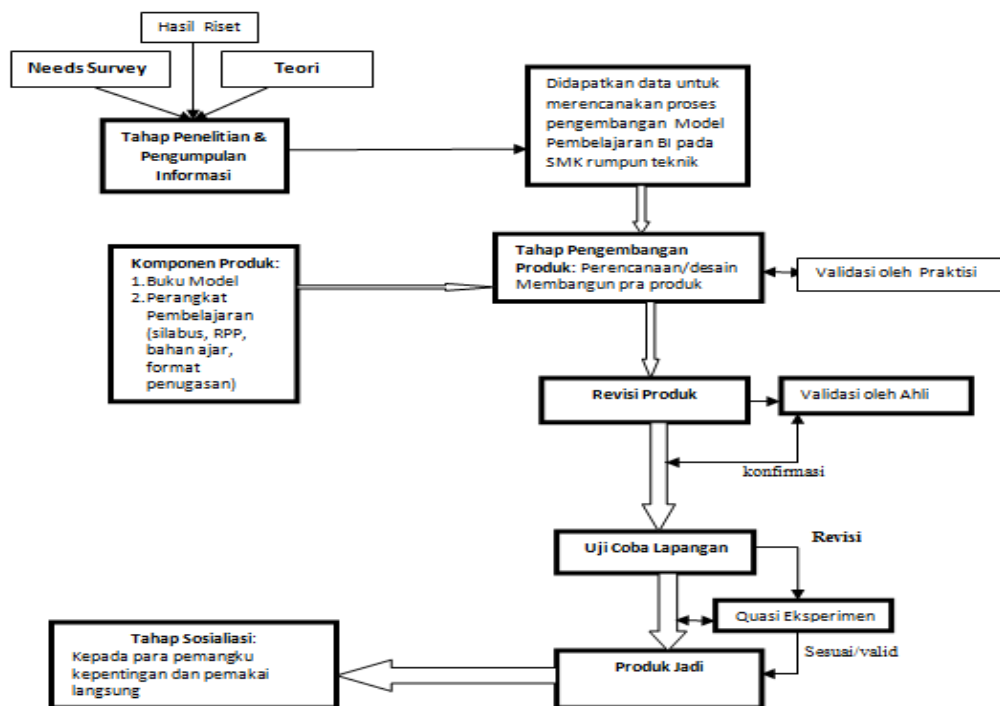


Figure 1. Stages of Research and Development Model PBTT (Borg & Gall: 2003, adapted Model:)

## 6. Development Findings

In the development of a model associated with the linguistic skills of today's empirical trend revealing that quantitative data is not the primary data that could provide conclusions on the effectiveness of the intervention of model of interpretation on language research independently. Qualitative data provide a more proportionate referral legitimacy because of the nature of language that is not exact science and requires a more socio-cultural in the measurement. Related to the nature of such language, the learning process requires the measurement of qualitative that is based on direct observation in the field when the PBTT model was applied.

Furthermore, qualitative data were analyzed by grouping the information according to its track and need; then confirmed through triangulation of two activities namely: (1) Triangulation to competent expert, and (2) Triangulation to confirm aspects of the data measured according to the quantitative results of testing on the effectiveness of the product.

Based on the logical consideration above, the conclusions (referring to the data collected: quantitatively significant on t-test analysis and qualitatively effective on the realm of field observation/interview) are stated as follow: (a) PBTT Model improves students' motivation as

PBTT model prioritizes tasks as a learning resource that can provide opportunities for the development of potential students (no matter how small the potential is). It opens the realm of communicative language teaching with a more tolerant atmosphere, acceptable, and fun; (b) Model PBTT increases teachers' professionalism because it is able to provide creative space for teachers to further develop professionalism through research activities, on an on going classroom action research and further develop the skills to select/define English language instructional media in relation to progress in the field of IT as a logical consequence of performance of students who move towards the modernization of the behavior of the infinite internet facilities, (c) PBTT Model improves the style of the Student-Centered in teaching activities rather than Teacher-Centered because PBTT model consciously and constructively put the students in the position as a center of teaching. Thus PBTT model is able to provide contextual space for students to become more pro-actively develop their own potential, career packed in accordance with the English complex communication competence. It also is responsible for developing the students' behavior of being learners with a heightened awareness that only he himself is able to project-competencies that must be achieved; (d) PBTT Model makes resource assignment functions as a fun learning through the construction of integrated

tasks. Here the students can elaborate activities to complete a learning process occurs. 98% of the observations in the field shows that the students involved in the experiments were pleased with the tasks that are packed in the implementation of the concept PBTT model; (e) PBTT Model increases the students' soft skills in practice because the model can give students the opportunity to learn English by managing the skills of language learned and emotion as the medium of communicative socialization that is integrated; has the nature of the discipline, rapid, democratic and solidarity; (f) PBTT Model develops cultural competence of English mastery because it is contextual and consistent with the professional environment, similar to the original setting that is able to provide challenging moments on reflective curiosity for students to initially forced to speak, after a long time get used to the culture. Habits of the dominant practices of professional experience in the environment led to the understanding that the assignment requires students solving information gap faced around to be able to contribute creatively and openly on the occasion of the presentation/reporting without fear of punishment in case of errors in communication; and (g) PBTT Model facilitates low-capable students to the maximum because PBTT model is able to provide space for students of low capability with stimulus. Individual rights and equal opportunity stimulate the learners to contribute because the PBTT model is not presented and to treat the students as average score of replacing the true identity but each person is deemed to exist and has the potential to be independent and take advantages with humanist touches.

## 7. Closing

It is recommended to be sure that the implementation of PBTT model as a means of developing and improving the teaching/learning of English language as VESP is significantly meaningful. With the result of qualitative and quantitative data collected in this research both are showing the strength of PBTT model that can be used to improve the students' adaptive competence of English vocational technical school. By providing opportunities for the students to get involved in the process of teaching-learning activities, giving space for them to perform, inviting them to solve problems, developing their potentials, treating them as a unique individual not in score, supporting them to co-operate each other to work, and creating mutual human interaction (teacher-student; student-student), PBTT model brings an enlightening moment to facilitate teaching/learning English improved significantly. It is

able to bring happiness, freedom of expression, fun learning situation, and motivating moment to everybody getting involved in.

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# PROBLEM SOLVING–BASED PERFORMANCE ASSESSMENT IN THE LEARNING OF CONSUMER EDUCATION AS A MEANS OF DEVELOPING CRITICAL– THOUGHT VOCATIONAL STUDENTS’ CHARACTER

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## Abstract

Ideally, students who are ready to study in university should have high self-motivation so that in the end they will reach their learning goal. In order for students to effectively reach their learning goal, there are some requirements to fulfill. Those are motivation (which is reflected in positive attitude in learning), learning readiness, learning tradition, and learning skill. Various efforts can be done by lecturers to make the students become characterized learners who are high motivated, independent, creative, and critical. Making characterized students can be done through a social problem and its assessment-based learning. This is necessary to build because student is Homo Sapiens whose intelligence will be formed inside the individual and in the social and cultural contexts. Curiosity as an intelligence process and a problem solving is a mode of reflective-critical thinking. One of the learning models that can be done is a learning using performance assessment. This performance assessment is used to measure the students' status based on the work of an assignment of solving problems in real life which tends toward an application stage of a principle or a concept in a new situation, based on a demand related to knowledge which has to be owned by students.

**Keywords:** performance assessment, consumer education, vocational student

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## 1. Introduction

Crisis of life happens as a consequence of the wrong thinking way in understanding the meaning of life. Thinking takes place in every mental activity of a human. Its function is to formulate or solve problems, make decisions, and find understandings. The quality of thinking activity can differentiate one's value and behaviour. It is because human's deed and behaviour is instructed and controlled by his/her own brain. The products of brain can be in the form of thought (mind) and feeling (emotion) as a mood or impulsion to act. Goleman (2005) states that if a problem is related to a decision making and action, thus the aspect of feeling is as important as mind, and indeed is oftenly better than mind.

To come out of such crisis of life, there is an importance of focusing on the development of human resources through education. Education is identical with that of the personality developing through life. Human's personality develops through a learning process which is influenced by mind, emotion, and action. Rosyada (2008) states that until today, there are in fact, many teachers follow the transfer of knowledge (without heart) paradigm in learning and give more focus on exercising the routinely quizzes and drills. This condition causes the result of school education is only able to produce humans of less self awareness, less critical thought, less creative, less self supporting, and less

communicational skills with those in the surrounding physical and social life environment. Thus, the question is, how can those values be owned by every individual? This question is related to the way the learning process in schools is done.

The learning of consumer education which involves the life values of a consumer and various problems which occur will play an important role in preparing an individual and society to anticipate the changing. The society's need of an understanding of becoming wise consumers in this full changing era will continue to increase. Thus, mastering knowledge and new skills in facing the following problems will be a demand. The skill of high adaptability will be needed by every individual and society. Considering this demand of mastering knowledge and new skills, the learning of consumer education should be obtained to raise the self awareness and self control of every student in developing the learning skill of new things in consumer education.

The importance of developing the learning and assessment is to raise the skill of adaptability to help students in swallowing and constructing their own knowledge and to empower them in solving the problems they faced. To obtain it, there is a need to do an evaluation which can make the students learn. This hopefully will change the situation from teachers teaches into students learn,

from the consuming experience of teachers' into the consuming experience of students'. The characteristics of such evaluation can grow the productive culture like designing models, researching, solving problems, finding patterns, finding new ideas, both individually and in group.

The approach used is a consumers' problems-based approach. Hopefully, this approach will increase the ability to solve problems and the study result of consumer education which is empty into the building of students' critical thinking character. The performance of solving the problems in consumption can be assessed based on the stages of solving problems and the quantity and the quality of students' responses to the problem situation given. One of the assessing forms which is considered to be suitable to measure the performance is a *performance assessment*. The objective of consumers' problems-based performance assessment is to assess the performance and to examine students' ability to demonstrate their knowledge and skills in the activities of solving and proposing consumers' problems.

## **2. Discussion**

Before discussing about building critical-thought students' character with the use of problem solving-based performance assessment in the learning of consumer education, it will be first discussed about the learning of consumer education containing the values of character building and its various problems, critical thinking skills through problem solving habituation, and problem solving-based performance assessment to build the character of critical thinking.

### **2.1 The Learning of Consumer Education and the Values of Character Builder with All Their Various problems**

The learning of consumer education is one of the theoretical study courses which is given formally in one of many study programs in Vocational Higher Education Institution. The competences that hopefully will be obtained by students after completing the course is being able to have knowledge and skills to manage their personal finance, to make buying decision wisely, and to participate in becoming society members. In the consumer education, there are life values which play an important role in building students' character. Among the values in managing personal finance are including the values of economical, simple, productive, purposeful, and accountable. The skill of making decisions contains the values of self awareness, well informed, wise, minute, critical, sensitive, and valuing money. The value of social tolerance, environmental awareness, nationalism, caring, and fairness are embodied in the participation to the community member.

One of the basic competencies to be achieved in the course of consumer education is critical of various consumer problems in consequence of consuming activity and sensible of the current issues of consumer education. Consumer problems that often happen to the consumers are caused by the low awareness of consumers in applying consumer rights and obligations when making consumption of goods and services. That basic competence are translated into a number of indicators, namely 1) able to identify social/consumers problems caused by the trading rules, the compensation problem, the problem of specifying goods, quality issues of goods, and the problem of the influence of advertising, 2) able to choose those issues based on personal or others' experience, 3) able to collect data for problem solving, 4) able to develop a portfolio of problem solving, 5) able to present a portfolio in a discussion forum, and 6) able to do a reflection to make sense of problems and solutions.

The learning objective is to make students sensitive and responsive to various social/consumers issues and their implications for public policy. The students go through a process of presentations and discussions on a wide range of consumer problem-solving analysis, and then perform a variety of meanings and seek alternative solutions of how to anticipate them. Through this process, it is hoped that students will be able to formulate personal decisions and collective decisions through a democratic process, by communicating logically and responsibly as a reflection of the embodiment of characterized attitudes and behaviors, and then to disseminate the decisions that have been generated.

### **2.2 The Skill of Thinking Critically through Problem Solving Habituation**

Thinking skill is a mental process that occurs when one is thinking. Thinking critically is, according to Inch (2006), a process where one tries to answer a difficult question that the information rationally not yet found at this time. Thinking critically is a mental process which is well organized and plays a role in the process of making decisions to solve problems by analyzing and interpreting data in a scientific inquiry activity (Johnson, 2000). Related to thinking critically, educators/leturers should teach students how to think and not teach what to think. Thus, the students will become critical thinkers and independent thinkers (Clement and Lochhead in Schafersman, 1991).

According to Nickerson *et al* (1987) and Muijs & Reynolds (2008), there are four kinds of the main program related to the thinking skills, i.e., the program of problem-solving skill or named heuristik program, metacognitive program, open-ended program, and formal thinking program.



Heuristik is a program that analyzes problems in order for them to be easily done. Metacognitive program is a self reflection of one's mind. Open-minded program is used to improve high skills. Formal thinking program is related to the effort to help students easily going through the transition among the stages.

Thinking critically is a part of thinking skills which is also related to what should be believed or done in every situation or event. Ennis (1996) said that thinking critically is actually a process of thinking skills that happened to a person and aims to make rational decisions about something that can be believed to be true. Therefore, the skill of critical thinking is none other than the skill of solving problem that produces reliable knowledge. Thus, there are two main signs of thinking critically. First, thinking critically is thinking appropriately. It guides to a direction of deductive thinking and a correct decision-making and is supported by proper evidences. Second, thinking critically is thinking reflectively which shows a full awareness of the thinking steps that leads to the deduction and decision making.

According to Ennis (1996), there are six basic elements which need to be considered in thinking critically. Those are focus, reason, inferential, situation, clarity, and overview (the wholly initiatives or reflection). Thus, thinking critically means finding a clear statement about a question, finding the reason, using the credible sources, totally considering the situation and condition, trying to keep relevant with the main and basic idea, finding alternative, behaving and thinking openly, finding logical reasons, and being sensible of other sciences. A person thinking critically is one who thinks and is responsible for the decisions he/she made in life which will give influence on his/her future life.

The occurrence of thinking critically in learning is by presenting problems of the inhabitual and open-ended contexts as well as by implementing the scaffolding approach in small groups. Besides, Chamot (in McGregor, 2007) suggested that developing thinking critically in a learning needs a modeling by teachers as well as the use of students' early skills and interactive communication. Meanwhile, Thomas (in Tall, 1999) suggested that to build a culture of thinking critically in learning, the students need to be faced with new and contradictive problems in finding the truth and the clear reason.

The quality of man's way of thinking is divided into three parts. Those are a low-level thinking, such as remembering, knowing, and understanding; a mid-level thinking, such as applying, using, and practicing; and high-level thinking, such as analyzing, sintesizing, evaluating, problem solving, thinking critically, and thinking creatively.

According to Gagne in (Natsir, 2004), a man's way of thinking depends his skills and the hierarchy of skills needed to study it. Gagne gave his opinion that in the process of learning, there are five abilities owned by students. Those abilities can be observed as a result of learning such as 1) intellectual skill, i.e. the ability which is related to mental operation which enables a man to give response to his environment, 2) cognitive strategy, i.e. the ability to control and to manage the studying and thinking activities in one's ownself, 3) verbal information, i.e. the ability to describe something in words through the managing of relevant informations. The observable performance is the performance of stating or communicating information both writtenly and spokenly, 4) motoric skill, i.e. the ability to do and to coordinate movements related to the muscle, and 5) attitude, i.e., the internal ability to choose positive or negative action toward a person, an object, or an event. Observable performance is the choosing of personal acts to approach and to avoid an object. Based on the explanation, thinking critically is a study result whose aspects include intellectual aspect, cognitive strategy, and verbal information. Those aspects can be used to support the achievement of critically thinking skill, higher order learning skill, and students' creativity.

### **2.3 The Problem Solving-Based Performance Assessment in the Learning of Consumer Education to Build Critically Thinking Character**

The learning assessment can be used to improve the quality of learning process and the achievement of study result suitable to the objective set. The current curriculum requires the learning that more involves learners to be motivated, independent, active, and creative. In this context, there is a necessity to use an effective assessment, in the sense of having the accuracy and reliability in realizing of the learning objectives defined by the principles of assessment. The effective learning assessment as mentioned above occurs throughout the learning process in class.

There are seven techniques used in class assessment. One of those is a performance assessment. Performance assessment is a procedure which uses various tasks to gain information about what and how far that is done in a program. The monitoring is based on the performance shown in completing a given task or problem. The result obtained is the result of that performance. Performance assessment is an investigation of an in process product. It means that the result task shown in the process of the program implementation is used as a base to consider a monitoring of the improvement of the program's achievement.

Performance assessment is an assessment which is done by observing students' activities in

doing something. Generally, this assessment uses a test named a performance test. This test is used to measure the students' status based on the result of a task, not on the provided answers or choices. Thus, through a performance assessment, students will be accustomed to demonstrate their performances. The questions in performance test are based on the demand of society and other institutions associated with the knowledge that students should possess. Thus, the questions tend to be on the application level of a principle or a concept in new situations. The problems that were tested as far as possible are the same as the problems that exist in real life. This is the main characteristic of the differences between a performance tests and a conventional form.

Essay is a very common example of a performance-based assessment. However, there are still many other examples such as artistic production, experiment in science, and spoken presentation of problems solving in real life. Its emphasizing is on the doing, not on the knowing the process and product. In addition, the assessment of the ability of learners to make observations of phenomena in life, to formulate hypotheses, to collect data, and to describe the valid scientific conclusions may require the use of performance assessment. Performance assessment determines a basis for teachers to evaluate the effectiveness of processes or procedures used (for example, the approach to data collection, manipulation of the instrument) and the products that are resulted from the performance of a task (for example, report of the full results, complete work art).

Performance assessment oftenly points to an authentic assessment by emphasizing that the teachers assess the performance while the students are engaged in problem solving and learning experiences assessed in the truth of themselves, not as a means to assess students' achievement. However, not all of the performance assessments are authentic in the sense that teachers engage students in solving real problems (Linn & Gronlund, 1995:13).

The approach of performance assessment that can be used in raising the awareness of students in completing the task on the real problems of consumers and the outcomes of the learning of consumer education is the problem solving-based performance assessment. The problem solving-based performance assessment is objected to assess the performance of skills in solving problems and to test the ability of students in demonstrating their knowledge and skills in the activities of consumers' problems solving. With performance-based assessments of consumer issues, in addition to improving problem-solving skills, can also enhance critical thinking skills of students. Consumers' problems-based performance assessment is not only able to improve the ability to solve problems but

also able to improve the students' skill of thinking critically.

The implications of the solving of consumers' problems as process in the implementation of teaching and learning process in the classroom remains two main questions. Those are how to teach consumers' problem solving to the students and how to evaluate and assess students' performance in solving problem. Problem solving-based performance assessment is a performance assessment of the solving problem or the consumer education task which is completed by students through some steps in problem solving, namely 1) understanding the orientation of the problem (an essay on a various real consumer issues), 2) planning and organizing the problem solving, 3) implementing the plan of the problem solving by an independent investigation or a group investigation to seek explanations and solutions, 4) developing and appearing the artifacts/works in the form of reports, videos, or models, 5) analyzing and evaluating the problem-solving process, and 6) presenting the report and revising the results.

There are three main components in performance assessment. Those are performance task, performance rubrics, and scoring guide. Performance task is a task which contains the topic, the task standard, the task description, and the condition of completing the task. Performance rubric is a rubric containing components of an ideal performance and a descriptor of that every component. There are three scoring guides. Those are (1) holistic scoring, (2) analytic scoring, and (3) primary traits scoring. Holistic scoring is a scoring that is based on the assessor's general impression of the performance. Analytic scoring is a scoring of aspects that contribute to a performance. A primary trait scoring is a scoring that is based on some dominant elements of a performance.

This problems-based performance assessment asks students to demonstrate and to apply their knowledge to solve problems in various contexts accordance with the desired criteria. To determine the type of task assigned to the performance tests, there is the use of a number of criteria. These criteria, as possible as we can, are used all, although in certain circumstances for assessment in class some cannot be used. According to Popham (1995: 147), there are seven criteria that can be used to assess the task of performance tests. Those are 1) whether the performers of test participant is sufficient to be generalized to other tasks (generalizability), 2) the given task is similar to what is often encountered in daily life (authenticity), 3) the given task measures more than one desired capabilities (multiple foci), 4) assigned tasks are relevant to the learning materials (teachability), 5) the task given is fair for all the test participants (fairness), 6) the given task can indeed be implemented, given the cost factor, place, time,

or equipment (feasibility), and 7) the given task can be scored accurately and reliably (scorability).

The important thing in a performance assessment is the way of observing and scoring the students' performance ability. To minimize the fairness subjectivity factor in scoring the students' performance ability, usually the rater is more than one so that the result will be more valid and reliable. Performance assessment can be implemented in various forms and usually use two approaches. Those are holistic method and analytic method. The holistic method is used if the scorers only give a single score (single rating) based on the whole assessment of the students' work result. Analytic method is used if the scorers give different aspects which relate to the performance assessed. To do this method, the scorer can use checklist and rating scales.

### 3. Conclusion

That is all my thinking contributions on the building critical thought vocational students' character by applying a problem solving-based performance assessment in the learning of consumer education. Thinking critically is a mental process which is well organized and plays a role in the process of a decision making to solve problems by analyzing and interpreting the data in the scientific inquiries. Theoretically, the skill of thinking critically can be improved by a problem solving-based performance assessment which involves three main components in performance assessment. Those components are performance task, performance rubrics, and scoring guide. There are three ways of assessing the performance. Those are (1) holistic scoring, i.e. scoring based on the assessor's general impression of the performance quality, (2) analytic scoring, i.e. scoring of the

aspects contributed to a performance, and (3) primary traits scoring, i.e. scoring based on several dominant elements of a performance. In assessing the tasks of performance tests, there are seven criteria that can be used. Those are generalizability, authenticity, multiple foci, teachability, fairness, feasibility, and scorability.

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# IMPLEMENTATION OF E-LEARNING MODEL IN TRAINING ON LEARNING MANAGEMENT SYSTEM (LMS)

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## Abstract

Conventional training models cannot fully followed by all employees in government agencies. Budgeting will not be sufficient to finance the training with the conventional model as well as limitations on government training facilities. Currently, the use of information technology is no longer a new thing in education. With the limitations of the use of information technology in the classroom learning process and learning time become more flexible and effective without being limited by space and time. Change the time and place of study will change the learning that had been centered on the teacher to focus on training participants.

The use of information technology is considered important because it raises the efficiency of time and place of learning processes that become obstacles in the learning process in the conventional. E-Learning as a model of information technology- based training can be a solution to the limitations of conventional models. Training is implementing e-learning process can build LMS (Learning Management System) as a virtual classroom.

Learning material in the LMS can be a content-based multimedia or text-based content. In addition, LMS is preferably constructed with speed and convenience comparison with the beauty of the display of LMS. The qualities of LMS that can make the participants comfortable in digging for information and sharing of information's to the process of learning in the classroom.

**Keywords:** training, e-learning, learning material, Learning Management System (LMS)

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## 1. Introduction

Conventional or traditional model still continue to dominate in learning. Conventional model has a learning environment with instructor-based classrooms, teachers, professors, or as an SME (Subject Matter Expert). Further Suo and Shi (2008: 191) states that "the traditional learning mode is still modalities of learning. Traditional learning has a classroom-based learning environment with an instructor such as a teacher, professor or subject-matter expert." Learning model in which the instructor as a center of knowledge, adjust the speed and direction of change in the context students in the classroom, while students are positioned in learning environment by listening to instructions.

Reece and Walker (1997: 132) states that "many students prefer often they say lectures because they are passive and few demands are made of them." This may imply that the conventional model is formed due to the attitude of students rely on the knowledge that will delivered by teachers to improve knowledge and skills.

Character of the participants in the conventional models tends to show a passive attitude in the classroom. This is in accordance with the opinion of Noe (2008:272) as follows: "The trains played a passive role in learning. Communication on course content was one-way

from the instructor to the learner." Passive attitude arises will depend entirely to the teachers in the fulfillment of knowledge, so that only one-way communication arises only from the faculty of the participants.

Goldstein & Ford (2003: 222) explains that the advantages of conventional training with the active process of interaction can be established between teacher and participant training. Education and training excellence in the conventional model by Wilson (2005: 92) is the "soft skills development or other skill requiring practice and face-to-face feedback are excellent choices for classroom training." This means that the difficulties in the delivery of content can be completed in class. Additionally supported by Hofmann (2006: 33) states that "some objectives may be best taught in a traditional classroom, like completing the lab technical work. Think of those kinesthetic That task-based objectives can result in disastrous outcomes when not performed well. "The purpose of learning the skills associated with the formation in the form of conventional or traditional models. However, the implementation is different when the concentration of training participants will have an effect because the participants are provided outside the main routine. While the downside is the heavy demands of the time is limited to the time schedule of training, participants should be able to understand and practice the teaching materials.

Because after training that produces graduates who are skilled should tersimultan between classroom learning and the concept of class when it works later.

Bonk & Graham (2006: 5) further confirmed as follows that "the traditional face to face learning typically occurred in a teacher-directed environment with person to person interaction in a live synchronous, high-fidelity environment." This means that the conventional model or traditionally had the advantage because of the problems solved in the face to face in the classroom. The process of direct communication between participants or between participants and instructors not only establish the knowledge and skills but rather the establishment of a conducive environment.

## 2. Training

Based on the constraints in the application of the conventional model, it is necessary to know the development of information technology in this global era in the field of education. In the field of education, information technology can be used as an alternative for implementing educational programs. Recently, information technology and its application have raised questions to think about learning processes that have been conventionally implemented so far (Knapp dan Glenn, 1996).

Therefore, the information technology shift in the field of education is the use of e-learning. E-learning is an educational system using electronic applications to support teaching and learning activities through the internet, computer networks, and computers (Romi SW, 2007). Meanwhile, distance learning is a system characterized by the communication between participants or users and instructors established by means of facilities such as television, telephones, computers, or radio (Goldsstein & Ford, 2003: 251).

The use of the e-learning method which gains popularity in the field of education has positive effects because: (1) this method is more effective and efficient; (2) it saves time, costs, and energy; and (3) it motivates learners to use technology. Besides positive effects, this method also has negative effects because it makes learners lazy, makes them away from books, and makes them less familiar with and respectful to teachers because of the lack of direct communication. Trainings for expenditure treasures make it possible to use information technology as an attempt to accelerate the availability of treasurer personnel but this depends on the decision makers. This means that trainings e-learning-based trainings for expenditure treasures can be only a dream or can be a solution for government offices.

Education and trainings in government organizations are regulated in Government

Regulations Number 101 Year 2000 regarding In-Service Education and Trainings for Civil Servants, organizing the same thing that education and trainings refer to teaching and learning processes as an attempt to improve civil servants' competencies. This emphasizes that education and trainings are needed to prepare employees to be capable of accomplishing jobs they are facing or will face; the development is needed to prepare employees to accomplish their future jobs.

The effectiveness of education and trainings can be attained by taking account of the systematic development process. Noe (2008: 6) proposes seven stages, namely: (1) identifying the training needs; (2) ensuring that employees have motivation and basic skills necessary from contents of training; (3) creating a learning environment appropriate with organizational conditions; (4) ensuring the availability of training participants whose competencies are to be improved; (5) developing an evaluation plan consisting of identification of training outcomes and designing an evaluation of training advantages; (6) deciding a training model based on the objectives and learning environment whether to use a traditional mode or e-learning; and (7) carrying out monitoring, supervision, and, if necessary, revision in order to attain learning, behaviors, changes, and other training objectives.

## 3. E-Learning

E-learning (Romi SW, 2007) is: 1) a new learning method using computer network media and the internet and 2) the delivery of learning materials (contents) through electronic media so that the delivered learning materials are in the electronic (digital) form. According to Wong (2008: 147), e-learning uses computer- or website-based information and communication technology for learning.

General implementation stages of e-Learning moves from Asynchronous e-Learning that is established first to Synchronous e-Learning when the needs come. Saadé (2007) states that in reality, nowadays e-learning becomes a wide approach as a simultaneous change of the face-to-face environment ([www.jite.org/documents/vol8/p177-191/pdf](http://www.jite.org/documents/vol8/p177-191/pdf)).

According to Noe (2008: 273) a technology-based learning environment is characterized by instructors communicating to learners or participants involving or through technology infrastructure. Instructors play a role as trainers for participants and there is a communication process among participants. Experts and other sources are likely to be an environment in this learning process. The principle of a technology-based learning environment completely relies on information technology and even the management of the

participants' or learners' development employs information technology.

Individual readiness as the basis for e-learning acceptance is also supported by Rahmawati and Subekti J. (2009: 1-27). Individual factors related to one's confidence in self-competence are important when a new method is applied. Likewise, the acceptance of e-learning by students of the Faculty of Accounting of Sebelas Maret University Surakarta and the number of students with high self-efficacy has positive effects on the process of e-learning acceptance.

#### 4. Learning Management System

Today, there are many forms of information technology as a learning media such as video DICS, multimedia / hypermedia, email, and internet. In connection with the use of internet information technology in education is offered e-learning. This paper is implemented through the establishment of e-learning Learning Management System (LMS) as part of the e-learning. LMS is defined as "a software application for the administration, documentation, tracking, and reporting of training programs, classroom and online events, e-learning programs, and training content." [http://en.wikipedia.org/wiki/Learning\\_management\\_system](http://en.wikipedia.org/wiki/Learning_management_system).

A learning management system (LMS) is a software application for the administration, documentation, tracking, and reporting of training programs, classroom and online events, e-learning programs, and training content. A robust LMS should be able to do the following: 1) centralize and automate administration, 2) use self-service and self-guided services, 3) assemble and deliver learning content rapidly, 4) consolidate training initiatives on a scalable web-based platform, 5) support portability and standards, and 6) personalize content and enable knowledge reuse.

The characteristic of LMS include :

"(1) Manage users, roles, courses, instructors, facilities, and generate reports, (2) Course calendar, (3) Learning path, (4) Student messaging and notifications, (5) Assessment and testing handling before and after testing, (6) Display scores and transcripts, (7) Grading of coursework and roster processing, including wait listing, and (8) Web-based or blended course delivery." [http://en.wikipedia.org/wiki/Learning\\_management\\_system](http://en.wikipedia.org/wiki/Learning_management_system)

Most LMSs are web-based, built using a variety of development platforms, like Java, Microsoft .NET or PHP. They usually employ the use of a database like MySQL, Microsoft SQL Server or Oracle as back-end. Although most of the systems are commercially developed and have commercial software licenses there are several systems that have an open source licenses.

Hence LMS as well as a schoolhouse in the form of 'virtual' which has classrooms, faculty, students, student activities, learning, and student evaluation. This model was chosen to use the LMS as part of the process of e-learning because of the characteristics of the LMS as well as the school or educational institution in the form of "virtual".

#### 5. Learning Material

Training materials are important in the implementation process of training. This paper involves the development of information technology education and training materials must also take into account the participants who will use these technologies in the acquisition of knowledge. This is in accordance with the opinion of Forsyth et al. (2004c: 41) as follows:

The most effective aspects for people involved in developing course material for use on the Internet is to resolve the relationship between the delivery aspect required for information transfer of the content and the appropriate uses of the attributes of the Internet.

Development of training materials were developed in accordance with the needs and competencies developed directly from the organization in need. Kosbab (2003: 529) supports this by stating the following "training materials are developed directly from competencies by enterprises, providers and consultants of training."

Training materials in the form of teaching materials do not cover the overall subject matter. This concept aims to improve the participant activity enrichment of knowledge not only training but also understand the material comes from experience and training. This is in accordance with the opinion Biech (2005: 99) which states as follows: *when developing the participant materials, don't try to include everything on paper. The actives you design up into the knowledge, experience, and expertise of the participants. Participants should have a place to capture ideas they may want to use after the session.*

#### 6. Discussion

Trainings for government need to be improved in terms of learning processes. This is to facilitate participants to learn repeatedly so that they can acquire the necessary competence by minimizing the training costs. This can be done because it is not necessary for the participants to leave the offices where they work and they can still attend or take the learning process autonomously. The autonomy is implemented through the e-learning-based learning process.

E-learning is supported by the electronic system and application in teaching and learning processes (Romi W, 2007: 1) including: 1) the e-Learning infrastructure. The e-Learning

infrastructure includes personal computers (PC), computer networks, the internet, and multimedia equipment. It also includes teleconference equipment when we want to provide synchronous learning services through teleconference; and 2) the e-learning system and application; the software system vitalizing conventional teaching and learning processes. Such software is called the Learning Management System (LMS). Many LMSs come from open sources so that we can use them easily to be established in our schools and universities, using model 2.0.

Then the e-learning contents consist of the contents and learning materials in the e-Learning system. They can be in the form of Multimedia-based Contents (contents in interactive multimedia) or Text-based Contents (contents in texts like those in common textbooks). In general, they can be kept in the form of the Learning Management System (LMS) so that they can be used by users anywhere and anytime.

The developed LMS can be a virtual training center in which there are a classroom, modules, and test item banks as they are commonly found in a training center. Participants and instructors have direct or indirect virtual meetings. A direct meeting refers to a process of chatting as a virtual teaching and learning process. An indirect meeting is a process in which participants meet instructors in a forum facility as a place for communication, discussion, or question and answer.

The evaluation process is also virtually conducted using the developed LMS but the measurement and evaluation are still limited to the cognitive aspect. The psychomotor aspect for a treasurer has to be assessed factually through a competence test. If participants have not attained the cognitive aspect, they can still improve their competence through the e-learning process. Further, government offices have not incurred expenses to send participants to training institutions for a competence test. Costs must efficient and learning processes must be effective in the future. This is clarified further in Figure 1.

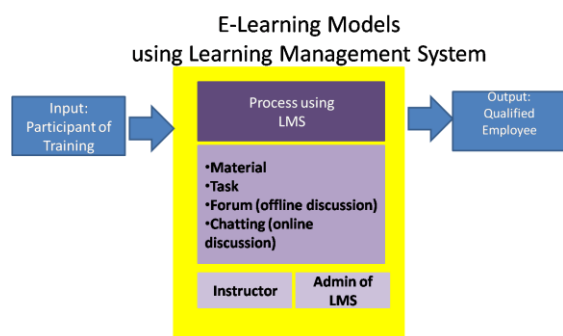


Figure 1. E-Learning Models

## 7. Closing Remarks

Cost-efficient training patterns and effective learning processes can be obtained through information technology. E-learning as part of information technology is not new in the field of education. Therefore, this needs considering in the development of training patterns for expenditure treasurers. Expenditure treasurers are prepared as functional personnel who have to satisfy the required competence standards. Such competence is acquired through a training pattern that has been implemented, namely the traditional learning pattern in the classroom. The pattern limited to space and time results in high costs.

Attempts to minimize costs without reducing the quality of the attainment of learning outcomes by training participants need to be made as a solution. The solution through e-learning is an alternative training pattern in the future. One pattern is to move the training center to a “virtual” one without reducing processes that have been implemented in learning processes. Time-efficient, cost-efficient, and effective learning processes become a solution to the training pattern for expenditure treasures. However, this will be only a dream if there is no willingness on the part of participants, instructors, and education and training institutions. All parties have to ponder whether it will be a dream or a solution; now is the time to opt.

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# MUSICAL INTERPRETATION IN MUSIC LEARNING IN SMK NEGERI 2 KASIHAN BANTUL YOGYAKARTA

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## Abstract

This study aimed to reveal: 1) the dimensions of musical interpretation which are taught; 2) students perception to musical interpretation learning. This study uses mix method, survey and case study approach to descriptive and intrinsic design conducted in SMK Negeri 2 Kasihan Bantul Yogyakarta. The data were collected through questionnaire, interview, participant observation, and document. For survey approached data were analyzed by using percentage. For case study approached data were analyzed by aggregate, organize, and classify. The result of temporary that found that in teaching of interpretation, teachers are transfer knowledge on matters related to the score being played.

**Keywords:** musical, interpretation, music, learning.

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## 1. Introduction

Vocational education is carried out at the secondary level, especially with the aim of preparing students to work in a specific area. Hansen (2009) revealed that *“The purpose of vocational studies was to fit boys and girls for a job. It’s integrity was tied to the educative value of work. Eventually, vocational guidance became a complimentary force that cemented the movement, both in school and in the work sector”*. Thus, the purpose of learning in vocational education is to prepare students for work and comes with the knowledge and skills that can be used and useful in their work, including work in the field of music. Therefore, in order to work in these fields, students need to be equipped with the knowledge of music theory and musical instrument playing skills including skills to interpret a piece of music, especially music works of art to enter the workforce, especially as player.

Musical skill competency, which is one of vocational discipline of 12 vocational discipline established within the framework of an international curriculum (Rauner, 2009:1447), and also one of skill competencies in the spectrum of secondary vocational education skills (SK Ditjen Mandikdasmen No. 251/C/kep/mn/2008), currently in great demand by some of the wider community. It is no hesitate because the music is one important part of human life. Not only viewed as mere entertainment, but music can also be studied seriously as other scientific fields, and can be used as a livelihood for the community group. This is what encourages people, especially young people (teenagers) to pursue, as well as studying music in more depth. SMK Negeri 2 Kasihan Bantul is one of the vocational high school that conducts music by learning the basic skills competency classical music (art music). As a vocational high schools that implement the learning of music, of course, these

schools prepare their students to be competitive in the world of work. To deal with this, the school is provision students with skills in music and life skills. It is given so that the resulting graduates to compete and can occupy the available job market. Learning materials presented in connection competence skills include knowledge of music theory, the fundamentals of music, music history, as well as the structure and musical analysis. In addition, subjects are given practice instrument that is one of important subjects that should be

mastered by students. This is the stock of skills in students enter the workforce after they graduate, and is a competency required by the business world, especially in the entertainment field, such as an orchestra player or other music players, arranger, and as music illustrator.

to be able to achieve this, in following the learning process, students are required to have a good musicality, high motivation to learn music, as well as the provision of skills to play certain musical instruments.

To provide sufficient knowledge, sensitivity, and skill in music, teachers need to instill a knowledge of musical things. One way to teach the interpretation of the songs that will be studied, so it is expected that students can interpret the song as well. Interpretation is an understanding or interpretation of symbols and elements of the music featured in a score. Purpose of interpretation of the music (Hermeren, 2001:13) are to discover what the composer wanted to express and communicate feelings, to illustrate the historical, social, and psychological conditions for the creation of the work interpreted. Interpreting a particular piece of music art music is necessary, because to give clarity to every note that has been created by the composer, and this resulted in a clarity of presentation (performance) of music. Not just any notes that need to be explained, but also every element of music as outlined in the work, such as

dynamic marks, rhythm, tempo, structure, background of the creation (related to the history), and the meaning of the title piece of music itself.

Interpretation is also related to the communication. Therefore, if the music works properly interpreted, it will become more apparent to be communicated to the audience. Thereby, interpretation is important of taught in music learning at SMK Negeri 2 Kasihan Bantul, because the interpretation is one of way to explain or clarify the message and the meaning set forth a composer who can't be described or shown in the right way how the performer of his music sung or played, so it is necessary for interpretation.

Based on the description, the problem can be posed as follows 1) How is the musical interpretation of the model used in musical instrument learning practices in vocational school?; 2) What does the dimensions are owned by the teachers in the teaching of music interpretation?; 3) How does the perception of students towards learning musical interpretation?.

## 2. Musical Interpretation

In music there are various kinds of interpreters (Krausz, 2001:14), namely composer, musician (performer), conductor, audience, critic, and researcher. In this study, the interpreter in question is a teacher who interpret and understand a piece of music and taught to the students to play in musical performance.

Casals through Kitelinger (2009:1) said that *"Without interpretation, it is just poor pen-and-paper music"*. That is, if a performer of music in playing a musical work without the use of interpretation, the song that is played that sounds monotonous or "tasteless". For that, a presenter needs to have knowledge of music, musical ability, sensitivity to music, and have a good musical quality, in order to interpret a piece of music well, too.

This is necessary because the musical interpretation (Silverman, 2007) is more of an aural copy of the score, and an act that brings the whole person, including intellectual ability, social, cultural, artistic, physical, emotional, and personal presentation to the musical performance. In other hand, interpretation is one way of communication. It is as stated by Kassab (2002) that *"The sense of interpretation was predetermined as a vehicle for communication, for translation from one medium into another"*.

Interpretation in music (Latham, 2004: 89-90) is the process by which a presenter of music translate or create a masterpiece of musical notation into sound artistically valid. Therefore, there is an ambiguity in the process inherent in musical notation, then a music presenter is expected to explain the meaning of a piece of music being

played, and able to explain every aspect in the work of music that can not be determined or explained by the composer. Aspects of the musical work that needs to be explained include melody, rhythm, dynamics, tempo, frasering, harmony, background work (history), and color the sound. If the general interpretation is the one text object, the object of interpretation in music is sheet music. Therefore, for a piece of music being played has a meaning and value, it is necessary to use the interpretation, because interpretation is the beginning and end of an understanding of music as a whole (Hatten, 1994).

## 3. Elements of Interpretation

In presenting the art of music there are elements of interpretation (Kitelinger, 2010:4), the sound, rhythm, melody, harmony, tempo, and the shape and structure. Among the elements of interpretation which have been described, the most fundamental element is the history of music. As described White (2009) in the previous section, that the framework interpretation is the one who taught music history.

In the New World Encyclopedia of Classical Music discusses explained that the piece of music, especially art music is best understood in the context in which musical works are created through the history of music. It is related with the background of the lives of composers and musical creation background that created.

## 4. Teaching Learning of Music

Music learning in general is for the personal development of the whole man, and hopefully through learning music can encourage the growth of musical taste (sense of music) to the students, thus making the students have a sense art of scientific. In fact, music learning is not an easy thing to do, because in practice directly involves all three domains, namely cognitive, affective, and psychomotor.

Raimer (2003) argues through Kelly (2009) that the primary purpose of music education including music learning is to develop the capacity for aesthetic knowledge through experiencing music. Music should be valued for its own sake and its effect is unique to each individual. Music itself is autonomous, extramusical ideas should be irrelevant to the experience. Therefore, music education including music learning should place a strong emphasis on quality music with allowances for individual meaning in situations that focus on music's intrinsic ideal.

## 5. Method of Research

To examine the concept the model of musical interpretation that used in music learning in vocational education is a mix methods of research. Mix method is a research method that focuses on combining the two methods (qualitative and quantitative in a single study (Creswell, 2010). The use of mixed methods in this study (Creswell, 2010) is to expand the discussion of the findings that will be generated by applying the two methods at once, to use an integrative approach to be able to gain a good understanding.

Approach to the study is a descriptive survey (quantitative) and intrinsic case study (qualitative) design. Surveys used to determine student perceptions about learning musical interpretation. In addition, to determine the perceptions of teachers about the dimensions of which are owned in the teaching of musical interpretation. Case studies are used to examine as much data about the subject under study is the teachers who taught the musical interpretation in practice learning instrument.

This research is being conducted in SMK Negeri 2 Kasihan Bantul, Yogyakarta. Selection of study sites with consideration of the vocational school is the only vocational school in Yogyakarta which organizes musical expertise.

This study population is teachers who teach the practice of XII class instruments in the SMK Negeri 2 Kasihan Bantul, which totaled 48 people (source SMKN 2 Kasihan Bantul). Meanwhile, the study sample was the teachers who teach the practice of XII class instruments in the SMK Negeri 2 Kasihan Bantul, which numbered 17 people. Determination of the sample was done by purposive sampling technique, because of certain considerations. This amount is taken from each of the instruments that are taught in school.

Data collection techniques used in survey approach is the questionnaire. Meanwhile, data collection techniques used in the case study approach is the observation, interviews and FGDs. The research instruments used to approach a questionnaire survey was used to obtain information about the interpretation of these dimensions in the interpretation of the music is taught by teachers on students. The instruments related to the case study approach is the researchers themselves. This is as set out by Sugiyono (2006:251) that in qualitative research "the researcher is the key instrument".

Data analysis that used in survey approach is percentage with formula following.

$$P = \frac{f}{N} \times 100$$

$P$  = Percentage

$f$  = frequency for percentage

$N$  = Number of samples

Data analysis that used in case study approach is aggregate, organize, and classify. The result of temporary that found that in teaching of interpretation, teachers are transfer knowledge on matters related to the score being played.

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# CLASS- BASE INTEGRATED SOFT SKILLS LEARNING MODEL (CISL) FOR VOCATIONAL HIGH SCHOOL STUDENTS

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## Abstract

Classroom-based learning soft skills effectively increase hard skills when administered with habituation-based management performen. This article will discuss an integrated model of the development of soft skills that have tested the effectiveness of the productive class. This integration soft skills model (ILS) is the approach the topic as the integration between hard skills and soft skills. Topics are developed based on the analysis of competence and teaching materials. The model consists of two key components: 1) the integration of components and 2) learning component that describes the acculturation process through continuous improvement. Component integration is the integration of learning targets, the student, and teacher-designed learning environment. Component of learning is a process of familiarization with continuous improvement. Integration on the learning targets teachers do when designing lesson plans, integration on students to do when students create a learning contract, and the integration of the learning environment illustrates that learning occurs in the integration of soft skills and hard skills. At this time students learn to integrate the soft skills and hard skills simultaneously. Learning as a process of acculturation occurs naturally when the students moved the potential soft skills and hard skills with continuous improvement mechanism. Students are encouraged to conduct self-evaluation by self-reflection as well as an effort to motivate myself to do my best. The teacher's role was to be effective in helping to improve the mastery of soft skills and be sensitive to changes in the behavior of soft skills of each student.

**Keywords:** soft skills, class-based integrated learning model, vocational students

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## 1. INTRODUCTION.

Class-based soft skill learning becomes a necessity when teachers are aware of their responsibilities as professionals. Teachers, as the managers of learning, have strategic roles in preparing high-qualified human resources who have competitive ability and who are ready to compete in work field. Soft skills are the key to be ready employee. Therefore, soft skills learning must be a priority when educational institution expecting its graduates to be absorbed easily and competitive in work field.

Soft skills are a number of abilities or talents visible when someone works in a work place (James and James in Mitchel, 2008:1). In the twentieth century, there is a change of paradigm that an employee must have mastered more soft skills than hard skills (Ganzel in Mitchel 2008:3). This is in line with the change of knowledge-based economic paradigm which requires an employee must have mastered more soft skills. It needs a longer time to develop soft skills than hard skills which can be coached up and developed in the work place.

Soft skills are nontechnical abilities. It is difficult to observe, to measure, as well as to teach them. However, indeed, soft skills belong to hard

skills, so that observing hard skills will give soft skills nuance within. People who can integrate both of them and those who are able to work hard in achieving maximum results can be observed from their productive, effective, and efficient works. Soft skills are complement to hard skills. Both of them are needed to work.

It is easy to teach soft skills if they are integrated in technical skills. This integration will make the mastery of hard skills better. The students will become more understood of soft skills which later become their success key. The students will be encouraged to develop thinking ability, sense ability and physical capability in balance when they are faced to work problems, life problems and life.

Class-based Integrated learning skills model (CISL) is an alternative. The advantage of ILS model is relatively cheap so it does not make a burden for the school, especially for the principal, the teachers as well as the students. This model can be applied in theory learning and practice learning. The key is moving the integrated soft skills potentials through active learning and experience-based learning. This model has been tested in productive class of Culinary Program of Vocational School and it successfully improves the performance of food processing and food serving practices.

CILS model is aimed to meet Vocational School's needs as a work-field oriented institution. This model is expected to make the students master hard skills as the requirement of work and soft skills as the complement of hard skills. In line with that, Wardiman Djoyonagoro (1998: 30) states that the mastery of key competences is done through the learning process designed by teachers which is able to bring Vocational School's students being high-qualified human and ready to compete with other employees. The key competence integrates soft skills.

## 2. DISCUSSION

Class-based integrated learning skills (CILS) model is developed based on several things:

### 2.1 Principles of Learning Theory

The development of CILS model is based on the study of learning theory used eclectically among cognitive, constructive, behaviourism, and humanism. The model development is based especially on the change of integrated soft skills due to learning situation developed by the teacher. The change of behavior occurs when the student is encouraged by his/her cognitive potential to understand the concept of soft skills and to grow integrated soft skills's potentials, and it is conditioned by learning experiences enabling the development and the construction of soft skills's concept related to context. Furthermore, internalization process occurs to the students and it seems on the behavior of integrated soft skills.

Integrated soft skills learning cannot be separated from culinary context. The contexts of food processing and food serving are different. Working in the kitchen needs: 1) *positive attitude toward the job* that can be seen in the behaviors such as adept, efficient, neat, clean, safe as well as proud toward the work; 2) *staying power* that shows strength either good physical, mental, stamina and health as well as the desire to work hard; 3) *ability to work with people* is the ability in a team work and cooperation, not egoistic, appreciate the partner's work, not envy, and able to control her/himself; 4) *eagerness to learn*, the desire to learn along the time and conduct experiment; 5) *experience*, means that working experience can be a media of self-improvement by doing exercises while working that later will improve professionalism; 6) *dedication to quality*, always uphold the food's quality so that it can create a "gourmet food"; 7) good understanding of the basic, means that this mastery will be helpful for creating the best work and full of innovation and later it will create a brilliant chef (Wiley John & Sons, 1983:8).

A waiter must show the work's quality which is measured by skill, accuracy, friendliness and comfort (Hamidah, 2004).

The context of culinary work always emphasizes the behaviors of soft skills that have meanings for the development of career and self-development. By using ILS model, the students construct the concepts of soft skills independently that are suitable with the context and they are encouraged to be the best. They are also continuously getting consistent with the behaviors of soft skills and making this as a part of their personalities.

### 2.2 The purpose of ILS Model Development

CILS model is developed as the form of anticipation toward the development of work market. Workforces in the future are expected to master ability for adapting and capacity to keep learning. ILS model is developed with the aim of providing skills for workforces of vocational schools' graduates in order to get more ready in entering work market and get ready to develop. The focus of soft skills developed in the model is based on competence with various industries of restaurant and catering. It includes: team work, strategic thinking, the ability of continual learning, the ability of potential development, communication, being goal oriented, discipline, problem solving, creativity, hard work to succeed, coping and managing fear, professionalism, commitment, and responsibility (Hamidah, 2011).

In line with the basis of the development of CILS connected and nested model (Fogarty, 1991:xiv), CILS model is started by selecting topic of hard skills needed by students when working in the kitchen and in restaurant. Through the analysis of competence and learning material, it will find correlation between soft skills and hard skills in each topic, concept, skill, and work field today and in the future. By CILS model, soft skills will be achieved easily, because soft skills are integrated. Every learning activity contains soft skills and it is measured through learning target as manifestation of the achievement of multiple skills and multiple targets.

CILS model is aimed to form the vocational school's students of Culinary Program who have good characters. The implementation of CILS model effectively will improve standardized and good performance when it is faced to various situations. The students are able to demonstrate their performance, knowledge, skills and personal characters if they are faced to the learning situations designed by teachers. So it is clear that CILS model develops competence measuring someone's knowledge, skills or personal character related to work effectiveness. This competence's mastering

makes the students more skillful and shows standardized work results.

### 2.3 Learning Syntax

CILS syntax describes an instructional strategy to make the students learn and to help students to get information and it also describes skills, value, and the way of thinking so that the students are able to express themselves and have better capability in learning. In other words, CILS learning strategy is a learning design in the sequence of activity, involving all facilities and learning sources directed to achieve the purposes of learning.

In line with the pattern of connected and nested integration applied in CILS, there are three important things related to the determination of learning strategy. First is the analysis of basic competence and learning materials which will be the basis of the determination of learning purposes. The purposes are describing the integration between

hard skills and soft skills and determining the standard of achievement, especially soft skills as well as explaining content that describes the unit's range and the learning materials which will be learned by the students.

Second is the understanding of the profile's description of the students' soft skills as the basis of determination of learning activity. The learning activity explains what the students should do including the readiness of mental, physical, as well as mechanism of soft skills' internalization.

Third is habit-based learning experience that functions to improve the mastery of integrated soft skills and hard skills. Within it, there is a process of soft skills strengthening integrated continually which is not forced but done consciously.

A set of learning strategy is presented in this syntax as follows:

Table 1. Syntax of class-based integrated soft skills learning

No	Stages	Procedures	Role	
			Teacher	Student
1	Integrated learning implementation	<ul style="list-style-type: none"> <li>▪ Determining topic and sub topic, then arrange them in topic map.</li> <li>▪ Determining soft skills that will be taught and understanding the concept of each soft skill</li> <li>▪ Designing learning activity in each soft skill that will be taught</li> <li>▪ Determining the learning target</li> <li>▪ Making integrated lesson plan</li> </ul>	<ul style="list-style-type: none"> <li>▪ Determining soft skills taught based on the analysis of curriculum and class situation</li> <li>▪ Determining learning target as the standard</li> <li>▪ Making learning scenario</li> <li>▪ Controlling learning sources</li> </ul>	<ul style="list-style-type: none"> <li>▪ Understanding soft skills and behavior</li> <li>▪ Making learning contract</li> <li>▪ Forming work team, if necessary</li> </ul>
2	Implementation	<ul style="list-style-type: none"> <li>▪ Developing the concept of soft skills as the form of awareness. There is an awareness of learning target.</li> <li>▪ Emphasizing on practice situation praktek</li> <li>▪ Strengthening management</li> <li>▪ Independency-based learning</li> </ul>	<ul style="list-style-type: none"> <li>▪ Facilitating learning that is rich of experiences and in work situation</li> <li>▪ Guiding and monitoring learning</li> <li>▪ Explaining the mistakes of soft skills behavior and encouraging self-improvement.</li> <li>▪ Applying strengthening management</li> <li>▪ Motivating</li> </ul>	<ul style="list-style-type: none"> <li>▪ Interacting with the learning situation</li> <li>▪ Building the cognitive structure by constructing the concept of soft skills</li> <li>▪ Controlling behavior toward perfect mastering</li> <li>▪ Obeying the learning</li> </ul>

				contract
3	Reflection, observation and evaluation among colleagues	<ul style="list-style-type: none"> <li>▪ Monitoring the development of soft skills achievement</li> <li>▪ Implementing continuously</li> <li>▪ Evaluating gradually consisting before, during, and after</li> </ul>	<ul style="list-style-type: none"> <li>▪ Learning evaluation instrument</li> <li>▪ Doing reflection and evaluation continuously</li> <li>▪ Using the results of observation, reflection and evaluation among colleagues for continuous improvement.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Showing the mastery of soft skills</li> <li>▪ Reflecting the performance of soft skills independently</li> <li>▪ Improving the work performance</li> </ul>

## 2.4 The Developed Learning Experience

Learning experience emphasizes on the students' activities in the form of the student-centered learning. The main focus of learning activity is the student's participation in forming knowledge, making meaning, questioning clarity, having critical attitude, and justifying. The students obtain a lot of opportunities to develop knowledge and understanding and always updating their knowledge from the results of interaction with learning experiences from surroundings. The students will get deep meaning about what they know as well as strengthen self-concept. The strength of learning is derived from the students themselves controlled by the teacher, the materials and the standard of achievement.

CILS model applies various patterns such as independent learning, cooperative learning, collaborative learning, generative learning, and cognitive learning like problem-based learning and cognitive strategy (Pauline., Dina Mustafa., Mestika Sekarwinahyu. 2005: 40-41).

Learning experience with CILS model focuses on two key components. In the first component, soft skills are integrated in learning target, the student him/herself and learning environment. In the second component, soft skills learning is as acculturation implemented through continuous improvement process. It seems on the following figure:

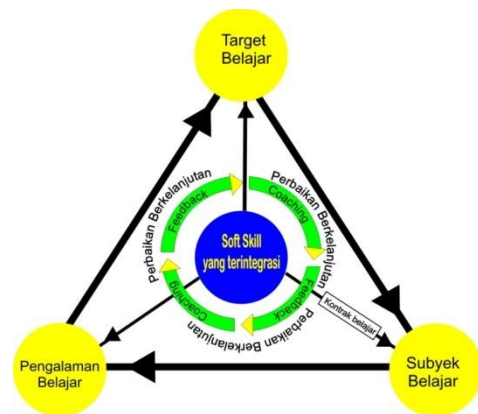


Figure 1. Figure. Integrated soft skills learning model (Hamidah, 2011)

The figure above explains two important charts, those are: 1) triangle chart describing the integration of soft skills in learning target, learning subject and learning experience; 2) oval chart describing a learning process as a process of acculturation with the emphasis on the continuous improvement.

The two charts above cannot be separated from the analysis of soft skills that will be developed. By those charts, the teacher as the manager of teaching and learning process will determine soft skills which will be taught related to the topic of hard skills determined. The focus of integrated soft skills is written when writing lesson plan as the target of soft skills. The description of integrated soft skills's mastery seems on the purpose, indicators, learning materials, learning experience as well as performance standard.

The next integration is on the student him/herself through the process of the mastery of each soft skill's concept guided by learning contract. With this mechanism, the student becomes ready to learn with integration pattern. Integration

of learning experiences describes that integrated soft skills must be guideline when the teacher determines the students' learning strategy. Integrated learning pattern determined must be based on real experience, task, and problem solving, as well as learning independence. The mastery of integrated soft skills will be meaningful when the students are active and independent.

The second chart is the process of integrated soft skills internalization. During the process of learning, the students still need counseling. The teacher should be an effective person in helping the students improving their soft skill's mastery and be sensitive toward the change of soft skill behavior of the students. Coaching and feedback mechanism determined by the teacher will help student in mastering integrated soft skills in consistent level. The teacher can determine evaluation whether using rubric, self-expression or evaluation among colleagues or group.

The second section also explains the process of learning occurs in continuous improvement cycle as the manifestation of habit. Soft skill is a part of personality and personality is the final result of systematic habit.

### 3. CONCLUSION

CILS model is a model that can be applied on various situations but still in the context in which those soft skills can be applied. With the bringing up pattern, the students can apply CILS model as well as observe its results.

There are 4 stages of CILS model, those are: 1) Model that emphasizes the emergence of the desired integrated soft skill behaviors. Soft skill is complex, so it is necessary to be observed and appreciated; 2) the development of mental process of the students seems on their particular behaviors. The students are given a lot of opportunities to participate actively in forming knowledge and making meaning as a part of personality; 3) the teacher creates learning scenario enabling the students in mastering the concept of integrated soft skills, improving comprehension, and forming consistent behaviors. It is supported by various learning situations which are based on real experiences, task, and problem solving, as well as learning independence; 4) the learning subject needs many opportunities to get exercises and to get feedback from real situation or simulation.

ILS model focuses on two main components: integration component and habit-based learning component. There is a process of integrated soft skill strengthening in it continuously, which occurs voluntarily and consciously.

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# VIDEO RECORDING OF TEACHING MICROTEACHING ELEMENT : An Experimental Study To Improve The Teaching Skills Of Vocational Teacher Candidates

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## Abstract

The paper is organized as an effort to improve the teaching skills of prospective teachers for vocational students. Teacher as a professional educator has primary responsibility to educate, teach, train, assess, and evaluate students. Teacher as a professional position should be prepared through education and should be supervised by an experienced supervisor. It is not easy to form a professional teacher, one way is through microteaching. Microteaching taught in small scale and one goal is to provide early experience in the practice of teaching. This paper was developed from initial research that emphasizes how the role of students and lecturers in using the video footage that is in use online through social media. Comments and suggestions from each participant are provided online through social media. Analysis is performed to see the influence of video recording and comments from my friends as a reflection of the individual prospective teachers to make improvements in each of the practice of teaching. In addition, how the use of new technologies in communication such as social media to support the vocational teacher candidates.

**Keywords:** video recording, microteaching, vocational teacher candidates, social media

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## 1. Introduction

The objectives of the national education system is to develop skills and form the character and civilization of the nation's prestige, developing the potential of learners in order to be a human who is faithful and devoted to God Almighty, noble character, knowledgeable, healthy, creative, independent, and become citizens whose democratic accountable [1]. Teachers have a strategic role in education, other educational resources are often less of means if not supported by qualified teachers. The teacher is spearheading the effort to improve quality services and outcomes of education and teacher is the key element to improve the quality of education.

The teacher as a professional educators has the primary duties to educate, teach, guide, direct, train, assess, and evaluate students. Teachers as professional positions should be prepared through education and should be supervise by the experienced supervisor. Any plan to prepare teachers should include some teaching under the direction of an experienced practitioner. Both students and professors have judged the student teaching to be, without qualification, the best way to train teachers [2].

Higher Education is the system which provides teacher candidates plays an important role to prepare graduates readiness in teaching, training, guiding and evaluating. A sequence of elements to meet the standards for the award of Qualified Teacher Status includes: 1) Professional value and

practice, 2) Knowledge and understanding, 3) Teaching and class management (discipline and relationships), 4) Teaching and class management (teaching techniques), 5) Teaching and class management (teaching and learning styles), 6) Planning, expectations and targets, 7) Monitoring and assessment [3]. Micro-teaching became one how to realize a quality of teacher candidates.

Micro-teaching is a scaled-down teaching encounter which has been develop as Stanford University to serve 3 purposes: (1) as preliminary experience and practice in teaching, (2) as a research vehicle to explore training effect under controlled conditions, and (3) as an in-service training instrument for experienced teachers. In micro-teaching the trainees are exposed to variables in classroom teaching without being overwhelmed by the complexity of the situation. They are required to teach brief lessons (5 to 25 minutes) in the their teaching subject, to a small group of pupils (up to 5). These brief lessons allows opportunity for intense supervisopn, video-tape recording for immediate feedback, and the collection and utilization of student feedback [4].

Micro-teaching is a technique that can be used for various types of different professional development. Especially, it has become a successful and an interesting method for transferring theory into practice for a preserve teacher in a teacher education program. The purpose of microteaching application is to develop skills in teaching [5]. A microteaching session is a chance to adopt new teaching and learning

strategies and, through assuming the student role, to get an insight into students' needs and expectations. It is a good time to learn from others and enrich one's own repertoire of teaching methods. A microteaching session is much more comfortable than real classroom situations, because it eliminates pressure resulting from the length of the lecture, the scope and content of the matter to be conveyed, and the need to face large numbers of students, some of whom may be inattentive or even hostile. Another advantage of microteaching is that it provides skilled supervisors who can give support, lead the session in a proper direction and share some insights from the pedagogic sciences.

In micro teaching, teacher candidates find opportunities to develop skills in drawing learners' attention, asking questions, using and managing time effectively and bringing the lesson to a conclusion. Also, through micro teaching, the teachers' class management skills improve. They acquire the skills to choose appropriate learner activities, use teaching goals, and overcome difficulties encountered during the process. During learner learning, on the other hand, teacher candidates improve their skills in giving feedback and measurement and evaluation. Furthermore, by observing the presentation of their friends they find a chance to observe and evaluate different teaching strategies [6].

Micro teaching helps develop skills to prepare lesson plans, choose teaching goals, speak in front of a group, and to ask questions and use evaluation techniques. Teachers' self confidence grows in a comfortable environment. It provides an opportunity to learn multiple skills that are important for teaching in a short time. It is a useful experience to learn how to realize teaching goals through planning a model lesson. It shows how preparation, organization, and presentation are important in learners' learning. Choosing activities, putting them in a logical order, maintaining improvement make it possible to become a whole with the content. Receiving immediate feedback is a means to determine productivity and using teaching strategies. By asking appropriate questions a strong learning environment can be established. Also, it allows for asking questions at various difficulty levels. Also, it makes it possible to create an environment that involves thinking differently and interaction [7].

Video case studies are commonly used in teacher training programs, usually to develop one specific area of competence. The need for an integrative model that meets diverse learning objectives and competences led to a study on how to effectively use videos to guide student-teachers towards professional development. The analysis of case studies helped develop a four-pronged holistic proposal that places student-teachers in the role of both teacher and learner allowing the co-

construction of teaching knowledge and the acquisition of digital competences and media literacy (8). The results suggest that having pre-service teachers develop and analyze video cases can improve motivation, learning, empathy, and the construction of professional identity [9].

Use of the video was optional, and about half of the class reported using the video, though usage was 90.0% for off-campus students. Most on-campus students accessed the video on-line, while all off-campus students accessed the video via CD-ROM. Off-campus students rated the educational value of the video higher than on-campus students, and were more likely to indicate that the video helped them understand the issues being studied. Most students were able to view the videos without any technical playback problems [10]. Results based on the scores in the pre- and posttests showed that Learner-Centered Micro Teaching (LCMT) model had a progress in teacher candidates' teaching behaviors on subject area, planning, teaching process, classroom management, communication, and evaluation [11]. The use of video-enabled, web based computer-mediated communication (CMC) for the provision of feedback to pre-service, trainee teachers who were involved in a Teaching Practicum course within a teacher-education program. Pre-service teachers' micro-teaching and field-teaching performances were videotaped and made available for viewing within the CMC system [12].

The observations in the classroom showed that the students have many difficulty in practice of teaching in the classroom. This difficulty is the impact of the micro-teaching practices. The micro-teaching indeed not fully working as well that make students weakness in many things, such: not ready to teach, less ability to attract the attention of students, low motivation, less ability to provide references, and others. Students seems uncomfortable and doubtful in teaching. Students needs an examples of teaching and how to teach. Video can provide a real examples of teaching in the classroom. It means video of teaching will assist students to have an examples of teaching.

## **2. Discussion**

### **2.1 Teaching**

Teaching may be even more complex than law, medicine, or engineering. Rather than serving one client at a time, teachers work with groups of twentyfive to thirty at once, each with unique needs and proclivities. Teachers must balance these variables, along with a multitude of sometimes competing goals, and negotiate the demands of the content matter along with individual and group needs. They must draw on many kinds of knowledge – of learning and development, social contexts and culture, language and expression,

curriculum and teaching – and integrate what they know to create engaging tasks and solve learning problems for a range of students who learn differently [2].

Teaching is simply helping other persons to learn. The teacher plans the learner's experiences so that they will lead as quickly and directly as possible to mastery of desired skill and knowledge. By this means, the amount of random "trial and error" effort by the learner is reduced to minimum. The teacher, then, guides the learner through these planned experiences in such a way that one who is learning makes steady progress in perfecting the skills or understanding the ideas which are being taught [13].

'The profession of teaching is becoming more and more complex. The demands placed on teachers are increasing. The environments in which they work are more and more challenging' [14]. Teaching is a complex, multifaceted activity, often requiring us as instructors to juggle multiple tasks and goals simultaneously and flexibly. The following small but powerful set of principles can make teaching both more effective and more efficient, by helping us create the conditions that support student learning and minimize the need for revising materials, content, and policies. The Teaching for Understanding framework is a guide that can help keep the focus of educational practice on developing student understanding. [15]. Successful teaching is a composite of skills, competencies, artistry and much more besides. Some is learned by experience; some by preparation and reflection [3]. The good teaching was defined as 'getting most students to use the level of cognitive processes needed to achieve the intended outcomes that the more academic students use spontaneously'. Traditional teaching methods – lecture, tutorial, and private study – do not in themselves require students to use these high-level cognitive processes [16].

The main value of an understanding of pupil learning in the context of effective teaching is that it enables a teacher to reflect upon an explicit agenda of the major processes and issues involved

in such learning. In the framework developed here, the notions of 'attentiveness', 'receptiveness' and 'appropriateness' acted as the focus for thinking about pupil learning. Teachers' thinking about their own teaching comprises much craft knowledge based on experience. The continued development of the quality of teaching stems from teachers thinking critically about their teaching [17].

Ramsden's course experience questionnaire measures five subscales: **good teaching** (providing useful and timely feedback, clear explanations, making the course interesting and understanding students); **clear goals and standards** (clear aims, objectives and expectations regarding standard of work); **appropriate assessment** (extent to which assessment measures thinking and understanding rather than factual recall); **appropriate workload** (the extent to which workloads interfere with student learning); and **generic skills** (extent to which studies have supported the development of generic skills) [18].

The sequence in Figure 1 draws on the experience of tutoring many student teachers before the first whisper of 'standards' was heard. This box addresses from very early on the questions that are usually uppermost in many student teachers'.

## 2.2 Micro-teaching

Micro-teaching is a scaled-down teaching encounter which has been developed at Stanford University to serve 3 purposes: (1) as preliminary experience and practice in teaching, (2) as a research vehicle to explore training effect under controlled conditions, and (3) as an in-service training instrument for experienced teachers. In micro-teaching the trainees are exposed to variables in classroom teaching without being overwhelmed by the complexity of the situation. They are required to teach brief lessons (5 to 25 minutes) in their teaching subject, to a small group of pupils (up to 5). These brief lessons allow opportunity for intense supervision, video-tape recording for immediate feedback, and the collection and utilization of student feedback [4].

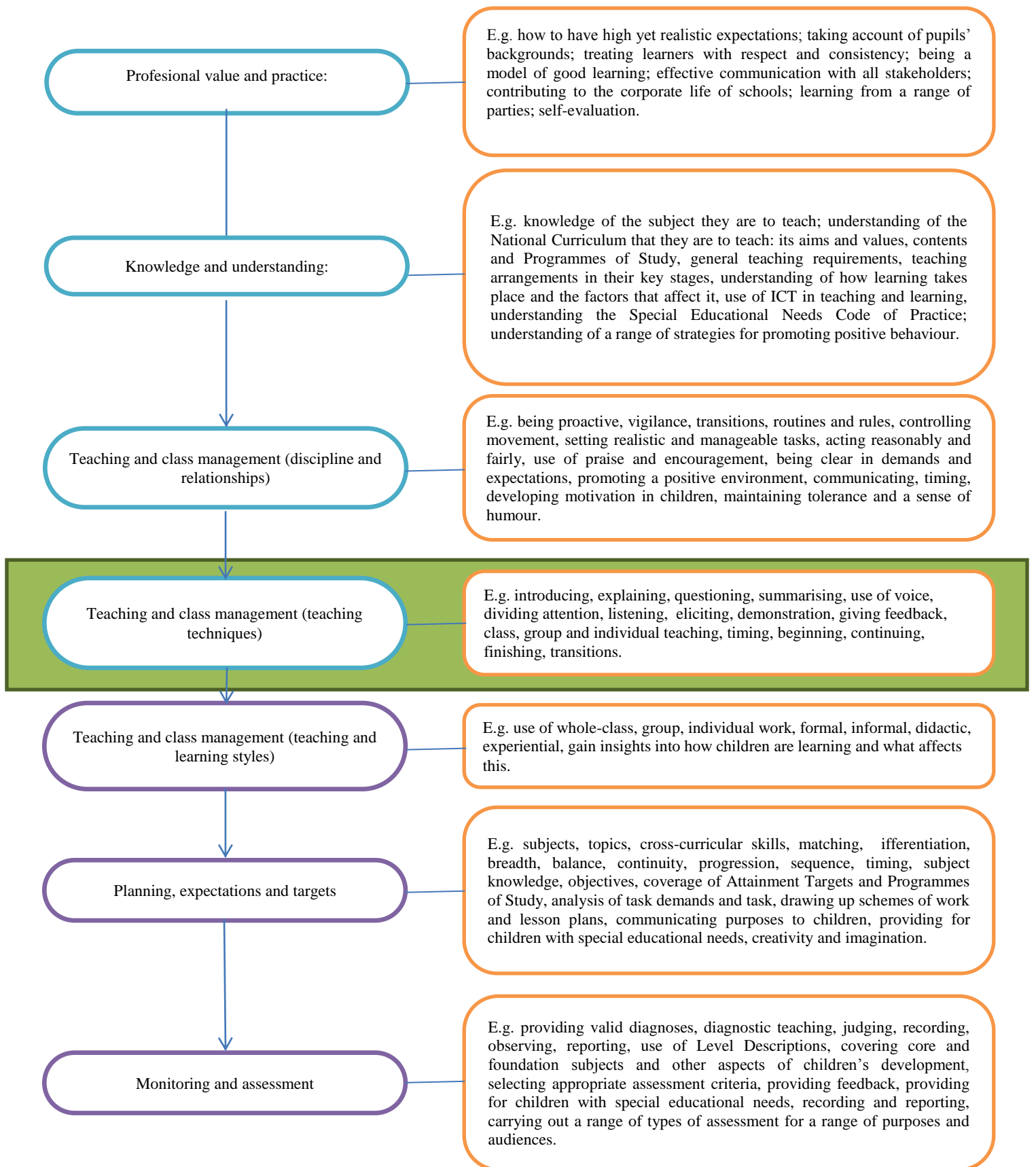


Figure 1. A sequence of elements to meet the standards for the award of Qualified Teacher Status [3]

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### **2.3 Video Based Learning**

As film and later video technologies developed, teacher educators quickly recognized their potential to magnify the perceived relevance and actual power of teacher education and professional development programs. These technologies offered unique affordances that appeared especially well-suited to teacher educators' agendas. Video-based multimedia can enhance teacher education by stimulating intending teachers to engage more effectively in the process of productive professional learning [19].

One of the earliest applications of video to teacher education was the development of microteaching. As its name implies, the goal of microteaching was to experiment with teaching at a micro-level – teaching was scaled down in terms of instruction time, class size, and instructional strategies used. At the beginning of a typical microteaching session, the participant was introduced to a specific teaching skill such as lecturing or leading a discussion [20].

Video feedback was also an important part of the microteaching process. The lesson itself was videotaped and immediately following, the participant used the video to analyze his or her success with the selected skill. In some cases, the participant watched the video with a supervisor. Either way, the next step was for the participant to restructure the lesson as needed and reteach the lesson to a new group of students. The cycle of reteaching and video analysis continued until the participant demonstrated mastery of the focus skill.

For example, Borg : explored the use of microteaching to modify the ways in which inservice teachers conducted whole-class discussions. In one case, teachers were introduced to a set of probing techniques including prompting students with cues, asking students for further clarification, and helping students relate their responses to other relevant topics [20].

Video technology entered the field of teacher training intertwined with microteaching, a behaviourist strategy to enhance the teaching/learning process. As applied to teacher training, microteaching has four main objectives: 1) assess the student teachers' overall teaching skills; 2) identify skills that require improvement; 3) provide a system for practicing the skills; and 4) monitor the skill development process [5].

### **2.4 Social Media as Media Learning**

ICT developments at this time gave the impact to the many users of social media one of which is Facebook. Facebook is a social networking and web site launched in February 2004.

“Founded in February 2004, Facebook is a social utility that helps people communicate more efficiently with their friends, family and co-

workers. The company develops technologies that facilitate the sharing of information through the social graph, the digital mapping of people's real-world social connections. Anyone can sign up for Facebook and interact with the people they know in a trusted environment." [21].

This social networking site is one of the most recent example of the use of ICT has been widely adopted by students, so has the potential to become a valuable resource to support communication and collaboration in education. The results suggest that Facebook is an open technology to support the work of the classroom [22]. The results of other studies also showed that Facebook can be used for education, although the portions are small, and still more widely used to disclose information that is more personal [23].

The use of ICT tools to facilitate the learners in the field of education needs to be improved continuously. As the use of social network Facebook to go to college there is currently no microteaching doing. Program on Facebook makes it possible to incorporate video, text, images and other media. The use of Facebook for microteaching eg by uploading a video of the presentation and invited to comment on the presentation.

### 3. Conclusion

Video recording is important to use as a tool for teaching aids for vocational teacher candidates to develop teaching skills. This video will be more meaningful and successful if it can be viewed and commented upon whenever and wherever. One way to maximize the video recording is to use the applications in social media like facebook. Where video recordings and other student's comments can be presented simultaneously so as to help prospective teachers become easy to practice teaching.

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# THE CNC VIRTUAL AS TEACHING AND TRAINING AID OF CNC PROGRAMMING

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## Abstract

CNC machine tools is the most important practical means of teaching and training of CNC Programming in Vocational High School. Its relatively-high price causes the incapability of the school for getting it, so the teaching of CNC programming in Vocational High School mostly doesn't use CNC machine. The effect is many students can't reach the standard competence of applied CNC programming.

The unavailability of CNC machine tools in teaching of CNC programming in Vocational High School is treated by using CNC Simulator. The CNC Simulator consist Virtual CNC, and CNC Machine Simulator. It's a media to simulate of NC Part Program execution. The simulation of NC Part Program execution are displayed tool path a machining process at monitor. NC Part Program has been simulated can be sent to unit control of CNC Machine Simulator.

Implementation of CNC Simulator in teaching and training of CNC programming begins from building CNC Virtual. The CNC Virtual is a software which provides a visual effect of environment of CNC machine in the monitor. The building uses Research and Development (R&D) method. Implementation of CNC Simulator in teaching of CNC programming shows; (1) the students are very interested and excited to use the virtual CNC which provides a visual effect of environment of CNC machine in the monitor, actively trying the simulation of numpad virtual in the monitor, inputting data on the panel virtual, and making simulation or execution of the CNC program at CNC Machine Simulator, (2) the students practice to make and execute the CNC programming individually in the classroom or outdoor class. (3) CNC Virtual can be used as teaching and training media classically (in classroom), individually learning, even e-learning.

**Keywords:** cnc-simulator, teaching-aid, cnc programming

## 1. Introduction

National Education Government had decided that Education Development concerns with three sectors, one of them is relevance and competitive education quality improvement. The improvement of relevance and competitive education quality is done by addapting the curriculum of education to the need of people which is dynamically develop. That addaptation must really exist in the form of teaching, guiding, and training. Teaching is for giving knowledge, guiding is for stimulating constructive behaviour, whereas training is for improving skills.

One of the sectors which develops fast, especially in the industries, is system of production process automation. Nowadays, almost all of industries is always expanding production process automation and replacing manufacturer tools which are used with machines and tools which can be controlled automatically for supporting the automation.

For improving the relevance and competitive education quality, this automation system is included to the curriculum, especially in the machine engineering education curriculum, starting from Machine Production department in the

Vocational School to the Machine Engineering department in the universities. However, including production automation system to the curriculum is not easy for many factors.

Stated by Indra Djati Sidi (2001 : 37), that based on the some education researches, teacher is one of the dominant factors which influences much learners success in transforming science and technology, also morality and ethics internalization. According to Winarni Surakhmad's opinion (Pannen, dkk, 1999 : 6), holding education needs certain requirement. Besides profesional teachers, it also needs cost and proper education infastructure. If education is held without considering the requirements, there will be bad condition which can cause the process not to be qualified and the learning goal will not be achieved.

Not-proper infastructure condition can be found often in the reality. The most is in the learning process of CNC pro-gramming, that is one of the automation, in the universities or machine engineering department of Vocational School.

CNC machine which is the main facility for forming competence of CNC operating and programming is less than the number of students, even many machine engineering departments don't have one.

The consequence causes learning process of CNC is held in group and in turn when operate the machine. For machine engineering departments which don't have one, the process is held without CNC machine. Those condition cause students don't have chance for having interaction to the machine then they don't have experience in operating machine that ability in making CNC program can't reach the standard.

Quality improvement of CNC learning can be done by giving chance as much as possible to each student for practising making CNC program and applying them to the CNC machine. However, to provide CNC machine as many as the students number needs high cost and not every machine engineering department is capable. Therefore, to fulfil the need of CNC programming learning, virtual reality CNC needs to develop.

Virtual reality CNC media is a computer program and when it runs, on the screen there will be two dimensions image of CNC machine completed with operating buttons resembling to the real CNC machine. Virtual operating buttons on the screen can have the function as the real buttons on the real CNC machine. This media is the representation of the CNC machine, functioned (1) to simulate buttons functions on the control panel, (2) simulate inputting CNC program (data input) as input data to the control system of CNC machine, and (3) simulate CNC program execution as animation of machine process in the CNC machine.

Problems in using virtual reality as CNC programming learning media are:

How is virtual reality development which can show the real environment visualization of a CNC machine on the computer screen?

How is the feasibility of the virtual reality as CNC programming learning media?

This article will explain; (1) building process of a virtual reality CNC which can perceive input and can react as the real CNC machine, (2) the result of that virtual reality CNC feasibility as CNC programming learning media.

Technology improvement, especially computer, should also be used in learning media. The using of computer in learning especially as interaction media and learning application, they are drill and practise, simulation, discovery, tutorial, problem solving, and games.

Computer use in learning activity, at least, has three purposes, they are cognitive, psychomotor, and affective. For cognitive purpose, computer can teach the concepts, principle, steps, process, and complex calculation. Computer is also able to explain that concepts simply by using combination of animated audio and visual so it will be suitable for independent learning.

For psychomotor purpose, computer is also able to serve learning process which is presented in the form of games and simulation which are so good for creating work condition. Some examples are; simulation of aeroplane landing, simulation of war in the worst condition, etc. For affective purpose can be done when the program is designed well by giving sound or video clip which can be a trigger. Then, behaviour learning/affective can be done by using computer.

Generally, there are three kinds of simulation. One, interactive and physical simulation. Physical simulation refers more to the physical object simulation for replacing the real system. This physical object is often chosen for it is smaller or cheaper than real system or objects, as the flying simulator.

Two, computer simulation. Computer simulation is an effort to duplicate real situation in a computer, so the situation can be learned for watching how it works. By changing variable, possibility of prediction can be made about the behaviour of that system. Three, simulation in training. Simulation is often used in the civil and military training. This, generally, happens when the cost is high or it's too dangerous for allowing training participants to use real tools in the real world.

Simulation about real environment which is made by computer, and user can have interaction with the result which shows the content of reality environment is called virtual reality. Virtual reality is an human-computer interaction format where a real or imaginative environment is formulated and the users can be connected and run that world. In the most successful virtual environment, the users feel that they really exist in the simulated world and that their experiences in the virtual world is equivalent to what they experience in the real environment.

Virtual reality can be applied in many sectors. In the engineering and scientific research, virtual environment is used visually for identifying everything happens to the physical world that is in the observation. Training for work in the dangerous environment or with expensive tools is better done by using simulation. For example, pilot practises by using flying simulation. Virtual reality may let medicals for practising the procedure of new surgery to the imitation human.

One of the senses which is often used for getting information from the environment is seeing sense. Seeing sense is used more often than others in processing information. Many psychology researches show that there are more information can be understood when it's served in the visual form than in nonvisual form.

Training by using virtual reality can reduce the cost compared with common training. Need of



expensive training tools in the real laboratory, or additional tools for training can be eliminated. The advantages of using virtual reality as training tools are; (1) reducing duration of the training in the real environment, (2) can hold a training in the very dangerous condition, (3) save more cost to the same training, (4) providing unlimited access to the expensive tools, (5) omit the cost for going to the training center, (6) cost of repairing/replacing of expensive machines can be eliminated.

CNC (Computer Numerical Control) machine is a machine which of the operating process is controlled by CNC system, that is a control system which of the controlling is done by using command in the form of alpha-numeric-code. Set of commands in the alpha-numeric-code and used for controlling machine operation of a product is called CNC program.

## 2. Discussion

Development of CNC virtual reality is done by using research and development method. As the reference of development is CNC lathe machine training type EMCO, made by EMCO Maier Austria. CNC virtual reality is developed by using Visual Basic 6 software, with Windows XP Operating System. The result is a computer program which can present physical environment visualization of CNC machine on the computer screen. Physical environment of CNC machine which is displayed is control panel, monitor, and clamping of work-piece on the machine. Look at Figure 1.

View design of the control panel is made resembling to the control panel of CNC machine TU-2A. This aims the situation and feeling of the user is same as they are in front of the real control panel of CNC machine TU-2A. Besides feeling comfortable in using that also feeling the sensation of the challenge as they use the real machine.

Not all of the function of visualized panels and buttons on the control panel can be simulated, some are only images or accessory for giving sensation of reality and interactive sensation. Switch and buttons which of the function can be simulated are:

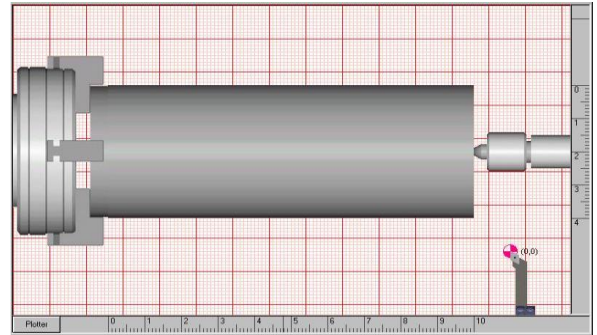


Figure 1. Display of CNC Virtual Reality on the Monitor Screen

1. Main switch. This switch can be simulated in two positions, those are "0" and "1" (ON/OFF). The function of main switch is for turning on and off the CNC machine.
2. Main spindle switch. This switch can be simulated in three positions, those are "0", "1", and "CNC". The function of the switch is for turning the main spindle whether in the CNC operating function and manual operation function.
3. Manually operating button, that is button for moving the chisel on the X and Z axis manually.
4. CNC operating button, that is Numpad for writing the code and number (NC program) which is made on the computer screen and put in the memory, and buttons functioned in the program editing, those are DEL for deleting written character, REV for moving the cursor to the previous line, and FWD for moving the cursor to the next line.
5. Start button, for starting running the written program.
6. Animation window, in this part, animation of chiseling is shown. Animation is constructed by some main components and supporting components. The main components are; (1) chuck, (2) workpiece, (3) live center, (4) and tools holder.

Typing buttons on the monitor screen (virtual buttons), those are numeric buttons "0" to "9", "INP", "DEL", "REV", and "FWD", can be functioned to write the CNC program on the virtual monitor. It goes the same as "START", and main switch ON/OFF can be operated identical to that button on the CNC machine. One of the excess of the developed product is being able to save written CNC program, recall saved program for being activated and shown on the screen.

Besides, written CNC program on the writing window of CNC program also can run. Written program is the input which can be processed into output. response or the output of the given input, is visualized as the run of CNC program reading by machine unit control. The run of CNC program can

be observed by simulating the move of slicing tools on the animation window on the computer screen.

Response from the input which is command (code) of CNC programming can be simulated by using animation of relative lathe chiseling to the work stuff. CNC programming code which can be processed and animated are still limited, it is limited only for command code which is often used in the beginning of making CNC program training for CNC machine TU-2A. Those command codes are: "G00", "G01", "G02", "G03", "G92", "M03", "M05", AND "M30". The animation result of the run of the CNC part program can be seen in the Figure 2.

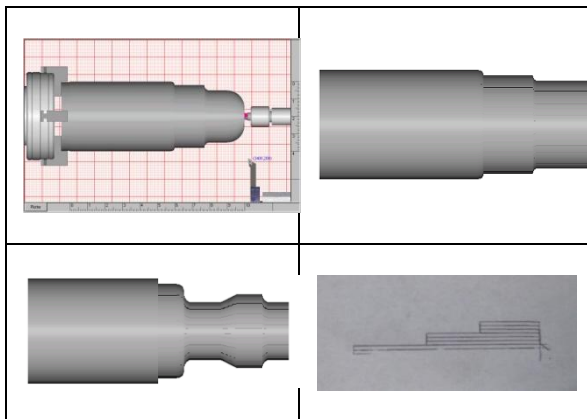


Figure 2. The Animation Result of the Running the CNC Part Program

Can be concluded that this research succeeded developing CNC virtual software, that is a computer program which can present the visual effect of CNC machine TU-2A operating principle on the computer screen. The program can initiate, translate, and respond to each input well. Respons (output) as the result of initiation and translation from the input in the form of command codes in NC program, visually in not different from the respons which is done by the real CNC machine if the machine system control gets the same input.

Although in the product development, especially the view is successful, the development produk has not been able to show the animation of program run for all command codes. Effort for developing translation of CNC program to the animation has been able to be made though it's limited to the some basic and simple codes, so the new product can be used for training basic CNC programming.

CNC virtual reality is able to fulfil the criteria as a learning media in two things; (1) product is able to give the image and visual effect of operational function of CNC machine so it can be a media which can give experience to the users, and (2) the product is able to explain clearly about the concepts of learning materials so it can help the users in understanding learning materials well.

Based on the product criteria as the media which visualize CNC machine, it can be stated that the product has good view, especially the view format, matching shape and colour, and the suitability to the control panel of the real machine. Besides, the product which is developed is also easy to be used/operated, and be able to build interaction well between the users and used media. Therefore, the product can be a tools of making CNC program training, tools of direct interaction, and tools which let the users learn independently well.

Based on the criteria as the media which can help explaining clearly the concepts of materials, it's known that the product which of the materials are developed is able to explain clearly the concepts of materials well, for the visualized materials have suitability to the learning materials of NC Machine, for example the materials about programming code, and making NC program. Besides the suitability of taught materials, there is also suitability between the chisel moving animation done by the product to the real chisel moving in the CNC machine. This causes users become easier to understand materials of programming concept, for the concepts can be directly visualized by using animation on the developed product.

### 3. Conclusion

1. CNC Simulator with Virtual CNC which can show the physical environment visualization of CNC turning machine; control panel completed by accessories and operating buttons, clamping system of work stuff, lathe chisel, operation function simulation, and the animation of machine process from the executed NC program, be able to generate students individually to be active in making NC part program and running that NC part program on CNC virtual and CNC machine simulator whether inside and outside the classroom.
2. For being used as teaching aid of CNC programming, CNC simulator which is developed has completed the requirements as education media, for:
  - a. Having view quality, navigation, operating, being able to stimulate users to keep interacting with CNC virtual.
  - b. The contents of CNC Simulator with virtual CNC are good, especially for the basic elementary of CNC programming. The quality of content, this media is able to show the simulation of tool-path as the result of the running of CNC part program on the basic program code, where the users are able to combine the program codes which is put in as well as they want for seeing the result of the given input.

- c. CNC simulator can be used as the teaching, learning, and training media of CNC programming in the class, individual, outside the classroom, and by e-learning.

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# THE EFFECT OF BLENDED LEARNING ON THE MOTIVATION AND LEARNING ACHIEVEMENT OF THE STUDENTS OF SMKN 1 PARINGIN

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## Abstract

The objective of the study is to reveal the differences of the learning motivation and achievement of the students using face-to-face learning model compared to those using blended learning model, the improvement of students' learning motivation and achievement due to the use of blended learning model, and the interaction of the effect of learning model and motivation on students' learning achievement in KKPI lesson

This quasi-experimental study used two groups: the experimental group who were taught using blended learning and control group who were taught using face-to-face learning. The population was 11th grade students of SMKN 1 Paringin. A sample of 57 students was divided into 2 groups, with 30 students as the control group and 27 students as the experimental group. The techniques for collecting the data were a test method by giving a written test and non-testing method by distributing a questionnaire.

The results of study show that there is significant difference between the learning motivation and achievement of the students using face-to-face learning compared to those using blended learning model, there is a significant increase in learning motivation and achievement due to the use of blended learning model, and there is no interaction of the effect of learning model and motivation on students' learning achievement in KKPI lesson.

**Keywords:** blended learning, face-to-face learning, motivation, learning achievement

## 1. Introduction

The government supports the concept of competence based education and the development of vocational school in a massive effort by converting the ratio of high school (SMU) and vocational school (SMK) become 33 : 67 in 2015. There are many strategies done by constructing the facilities of vocational education, such as school buildings, the tools and equipments, and the teachers' quality improvement by following the workshop and giving scholarship.

Becoming a professional teacher is something must be realized. There are many professional teachers but they do not have a proper pedagogical competence. The pedagogical competencies include the ability to held well-educated teaching learning process, to use information and communication technology for teaching learning and to facilitate the improvement of students' potency for exposing their ability. As the result of that, the need of teacher's competence in combining the material source, using good method and also mastering the material are absolutely needed.

According to American Heritage Dictionary, learning is a process to get knowledge, understanding or mastering by experience or study [8]. If learning is a process to get knowledge, students have to be encouraged for being active to construct knowledge they will have been reached

and try to find the answers from the problem they face. While teacher becomes a facilitator and motivator in teaching learning, he/she must be active to improve the interactive and meaningful teaching learning concept and method for the students. In otherwise, there are many teachers are still using the conventional method such as face to face learning. Demand has changed from the analog world to digital dimension through the massive development of information technology. At the same time, teachers are challenged to integrate traditional method and information technology for balancing students' learning style.

Ordinarily, the use of ICT has been developing in many schools, especially vocational school. The use of e-learning is one of the technology innovations that integrates information and communication technology and substance of teaching learning material. According to Naidu, e-learning is educational activity personally or in a group that is done online or offline by network or personal computer and other electronic wireless [15]. This model of teaching learning can be flexible that makes e-learning students can access whenever and wherever they want.

However, teaching learning does not rely on technology because teaching learning basically focuses on the process of interaction between teacher, students and the material. Although e-learning can be used by the students individually,

but the teacher's existence has a great meaning as an adult whose function is giving support and companion in teaching learning process [16]. In other words, face to face process becomes an important thing and it cannot be separated from teaching learning. Because of that, teaching learning that blends face to face learning model and e-learning systematically and integrated will make meaningful teaching learning process.

This study aims to know the difference of students' motivation and achievement using face to face learning model compare to blended learning model and the improvement of students' motivation and achievement due to the applied of the learning model. Besides that, this study is to know the effect of learning model interaction and motivation in improving learning achievement the students of SMKN 1 Paringin in KKPI lesson.

### 1.1 Learning Motivation

The word 'motivation' comes from Latin, *movere* that means move. Motivation also means an effort that can make someone or group of people moved to do something in order to reach the aim or to get satisfaction with their own efforts. According to Jex, motivation is like gravitation which cannot be seen visually or felt but only the effect can be seen as the result of it [11]. In a daily life, motivation has a strategic role, including in teaching learning process.

In teaching learning process, motivation can be said as a whole of energy activator in the students' selves that leads learning activity that guarantee learning performance and give direction in learning activity, so the desired objective by the learning subject can be reached [18]. If students have high learning motivation, all teaching learning process will be followed properly from the curiosity, intensity in paying attention to the explanation, reading material until finding the exact strategy to reach high academic achievement for them. Another opinion as Slavin said that motivated students are easily directed and given task; they tend to have big curiosity, active in finding the information about teacher's explained material and also using higher cognitive process to study and absorb the given lesson [19]. According to Halonen and Santrock, there are at least three cognitive factors in getting achievement, they are (1) attribution, (2) intrinsic and extrinsic motivation, and (3) goal setting and planning [7].

According to Woolfolk, motivation generally, is divided into two, namely (1) intrinsic motivation, and (2) extrinsic motivation [21]. Intrinsic motivation is internal motivation to do something for something itself, while extrinsic motivation is doing something to get something other (the way to get the objective). Extrinsic motivation is often influenced by external incentive like reward and punishment. The two factors have to get bigger

attention from the teacher, much more in the effort to improve students' achievement. Achievement motivation according to Wade & Tavris emphasizes objective and reason that are owned someone to reach the objective [20]. It works effectively to improve motivation by fulfilling these three things: (1) the objective must be specific, (2) the objective must be challenging but it can be achieved, and (3) the objective is restricted to get what is wanted, not to avoid what is not wanted. Achievement motivation encourages someone to learning hardly in order to reach the determined objective. There are at least six indicators in students learning motivation [9]:

- a. Desire and wish to be succeed,
- b. Motivation and need in learning,
- c. Expectation and goal in the future,
- d. Reward in learning,
- e. Interesting activity in learning and,
- f. Conducive learning environment.

### 1.2 Learning Achievement

Education implementation in school is done through teaching learning process. The realization does not always run well because the obstacles often happen. The obstacles can be overcome if teaching learning process is done in a discipline way. Teaching learning process persists in school points to curriculum that is formulated by those who are competence in that field. Curriculum contains a number of competency standards that must be fulfilled and become students' achievement indicators. According to Slavin, students' learning motivation is measured how far the concept or competency that becomes instructional objective or behavioral objective can be mastered by the students in the end of teaching learning activity [19].

Learning achievement is a kind of effort or students activity in mastering learning material given by the teacher in school. It is a term which has been achieved individual as an effort which is experienced directly. According to Didin Mukodim, Ritandiyono dan Harumi Ratna Sita, learning achievement is the result of teacher's evaluation through students' learning process and result that describes students' mastery in lesson material or remained relative behavior as a result of learning process experienced by the students in a certain period of time [6].

Students' learning achievement shows that they have experienced learning process and changes in getting the knowledge, skill, or behavior. Learning achievement can show someone's level of success after doing learning process in doing the changes and improvement. It is caused that learning achievement is result of evaluation in ability, capability and certain skills which is learnt for learning period. Therefore, Johnson emphasizes that a teacher should prepare a set of test that aims to

conclude students' learning achievement which consists of: (1) certain material completeness in curriculum, (2) cognitive ability, and (3) students' potency [12].

In other way, Daryanto said that there are some factors which influenced students' learning process, they are [5]:

- a. Internal factors consist of the students' physics and mental condition and students' tiredness.
- b. External factors consist of factor of family, school, and society.

### 1.3 Blended Learning

The use of information technology (e-learning) as a media for teaching learning is more often found in educational world. E-learning concept gives new nuance for education process that recently it relies on teacher. According to Clark & Mayer, e-learning is a kind of teaching learning which is provided through the use of computer [4]. Letter 'e' in e-learning means that the material given in a digital form, so it can be saved in the electronic wireless. E-learning gives illustration that the existence of information and communication technology, internet especially, teaching learning becomes opener and flexible, it happens whenever, wherever and whoever. According to Castle and McGuire, e-learning can improve learning experience because students can study everywhere

and in every condition as long as they are connected to the internet without joining face to face teaching learning activity [3].

Blended learning is a flexible approach to plan a program that supports the blend of any time and place to learn. According to Rovai and Jordan, blended learning model, basically, is a mixture of high quality teaching learning that is done in face to face way and virtually (e-learning) [17]. On-line teaching learning or e-learning in blended learning model becomes a natural extension from traditional teaching learning in the classroom which uses face to face learning model.

Through blended learning model, teaching learning process will be more effective because teaching learning process that has usually been done (conventional) will be helped by e-learning model of teaching learning. It relies on the infrastructure of information technology and it can be done whenever and wherever. Besides that, Jusoff and Khodabandelou said that blended learning does not decrease the distance between teacher and students but it also improves the interaction between them [13].

Based on proportion of content delivered online, Allen and friends divide clear categorization of blended learning, traditional learning, web facilitated and online learning [1]. It is shown in this table below:

Table 1. Proportion of Content Delivered Online

Proportion of Content Delivered Online	Type of Course	Typical Description
0%	Traditional	Course with no online technology used — content is delivered in writing or orally.
1 to 29%	Web Facilitated	Course which uses web-based technology to facilitate what is essentially a face-to-face course. Uses a course management system (CMS) or web pages to post the syllabus and assignments, for example.
30 to 79%	Blended/Hybrid	Course that blends online and face-to-face delivery. Substantial proportion of the content is delivered online, typically uses online discussions, and typically has some face-to-face meetings.
80+%	Online	A course where most or all of the content is delivered online. Typically have no face-to-face meetings.

Source: Allen, E, Seaman, J & Garrett, R. (2007). Blending in: *The extent and promise of blended education in United States*, Annual Report, Sloan Consortium

From table 1 can be found that teaching learning said to be blended or hybrid when the e-learning portion is about 30-79% combined with face to face learning. In other side, blended learning encourages teacher to change the educational paradigm from teacher-centered learning to

students-centered learning According to Carman, there are five keys to held teaching learning using blended learning model [2]:

- a. Live Event, direct teaching learning or face to face in a synchronized way in the same place

- and time or in the same time but in the different place.
- Self-Paced Learning, combining self-paced learning that enables the students will learn every time and everywhere online.
  - Collaboration, combining collaboration, both teacher and students collaboration.
  - Assessment, the planner has to be able to blend the combination of online and offline assessment both test and non-test.
  - Performance Support Materials, determining the material has been prepared in digital form, it can be accessed by the students both offline and online.

## 2. Research Method

This research is a quantitative research with quasi-experimental design. There are two groups in this research; they are experimental group using face to face learning and control group using blended learning.

Table 2. Nonequivalent Group Design

Group	Pre-Test	Treatment	Post-Test
Experimental	O	X <sub>1</sub>	O
Control	O	X <sub>2</sub>	O

O : Distribution of motivation questionnaire and written test to experimental and control group.

- X<sub>1</sub> : Teaching learning using blended learning.  
 X<sub>2</sub> : Teaching learning using face to face learning.

The research takes place in SMK Negeri 1 Paringin, Kabupaten Balangan Propinsi Kalimantan Selatan. This experiment is done in the even semester that is designed for six meetings (six weeks), from 9 Pebruary – 15 March 2012. The population are eleventh grade students in SMK Negeri 1 Paringin that consist of four class with 118 students. They are (1) XI KRA: 30 students, (2) XI KRB: 27 students, (3) XI AVI: 27 students, and (4) XI INTRIK: 34 students. All the students have same ability in computer.

The raffle technique is used to divide the control and experimental class and the other two classes are for trying out the instrument. The instrument of data collection is motivation questionnaire and multiple choice tests to measure students' learning achievement. Both instruments are given after and before teaching learning process for each group which is held six meetings. Then the data are analyzed and tested using f-test parametric and unvaried test.

## 3. Discussion

Below is the data description of the research result for each group:

Table 3. Research Data Description of Control Class

	Pre Motivation	Post Motivation	Pretest	Posttest
N Valid	30	30	30	30
Mean	89.6667	89.7667	62.7633	72.8583
Median	90.5000	92.0000	62.8600	74.2900
Mode	93.00	92.00	54.29(a)	74.29
Std. Deviation	5.86829	7.24775	10.10847	8.03806
Variance	34.437	52.530	102.181	64.610
Minimum	71.00	72.00	48.57	60.00
Maximum	99.00	103.00	82.86	88.57

Table 4. Research Data Description of Experimental Class

	Pre Motivation	Post Motivation	Pretest	Posttest
N Valid	27	27	27	27
Mean	96.7037	99.4074	62.0119	79.6848
Median	96.0000	99.0000	60.0000	80.0000
Mode	97.00	103.00	54.29(a)	85.72
Std. Deviation	6.35982	7.36551	8.70922	8.01610
Variance	40.447	54.251	75.850	64.258
Minimum	84.00	83.00	45.72	62.86
Maximum	110.00	117.00	80.00	91.43

Based on the result of normality and homogeneity test, all group data have been declared

that it fulfills the prerequisites.

Table 5. The Result of Prerequisite Analysis

Data Score	Value P to $\alpha$	
	Normality Test	Homogeneity Test
Control Group		
Pre Motivation	0,758 > 0,05 → Normal	0,166 > 0,05 → Homogen
Post Motivation	0,472 > 0,05 → Normal	
Pretest	0,560 > 0,05 → Normal	0,064 > 0,05 → Homogen
Posttest	0,696 > 0,05 → Normal	
Experiment Group		
Pre Motivation	0,594 > 0,05 → Normal	0,385 > 0,05 → Homogen
Post Motivation	0,990 > 0,05 → Normal	
Pretest	0,605 > 0,05 → Normal	0,912 > 0,05 → Homogen
Posttest	0,335 > 0,05 → Normal	
Gain Skor		
Motivation	0,124 > 0,05 → Normal	0,201 > 0,05 → Homogen
Learning achievement	0,377 > 0,05 → Normal	0,715 > 0,05 → Homogen

Table 6. Output Anova Gain Motivation Score

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	96.337	1	96.337	4.211	.045
Within Groups	1258.330	55	22.879		
Total	1354.667	56			

The result of analysis in table 6 prove significantly that there is difference in students' learning motivation using face to face learning

compared to blended learning. It can be seen from the sig.output (P) 0,045 is under 0,05 ( $\alpha$ ).

Table 7. Output Paired Samples t-Test Students' Learning Motivation

Paired Differences					t	df	Sig. (2-tailed)
Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
			Lower	Upper			
-2.70370	5.08251	.97813	-4.71428	-.69313	-2.764	26	.010

From table 7, it is proved significantly that there is an increase of learning motivation the students of SMKN 1 Paringin in KKPI lesson

caused the using of blended learning model. It can be seen from the value sig. output (P) 0,010 is under 0,05 ( $\alpha$ ).



Table 8. Mean Score of Students' learning Motivation

Face to Face Learning Model (F2F)			Blended Learning Model (BLEND)		
Pre (A)	Post (B)	B – A	Pre (A)	Post (B)	B – A
89.67	89.77	0,10	96.70	99.41	2,70
Increase of Motivation 0,10 point (0,11%)			Increase of Motivation 2,7 point (2,8%)		
<b>The increase of motivation using BLEND model to F2F 2,60 point (26x)</b>					

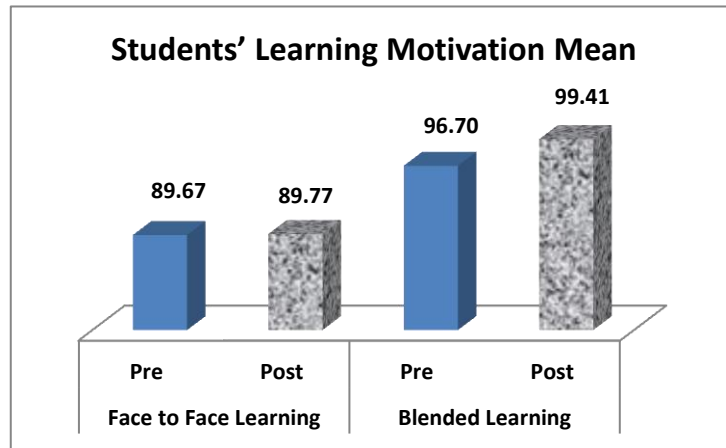


Figure 1. The Diagram of Students' Learning Motivation Mean

Based on table 8 and picture 1 can be seen that the mean of students' learning motivation for control class increase 0,10 point (0,11%), while the score of students' learning motivation for

experiment class is increasing 2,70 point (2,8%). If it is compared between the two groups, the increase of students' learning motivation in experiment class is higher 2,60 point than control class.

Table 9. Output Anova Gain The Score of Learning Achievement

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	816.047	1	816.047	8.311	.006
Within Groups	5400.212	55	98.186		
Total	6216.259	56			

The result from table 9 proves significantly that there is difference of students' learning achievement between the use of face to face

learning and blended learning. It can be seen from value sig. output (P) 0,006 which is under 0,05 ( $\alpha$ ).

Table 10. Output Paired Samples t-Test Students' Learning Achievement

Paired Differences					t	df	Sig. (2-tailed)
Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
			Lower	Upper			
-17.67296	10.11815	1.94724	-21.67557	-13.67036	-9.076	26	.000

Table 10 shows significantly that there is the increase of SMKN 1 Paringin students' learning achievement in KKPI lesson because the use of

blended learning. It can be seen from value sig. output (P) 0,000 which is under 0,05 ( $\alpha$ ).

Table 11. The Mean Score of Students' learning Achievement

Model Face to Face Learning (F2F)			Model Blended Learning (BLEND)		
Pretest (A)	Posttest (B)	B – A	Pretest (A)	Posttest (B)	B – A
62.76	72.86	10,10	62.01	79.68	17,67
Achievement Increase 10,10 point (16%)			Achievement Increase 17,67 point (28,5%)		
<b>The increase of learning achievement using BLEND model to F2F 7,58 point (75%)</b>					

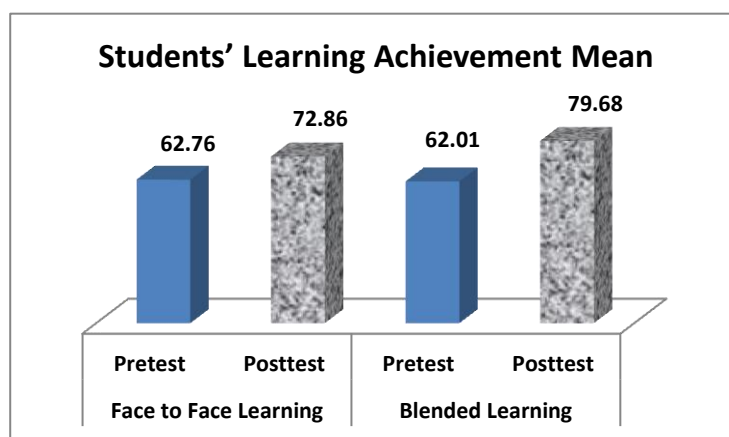


Figure 2. The Diagram of Students' Learning Achievement Mean

From table 11 and picture 2 show that there is an increase of students' learning achievement for each group. The highest increase happens to experiment class students. The mean score of students' learning achievement for control class increases significantly 10,10 point (16%) and 17,67 point (28,5%) for experiment class. If it is compared between the two classes, the score increase of experiment class is higher 7,58 point (75%) than control class.

Blended learning model can replace teaching learning principle from teacher-centered to student-centered dynamically. Blended learning can fill the lack of face to face and e-learning model because

the weakness of e-learning; the distance between teacher and students that are physically parted, can cause the lack of face to face interaction [14]. Besides that, e-learning tends to be a course than education that directs to cognitive and psychomotor ability and it pays less attention to the affective aspect. Using face to face learning, teacher can functions his/herself as a teacher and motivate directly expressively to the students. Blended learning model makes students' activities in class more varied. Students do not only rely on teacher's information but they try to dig it out from many sources.

Table 12. Test of Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1043.148(a)	3	347.716	3.562	.020	.168
Intercept	10878.780	1	10878.780	111.456	.000	.678
Motivasi	220.462	1	220.462	2.259	.139	.041
Model	796.309	1	796.309	8.158	.006	.133
motivasi * model	11.321	1	11.321	.116	.735	.002
Error	5173.111	53	97.606			
Total	16890.491	57				
Corrected Total	6216.259	56				

The next analysis in table 12 are not found the effect of interaction between teaching learning model and students' learning motivation to learning achievement. It shows that learning motivation does not influence significantly to the increase of

students' learning motivation. Therefore, the increase of students' learning achievement is caused by purely implementation of blended learning model.

Table 13. Description of Motivasi\*Learning Model Non Students' Learning Achievement

Motivasi	Model	Mean	
Rendah (R)	Face to face (F)	8.571	76.95%
	Blended (B)	15.167	
	Selisih RB - RF	6.596	
Tinggi (T)	Face to face (F)	11.619	72.14%
	Blended (B)	20.000	
	Selisih TB - TF	8.381	
<b>Selisih TF - RF (X)</b>		<b>3.047</b>	<b>35.55%</b>
<b>Selisih TB - RB (Y)</b>		<b>4.833</b>	<b>31.87%</b>

Based on table 13 can be seen that the total mean of both group's learning achievement for high and low motivated students are different. If it is discussed more, the mean trend of students' learning achievement for both high and low motivated students has increased. There is a mean difference of low motivated students' learning achievement (RB-RF) from 8,571 to 15,167

(76,95%) and from 11,619 to 20,000 (72,14%) for high motivated students. From the same table shows a mean difference between high motivated students' learning achievement to the low one using face to face (TF-RF) at 3,047 point (35,55%) and 4,833 point (31,87%) using blended learning (TB-RB).

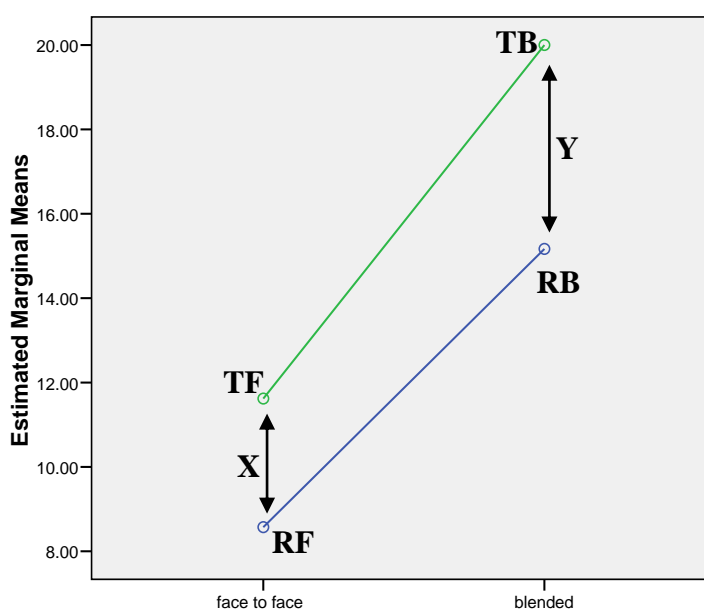


Figure 3. The Graphic of Interaction of Learning Model and Motivation on Students' Learning Achievement

Picture 3 is shown the skewness diagonal line TF-TB and RF-RB which is formed by the two groups seen to be parallel but it doesn't squeeze.

Besides, the difference TF-RF (X) and TB-RB (Y) in picture 3 is not relatively different.

According to Herminarto Sofyan dan Hamzah B. Uno, motif is a potential power for arising action [9]. In picture 3 is shown how stimulus in the form of teaching learning model has increased both groups' motivation to study, but the second group motif tends to produce potential energy which is relatively same TB-TF = 72,14% and RB-RF = 76,95%). The group of low motivated students cannot response maximal in the form of teaching learning model in order to reach the same learning achievement or more than other group of high motivated students. It can be seen from the difference of the two groups' learning achievement for both treatment (X and Y).

Based on attributive theory, there are three dimensions that influence the attributive characteristic: (1) locus, (2) stability, and (3) controllability [21]. The teaching learning model that is implemented to the two classes is stable external stimulus and the uncontrollable response. Therefore, the formed learning motivation caused by the effect of the blended learning implementation does not influence significantly to the students' learning achievement increase. The students' learning achievement is significantly caused by the treatment given to the students that is the implementation of teaching learning model.

In controlled theory (cybernetics), it is explained how individual do control to every accepted stimulus in accordance with set point in himself [10]. Every stimulus is responded in accordance with the set point for each individual. Both groups of low and high motivated students respond the stimulus in form of teaching learning model in each set point. It can be illustrated from picture 3 that there is set point that can lead achieved motivation to the two groups. High motivated students have been used to the learning activity and achieved motivation so they tend to defend their position while low motivated students have same behavior without willingness (set point) that is higher than the best. According to Wade & Travis, achieved motivation will produce learning achievement increase which is formed both intrinsic and extrinsic as the result of teaching learning model with the ability to demonstrate the activity [20].

Therefore, teaching learning model implementation that influence significantly to learning motivation increase becomes the main value for the following response in the form of students' learning achievement increase. Yet, we have to realize that motivation is complex psychological factor. According to Herminarto Sofyan and Hamzah B. Uno, the strongest motivation is intrinsic motivation than extrinsic one [9]. The same opinion, Woolfolk in Educational Psychology states that teaching learning process have to be able to create students' intrinsic motivation by connecting students' interest and

supporting their competency development [21]. Besides the implementation of teaching learning model to improve motivation externally, teacher has to seek that intrinsic motivation should be developed because it can give the strongest power to the students' potency development becomes an ability.

#### 4. Conclucions

Based on the research result, it can be concluded:

- a. There is a difference in learning motivation significantly between the class that use face to face learning and blended learning model.
- b. There is a difference in learning achievement between the class that use face to face learning and blended learning model.
- c. Students' learning motivation increase significantly because of blended learning model implementation.
- d. Students' learning achievement increase significantly because of blended learning model implementation.
- e. There is no interaction effect of teaching learning model implementation and motivation to students' learning achievement. Therefore, the increase of students' learning achievement purely influenced significantly by the teaching learning model implementation.

#### 5. Suggestions

From the result and the discussion have been explained before, there are some things that can be suggested:

- a. Teacher needs to improve the competency mastery of information technology especially related to e-learning as a teaching learning model which can improve students' learning motivation and achievement.
- b. Teacher needs to improve the ability to plan teaching learning process by combining face to face model and e-learning in order to get the optimum result.
- c. Blended learning model has been proved to improve students' learning motivation and achievement. Therefore, the school needs to support the implementation through workshop for teachers and provides the facilities to support that kind of teaching learning model.
- d. The need of information technology is a must in a modern teaching learning activity. Therefore, many teaching learning improved efforts especially for vocational school students that are done by all related parties cannot be parted from it.

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- d. All parties that I cannot mention one by one.

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# WORK BASED LEARNING (WBL) AT VOCATIONAL EDUCATION

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## Abstract

Vocational education learning needs Work Based Learning (WBL), as a result of the graduates are not prepared to work for a limited mastery of knowledge and skills. WBL goals in order to directly prepare graduates to work in accordance with the discipline being studied, without having to go through the stages of training again. WBL is for (1) students, (2) employers and (3) institution of learning.

Anatomy WBL: (1) WBL is a key element in learning, (2) activity WBL and learning resources include: (a) a classroom setting, (b) learning institution based businesses, (3) planning of work-based learning experience, as a two-way bridge between the classroom and the workplace, (4) the role and responsibility, (5) implementation, (6) evaluation program with continuous review and program evaluation, (7) socialization, focuses on three aspects: (a) promotion, (b) the construction work, and (c) designing a tool of socialization. (8) internship gives students the opportunity to: (a) to observe the world of work and develop job skills, (b) obtain credit outside the classroom, (c) gain work experience in a career field, (d) explore career options, (e) to learn the terminology of work, work climate, and business / industry protocol, (f) develop skills in the chosen career field, (g) cognitive map WBL.

Conclusion: (1) WBL is a learning experience for yourself as a student worker in industry, (2) WBL can be implemented in high school education level, D3 and S1, or even on non-formal education, (3) forms of WBL include: the production unit in learning institutions, an internship in the industry, career development program, co-operative, (4) implementation of WBL curriculum can be applied in formal learning institutions, (5) there is a link between vocational education and the workplace. (6) The transition from learning institutions to the workforce must have the support resources

**Keywords:** Work-Based Learning: vocational education.

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## 1. Introduction.

One fundamental question in the process of learning at vocational education. Why should "Work Based Learning (WBL)" Work-Based Learning?

Many graduates are not prepared to work because of their mastery of knowledge and skills are very limited. One reason is the applied learning model does not quite fit in the bridge between education and the workplace. Prospective graduates during the study less or even not at all familiar with the world of work in greater depth, although the curriculum has been formulated within the concept of work practice, but its implementation is far from the concept of working in the real world.

Through WBL, graduates are invited to understand the actual working world. According to this concept of prospective graduate truly prepared for work. They are exposed, directly involved to understand, try, evaluate the actual working world. Models of WBL is very much, among others: (1) internships, (2) industry work practices, (3) sandwich, (4) management of production units, (5) cooperatives and others.

The hope with this model of prospective graduate after graduating from the institute to learn, they can directly work on the job in accordance with the discipline being studied, without having to go through the stages of training again.

Some of the advantages of WBL model is: (1) For students (learners): study in institutes of learning; there is an academic concept; professionals in technical expertise; refers to job competence and basic skills; establish a clear link between education and employment; career opportunities; identify and analyze personal needs, interests, and abilities; identify and analyze potential opportunities in various career fields: making decisions and plans for achieving goals; improve post-graduation job prospects, develop attitudes and practices of positive work habits; understand the expectations in the workplace; motivated to stay in school; reduce the costs of education, establishing contacts for future professional work; (2) For Employers: help a skilled and motivated employees; improve employee retention; reduce training/recruiting costs; enables organizations to develop new projects with the help of students; encourage

involvement in the process of curriculum development; provide opportunities for workforce development; offers the opportunity to provide community service; (3) For Schools (learning institutions): expand the curriculum and learning facilities; improve the ability to meet the needs of diverse student populations; provide opportunities for individualized instruction; to contribute to the development of staff; make education more relevant to the learners valuable; improve learners retention; reduce overcrowding by utilizing learning beyond learning institutions; create a climate of collaboration and cooperation; encourage respect and tolerance between different groups; build a more productive economy; build confidence in the system of institutions of learning.

## 2. Structure and Anatomy of WBL

### 2.1 Definition WBL

WBL is defined as a sequence of coherent training of vocational training and work experience that involves actual work experience and connect classroom learning with work. One of the key elements that lead to successful learning institution for career-based employment system is studied. Learners should have access to a variety of developmentally appropriate work with the learning experience. Learning institutions and the leadership of labor organizations need the flexibility to develop a container learners studying for career development. Work-based component may include a variety of activities including false work (semi permanent), non-company-based learning, entrepreneurship programs, dual enrollment, mentorships, career paths, and service learning to name a few. Learning strategies out-of-school, paid internship with or without pay by the agency work while studying. The main focus of any WBL experience is that in it there should be an offer of academic studies, professional/technical skills, and related work experience. The approach adopted is progressive sequential approach "feeder". It is important to provide novice learners to experience the vibrant in the future through this program. "Feeder" offers the experience of young people to expose a variety of options such as career opportunities through internships, job apparent, and career exploration workshops, all geared to the relationship between institutions of learning and working as an integration of academic and job training. Ideally, work-based learning component is delivered through a planned program related to the chosen career. Program planning is concerned with: (1) Definition of an integrated program in the curriculum, (2) Increased knowledge, skills, and abilities learners, (3) Support for learners in

achieving academic and employment, (4) Delivery system support learners to employment agencies, (5) Evaluation based on the effectiveness of programs that lead to the support to learners.

### 2.2 WBL Activities and Learning Resources

WBL cannot be separated from activities like activities at school (junior high school, senior high school, D3, S1). These activities include: (1) Classroom settings include: education professional/technical, pre-employment, work maturity, job training and readiness, career awareness and exploration, tutorial, class and project organization, simulated workplace, training in basic skills education, career academies, job simulation laboratory, integration of academic and occupational skills, laboratory work; (2) Learning institutions based business. This activity occurs primarily in the private, public, or non-profit organization that includes: (a) Business: job shadowing, information interviews, mentorships, cooperative work experience, internships, practice: clinical experience, the business community, internship; (b) Connect the source and system support. These resources and support systems to help link the site with workplace learning institutions which include: career guidance and placement, data base employment agencies, business partnerships, work-based curriculum, professional associations.

### 2.3 Work Experience-Based Learning Plan.

Planning is very important that everyone in society must understand the mission of the initial WBL. Education community needs to think about WBL as a two-way bridge between the classroom and the workplace where learning institutions and communities to work cooperatively. WBL can occur at the location of school (junior high school, senior high school, D3, S1 and non formal education) and the actual jobs. This requires a coherent sequence of activities to prepare learners for WBL goals effectively and efficiently. Can be described schematically as follows:

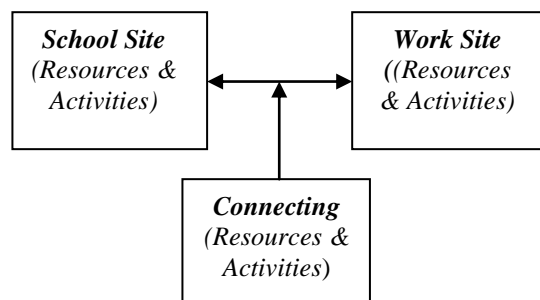


Figure 1. Two-way bridge between the classroom and the workplace

Role and responsibility educational institutions, among others: (1) provide classroom instruction which support WBL curriculum, (2) school personnel should work to encourage success for the sake of the relationship between learners and employers and provide appropriate support services. Services include: orientation of learners and employers; develop work sites and placements; promote WBL, a visit at work to monitor and evaluate the progress of learners, conduct orientation classes that may include pre-employment, work maturity, job readiness training, counseling learners about work and career paths, help the learner with questions and forms related to employment, working with learners to develop measurable objectives, assess the performance of learners in learning institutions and in the workplace, put learners, if necessary, take disciplinary action in connection with job placement, attend meetings and conferences related professionals; posting temporary jobs; complete records; maintain professional relationships with leaders of labor organizations, matching learners with leaders of labor organizations, provide basic safety training in accordance with the placement.

### 2.5 Implementation

Implementation, in general involve all or most of the participants. The outline of the implementation includes three aspects: (1) work site, (2) home and (3) schools. It really depends on the work-based learning activities. Success depends on the involvement and commitment of related systems include:

<p style="text-align: center;"><b>Work Site</b>                  Work Leadership Institute                  Supervisor                  Worker                  Mentors                  Learners</p> <p style="text-align: center;"><b>Home</b>                  Learners                  Parent/Guardian</p> <p style="text-align: center;"><b>School</b>                  Learners                  Teachers                  Program Coordinator                  Counselor                  Administrator</p>
---

Figure 2. Work-based learning activities

Successful WBL requires continuous review and evaluation program. An evaluation will provide an opportunity to analyze the program and will be useful to make changes or improvements in the learning process. Program assessment of information can be obtained from various individuals which include: former learners and learners, business leaders and former corporate leaders, teachers, coordinators, parents / guardians, business, community advisory committee members.

### 2.7 Socialization / Marketing

Educational institutions in disseminating to the public about the WBL to the public has the purpose, among others, to get support from the community and foster effective relationships with employers and community organizations. A wide range of dissemination activities to be done. This section focuses on three aspects of socialization: (1) promotion, (2) construction work, and (3) designing a tool of socialization. Promotion as defined by marketing professionals, covering four categories: (1) publicity, (2) advertising, (3) personal contact, and (4) the sale. A work-based learning marketing program that effectively take advantage of all the activities to stimulate interest and encourage people to participate in this program.

### 2.8 One form of apprenticeship WBL Learning

Models of WBL a lot of variety. One of them was an apprentice. Apprenticeship is an activity in which learners engage in learning through practical work experience sites. Internships are usually undertaken by learners at the end of the regular academic program. Apprenticeship is a structured work experience that involves practical application before the learner to learn the theory through a combination of part-time course and experience appropriate credit weighting determined by the learning institution. There is a strong emphasis on coordination and integration between the site of work and classroom learning. Credit weight and level of intensity varies, depending on the field of learning. The practice of internships can be paid or unpaid. Purpose of the internship program is to train learners to be able to master the knowledge, attitudes and skills that are closely related to the



world of work. Internships provide opportunities for learners to: (1) observing the world of work and develop job skills required, (2) obtain credit outside the classroom, (3) gain work experience in a career field, (4) explore career options, (5) learn about the terminology of work, work climate, and business / industry protocol, (6) develop skills in the chosen career field.

### 2.9 Map cognitive WBL.

Understanding the cognitive map is a concept that is used to communicate the essence of the problem and the concepts are interrelated and can

show the statement (of ideas, facts, proposals) related to the problem situation.

In an author's experience will be mapped WBL schematic cognitive map I have ever experienced in a linear way of learning in junior high school, vocational school, S1 (Civil Engineering and Planning Education) are as follows:

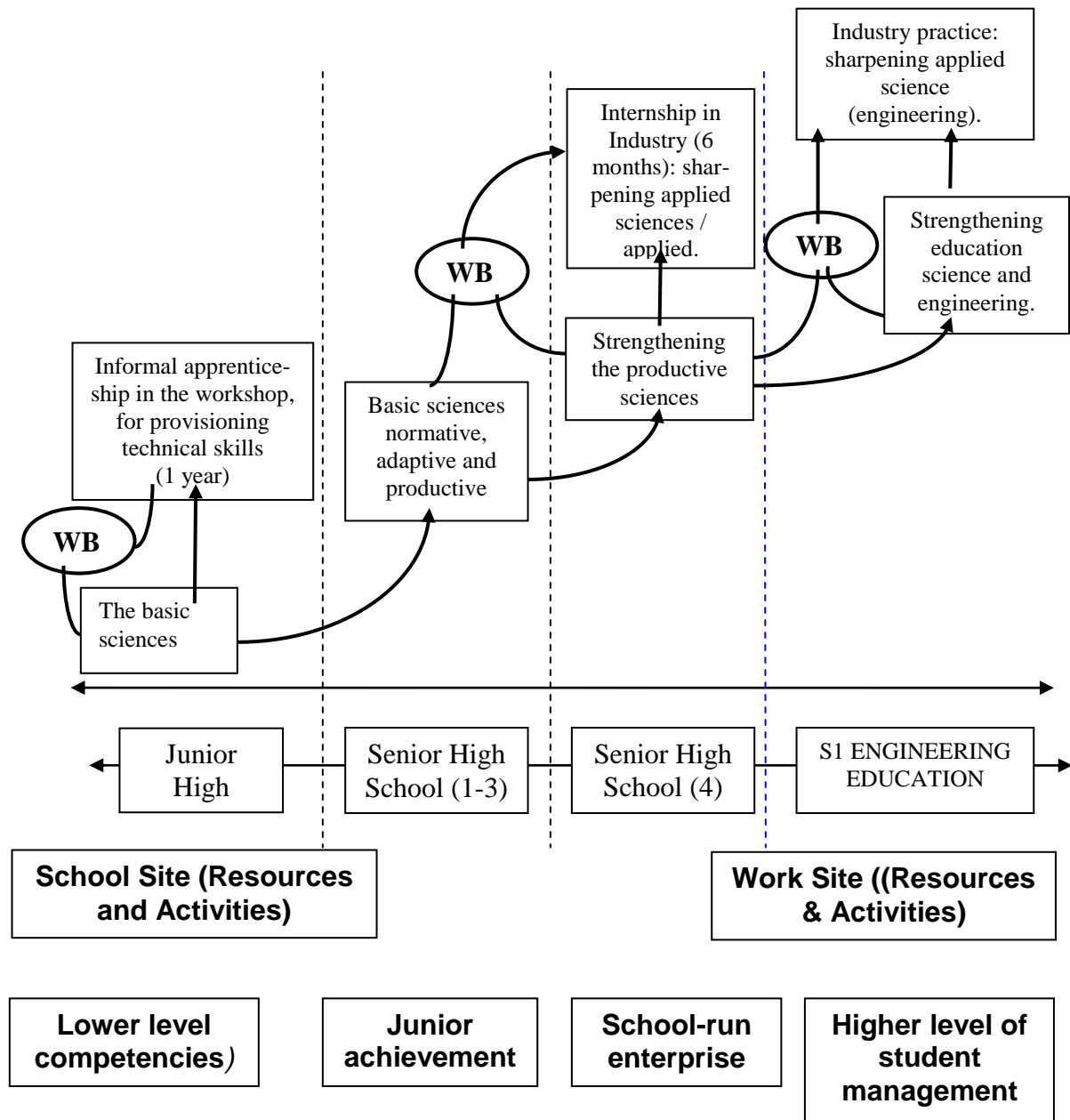


Figure 3. Cognitive Map WBL

### 3. Conclusion

- 3.1. WBL is learning in which learners experience themselves as workers in the industry.
- 3.2. WBL can be implemented learning education high school level, D3 and S1, or even on non-formal education.
- 3.3. WBL forms such as: production units in schools/learning institutions, internships in industry, career development programs, cooperatives and others. The most important place to learn to work like a real job agencies.
- 3.4. Implementation of Curriculum-Based Work (Work Based Curriculum) a variety of learning approaches applied in formal learning institutions such as project-based learning/task (Project Based Learning), WBL, experiential learning-based learning, learning-based Contextual Teaching Learning.
- 3.5. Link between vocational education and the workplace then the implementation of WBL programs should be implemented in earnest. because: (1) organizational learning requires a continuous process, (2) the rate of learning must be in line with the rate of development, (3) to make learning is a way of life, learning to be a natural, pleasant, and the difference between theory and practice of learning to make felt irrelevant, is impractical and tedious, and (4) WBL provides a combination of rational analysis, imagination and intuition.
- 3.6. Transition from learning institutions to support the workforce must have the resources, namely: (1) guidance and career placement, (2) the accuracy of prospective employees and update data, (3) advisory teams at all levels, (4) the business community, (5) work-based curriculum, (6) professional associations and departments of education.

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# THE COMPETENCE PROFILE OF SEWING CLOTHING IN VOCATIONAL HIGH SCHOOLS

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## Abstract

This research aims at finding out the profile of competence of sewing clothing of the Vocational High School students in Yogyakarta Special Region, consisting of: (1) the competence profile of the preparation of sewing clothing; (2) the competence profile of sewing clothing process; (3) the competence profile of sewing clothing results; (4) the profile of the time used in sewing clothing; and (5) the work attitude of sewing clothing.

This research is a descriptive research that describes the profile of competence in sewing clothing of Vocational High School students in Yogyakarta Special Region. The research samples are the students of Grade XII of Vocational High Schools in Yogyakarta Special Region, consisting of SMKN 6 Yogyakarta, SMKN Bantul, SMK Karya Rini Sleman, SMK Muhammadiyah Piyungan Bantul, SMK Muhammadiyah Berbah Sleman, and SMK Piri Yogyakarta. The sampling technique applied was purposive sampling. The test validity was assessed by the judgment from the experts (expert judgment) in fashion field, the teachers who conduct fashion design course in Vocational High Schools and the lecturers of Fashion Design Education Major of Engineering Faculty of State University of Yogyakarta. Inter-rater reliability was used for analyzing the reliability. The determination of competence was based on the achievement of the determined Minimum Completeness Criteria that is 70.

The results of this research show that: (1) 100% of the students obtain marks that are more or equal to Minimum Completeness Criteria that is  $\geq 70$  in the preparation of clothing sewing; (2) 82% of the students get marks that meet Minimum Completeness Criteria and 18% of students cannot obtain marks according to Minimum Completeness Criteria ( $< 70$ ) in clothing sewing process; (3) 82% of the students achieve marks according to Minimum Completeness Criteria and 18% of students cannot achieve marks required by Minimum Completeness Criteria ( $< 70$ ) in the results of sewing clothing; (4) 82% of the students achieve marks as required in Minimum Completeness Criteria and 18% of the students cannot achieve marks as required by Minimum Completeness Criteria in using sewing time, and (5) all students obtain marks according to the determined Minimum Completeness Criteria.

**Keywords:** competence profile, sewing clothing

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## 1. INTRODUCTION

Fashion design skill program in Vocational School is a part of Vocational Secondary School which aims at preparing the graduates to get ready for working. Therefore, Vocational Schools must keep being developed so that the graduates will have abilities and skills which are ready to apply in work field. With the skills on fashion design, the graduates of Vocational Schools will have a lot of chances to open job opportunity. The job opportunities for the graduates of Fashion Design Program of Vocational Schools are garment and "custom-made".

In the curriculum of Fashion Design Skill Program, the students are demanded to master vocational competences of Fashion Design. The vocational competences of the students can be found through the learning results. The learning results on skill program of making clothing are one of the competences required in fashion design. The competence measuring of making clothing can be

done through performance or assignments which form competences. To find out the competence of each student, the competence test is conducted.

The performance in making clothing was in the form of the requirement for the test participants to demonstrate their knowledge and skills according to the expected criteria and to apply them actually. The students' knowledge and skills could be known through scoring. Scoring is important because through scoring the actual ability of the test participants will be known.

The results of assessing skills are frequently influenced by the characteristics of rater. To avoid the significant measurement's mistakes, the assessment was done by more than one person as a team. Each rater assessed the same aspect. The results of assessment of each rater were compared to find out their consistency. The results of the competence test would be found by assessing the students' behaviors in making clothing. By comparing the competences achieved by the students with the standard of competence that had been determined, the students' skills would be

found. Furthermore, the results of the competence test in making clothing were arranged in the form of the competence profile to find out the competent students and incompetent students.

The purpose of this research is to find out the competence profile of making clothing on the students of Vocational Secondary Schools in Yogyakarta Special Region, including the preparation of sewing; the process of sewing; the results of sewing; the attitude and the time used in sewing.

Andono, dkk (2003: 7-10) states that competence means the ability needed to do or to implement a work, based on knowledge, skill and working attitude. A unit of competence consists of specification of skills and knowledge as well as effective application of the skills and knowledge in a position in industry/work field. The standard of competence is developed by industrial parties based on the standard/criteria of work in industry/company. The standard of competence is stated in the form of the results in work place by defining knowledge, skills, and application of attitudes needed by all works in industry/company.

Griffin (2007:22) states that "competence has been generally defined as the capacity to meet the standard of performance expected in the workplace". The competence, basically, is the description of the works that someone should do in a job. In order to be able to do the job, someone must have competences about knowledge, skill, and attitude according to the job's field. The achievement of competence is marked by the change of behaviors that can be measured covering knowledge, skill, and attitude.

The competence-based assessment is the way used by teachers to evaluate the students' performances for placement and planning of professional development (Yorkovich, 2008:1). Assessment is a part integrated in learning. With assessment, it will be found whether the learning done by the students can be achieved or not. Assessment is a process of determining the purpose of education, collecting, analyzing, and using information about the learning results of the students to make decision about program and the students'/individual's progress.

Djemari Mardapi (2004:7) proposes that the principle of competence-based assessment are: (1) describing someone's behavior characteristics effectively; (2) the assessment does not depend on others but based on someone's behavior; (3) helping to gain an effective way to think about behavior; (4) the assessment system must be accurate, economical and supportive toward the quality improvement of learning. Being accurate means that the results of the assessment must contain minimum mistakes, being economical means that the assessment system is easy to do and cheap, and it encourages schools in improving the

quality of education. Performance assessment is suitable to use for assessing the achievement of competence demanding the students to do certain tasks, one of them is making clothing. This system of assesment is considered more authentic than written test because the aspects assessed reflect more the students' actual competence (Depdiknas, 2006:7).

## 2. Research Method

This research is a descriptive research that describes the competence profile of making clothing of the students of Vocational Secondary Schools in Yogyakarta Special Region. The sample of this research is seventh grade students of Vocational Secondary School in Yogyakarta Special Region, consisting of the students of SMKN 6 Yogyakarta, SMKN Bantul, SMK Karya Rini Sleman, SMK Muhammadiyah Piyungan Bantul, SMK Muhammadiyah Berbah Sleman, and SMK Piri Yogyakarta.

The competence test of making clothing was done only if there is object (the students) and the assessment instrument of the competence test. The assessment instrument of the competence test includes the problems of competence test, assessment sheet, and assessment guideline (rubric). The problems of the competence test were arranged based on the standard of competence and basic competence of the students in a certain level. Furthermore, the course grid was made. The sample was taken by purposive sampling technique. The test was then validated by using expert judgment from clothing industry, the vocational schools' teachers of clothing design course and clothing major of Fashion Design Education of Faculty of Engineering of Yogyakarta State University. The reliability of the test was analyzed by using inter-rater. The determination of the competent criteria was based on the achievement of Minimum Completeness Criteria determined that is 70. The assessment sheet was arranged based on the materials of sewing woman's coat that is elaborated into: (1) the type of activity, consisting preparation, process, working attitude, result, and the time used in sewing; (2) the value of each activity; (3) the achievement of competence (scale); (4) score achievement; and (5) the description of competence achievement. The last part of this assessment sheet is completed by the procedure of determining score of each activity and determining of the final score of activity.

## 3. Result Finding and Discussion

The result of the test competence of making woman's coat can be described through the profile of ability of each aspect in sewing woman's coat.

### 3.1 The Profile of the Preparation of Sewing Woman's Coat

The profile of the students' abilities in the aspect of sewing clothing is shown in Figure 8. The maximum score of the aspect of the preparation of

sewing according to the value determined as amount to 10. The minimum score that must be achieved by the students according to Minimum Completeness Criteria is 7.0. The students' abilities in the component of sewing preparation show very good achievement.

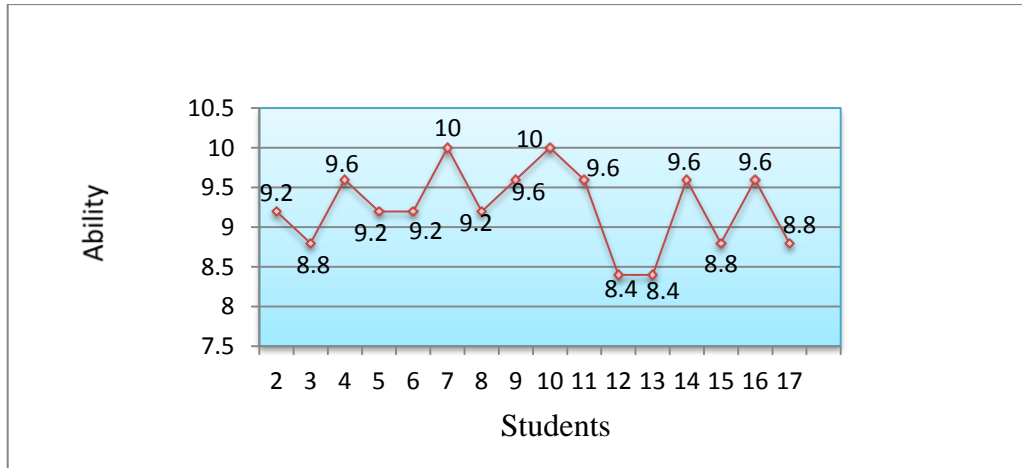


Figure 1. The Profile of the Competence of Sewing Preparation of Woman's Coat

The good achievement in the aspect of sewing preparation seems on the score obtained that is over Minimum Completeness Criteria determined. The results of the preparation of sewing clothing shows that the sewing instruments are prepared completely, the machine is tested before used, and in clean condition.

### 3.2 The Profile of the Process of Sewing Woman's Coat

The profile of the students' abilities in the process of sewing woman's coat is shown in Figure 9. The ability and skill in the process of sewing woman's coat include the activities of operating sewing machine, the application of sewing

technique, working safety, and the maintenance of sewing machine. The maximum score in the aspect of sewing process according to the value determined as amount to 35. The minimum score must be achieved by the students for the process of sewing according to Minimum Completeness Criteria is 24.5. The results of calculation show that there are 14 students able to operate and maintain sewing machine, apply sewing technique well in sewing process. There are some items of the sewing process which need to be the teacher's concern, especially the techniques such as sewing *passepaille* pocket, split, the *passepaille* buttons' holes, collar, and coat's sleeves.

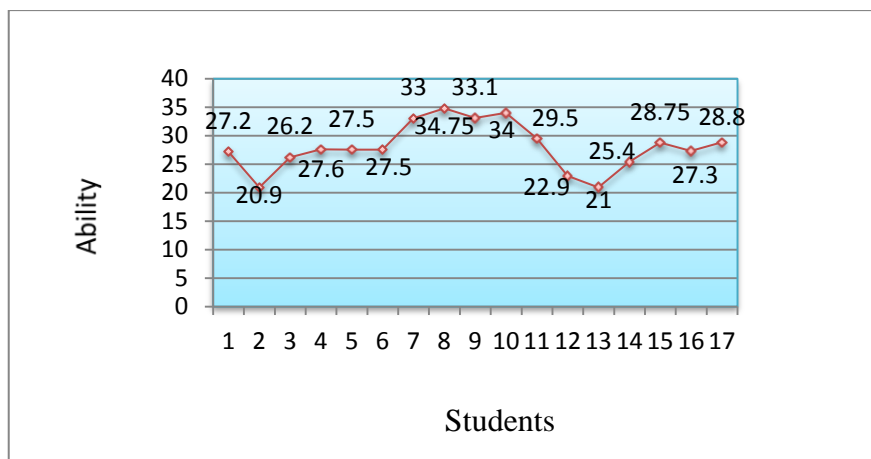


Figure 2. The Profile of the Competence of Sewing Woman's Coat

The weakness in finishing sewing *passepoille* pocket was the weak cut of triangle in both sides of pocket so that it seemed the holes and it was not neat. Some students were not able to finish the split well yet. It can be seen that the final results of the split were not even and waving.

### 3.3 The Profile of the Results of Sewing Woman's Coat

The students' abilities and skills in the aspect of sewing clothing include the activity of sewing according to the accuracy and appearance entirely. The maximum score in the aspect of sewing the coat is according to the value that is 45. The minimum score should be achieved to gain the results of sewing according to Minimum

Completeness Criteria of  $\geq 70$  if the students got score as amount to 31.5. Based on the results of calculation, the students stated as competent in the aspect of sewing woman's coat are 82% or 14 students. Thereby, the result of sewing coat is in good category.

The profile of the students' abilities in the results of sewing woman's coat is shown in Figure 10. In the ability of finishing each item of the aspect of sewing clothing are three students categorized as not competent. The students did not complete the parts of clothing according to the required measurement. Besides, the finishing of clothing seems less neat.

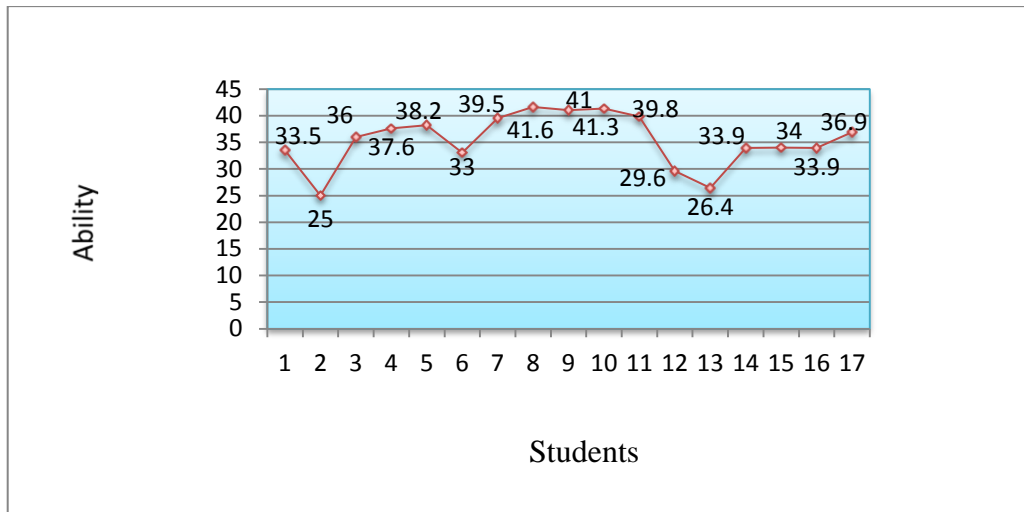


Figure 3. The Profile of the Competence of Sewing Woman's Coat

### 3.4 The Profile of Attitude of Sewing Woman's Coat

The students' ability in working attitude of sewing woman's coat is shown in Figure 11.

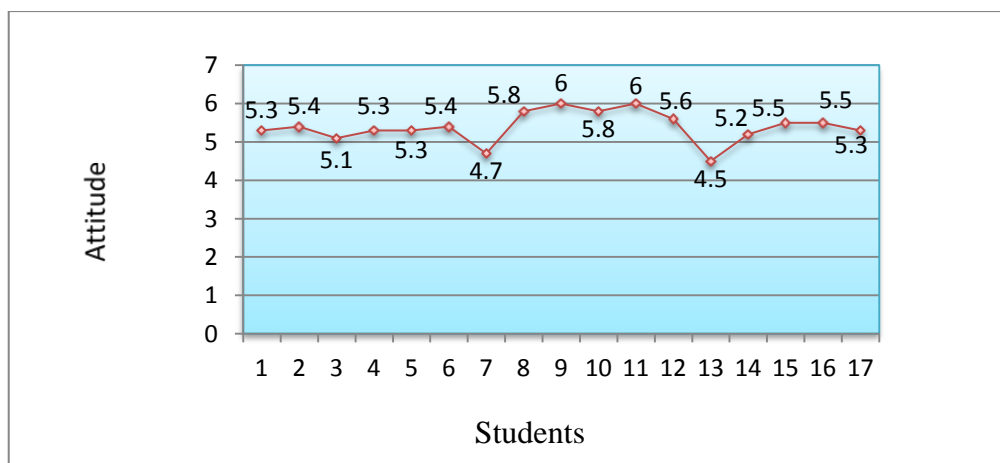


Figure 4. The Profile of Attitude of Sewing Woman's Coat

The maximum score in the aspect of attitude of sewing woman's coat according to the value of 6.0 and the minimum score must be achieved according to Minimum Completeness Criteria as amount to 4.2. The working attitude of the students in sewing woman's coat is categorized as very good. It is also shown that all students get marks according to the limit determined. The activities done by the students are preparation until final fitting, actually shows that the students: (a) are able to understand the systematics of work and able to control emotion; (b) obeyed the rules, be polite, had good behaviors, and stayed work in the work place;

(c) believe toward the work results, were able to do the job, and were willing to take the work's risk if there was a mistake.

In the implementation of sewing practice, the students show good attitude. They were discipline, calm, thorough, and serious in doing their works.

### 3.5 The Profile of the Time Used in Sewing Woman's Coat

The students' abilities in the time used in sewing woman's coat are shown in Figure 12.

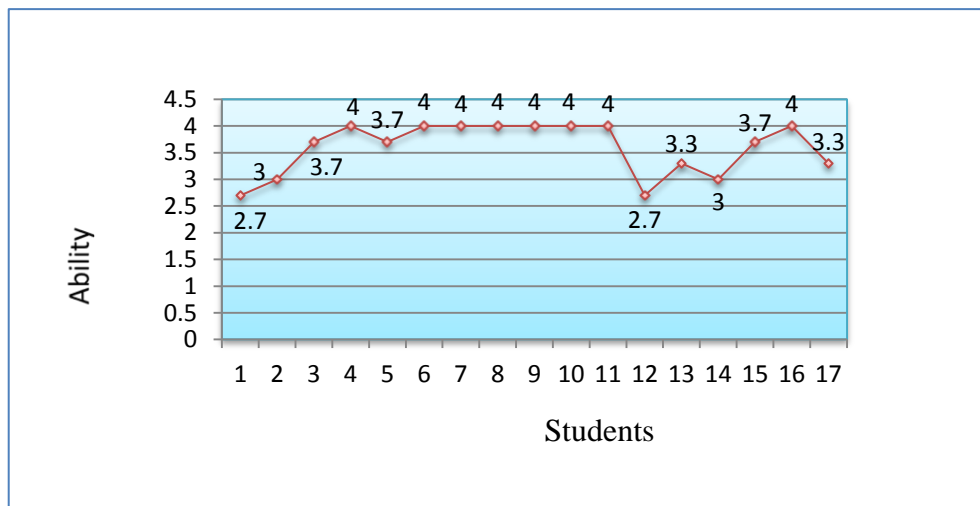


Figure 5. The Competence Profile of "the Time Used in Sewing Woman's Coat"

The maximum score of the time used in sewing woman's coat is according to the value determined that is 4. The minimum score should be achieved by the students according to Minimum Completeness Criteria is 2.8. Based on the implementation of sewing coat, the students managed the time well. The woman's coat could be completed according to the time determined.

### 3.6 The Profile of Sewing Woman's Coat

The Profile of the competence of sewing woman's coat of the students is shown in Figure 13.

The results of descriptive analysis show that from 17 participants of the competence test of sewing clothing, the students stated as competent is as 82% or 14 students. The students stated as incompetent is as amount to 18% or three students. The students are stated as incompetent if they do not meet the standard of Minimum Completeness Criteria that is 70. The failure in fulfilling the standard is because almost all items on the test did not do correctly. When it was analyzed more detail, actually incompetent students have less good background in their schools.

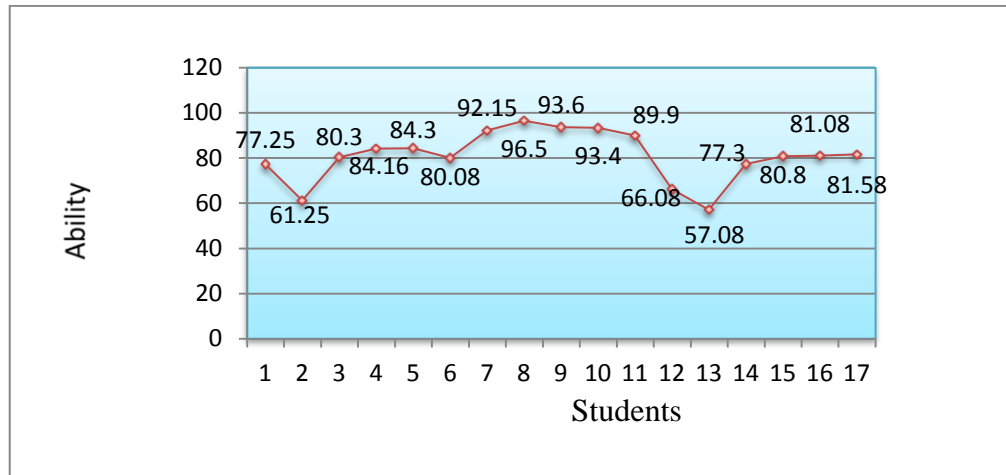


Figure 6. The Profile of the Competence of Sewing Woman's Coat

#### 4. Conclusion

The profile of the competence of sewing woman's coat shows that 82% of students are stated as competent and 18% of them are stated as incompetent in sewing woman's coat. The incompetent students failed in sewing collar, sewing *passpoille* pocket, and sewing sleeves.

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# ASSESSMENT OF STUDENT RESULT INFORMATION SYSTEM DESIGN IN VOCATIONAL HIGH SCHOOL

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## **Abstract**

This study aims to produce design software Student Assessment Result Information System based on PHP and MySQL that can manage employee personal data, personal data of students and student Report the results of learning data each semester and each year can access from every time and every place.

This type of research is the Research and Development. Methods of software development using the Waterfall Model. Software testing is done through white-box testing and black-box, as well as alpha and beta through testing by a number of experts and users. The quality factor McCall instruments used as an indicator to determine the level of proprietary software in terms of correctness, integrity, and usability, while in terms of reliability in the measurement scale using Likert Scale. Tests carried out through instrument validity and reliability testing. Instrument reliability test using Cronbach Alpha coefficient formula.

Techniques of data collection using interviews and questionnaires. The Techniques of data analysis using quantitative descriptive analysis.

The results of the draft final-Based Information System Student Assessment of PHP and MySQL is a blueprint for the management of employee personal data, personal data of students, and student report the result of learning data each semester and each year data.

**Keywords :** Information System, Student Assessment, PHP, MySQL

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## **1. Introduction**

With the era of growing globalization, the need for information even more important to also include those who pursue the world of education library. So if there is a lack of management can lead to the launch chaos in controlling the flow of information, re-making and planning technical and strategic. For that we need a system that relied upon to support the need for such information. One system word good when will facilitate all the processes, one by way of a data processing system computerization. The use of computers as Data processing equipment can be said that Best for now, because it can increase the pace of work so time and energy efficiency can be achieved in process the data.

In the operations of a school, generally involves a lot of student data collection. Both a collection of personal data of students, student extracurricular activity data, the data of personality and character of students, student assessment data, and so forth. The data set is usually stored in an archive (paper) and the file on your computer. Data storage on a computer can use Microsoft Word and Microsoft Excel, but most of the data storage is still done manually. In addition to student data, the operational activities of a school employee data set also involves working on it. Management of

employee data even this is still done manually, mostly stored in the school archives. The main management of the students at the school, is still done manually by the classroom teacher. The delivery of value to parents who are still in the form of report cards submitted by the end of each semester. When the homeroom teacher or charging a report card, teachers will find the data value of each student one by one, adding the average value, and rank of each student, then teacher can fill in the student report cards. Such a way that would be very inconvenient and time-consuming and labor. Likewise, the student profile data management and employees at the school, is still done manually. So when searching a data, will require a long time. Along with the development of science and technology today allows all areas of human life can be done with the help of computers. Similarly, the data management of the students in a school. By utilizing database software and internet access, data profiling and the students can be accessed quickly by the principal, teachers, and students themselves so that the efficiency of energy and time can be improved.

## **2. Study Literature**

In the preparation and design information systems, we must use basic concepts as well as

reference and basis, where such concepts a theory that relates directly with the design of information systems and existing problems in a organization. Here is a theoretical basis theories that describe the author use in systems analysis and design to be designed.

### 2.1 Model Waterfall (Waterfall Model)

At the waterfall, there are several schemes which stages of each explanation of the stages are as follows:

- a. Requirements analysis and definition Service, programming language, and objective system determined in consultation with user system. These requirements are then defined in detail and function as a system specification.
- b. Software system design and Dividing the system design process requirements in the system hardware or software. Activity These define the

system architecture overall. Software design involves the identification and description abstraction system software fundamental and relationship.

- c. Implementation and Unit Testing At this stage, the design of the device realized as a series of software program involves the testing unit verify that each unit has meets the specifications.
- d. Integration and System Testing Program unit or individual program and tested as a system integrated in complete to ensure that system requirements have been met
- e. Operation and maintenance: operates the program in their environment and perform maintenance, such as adjustment or change because adaptation to the actual situation.

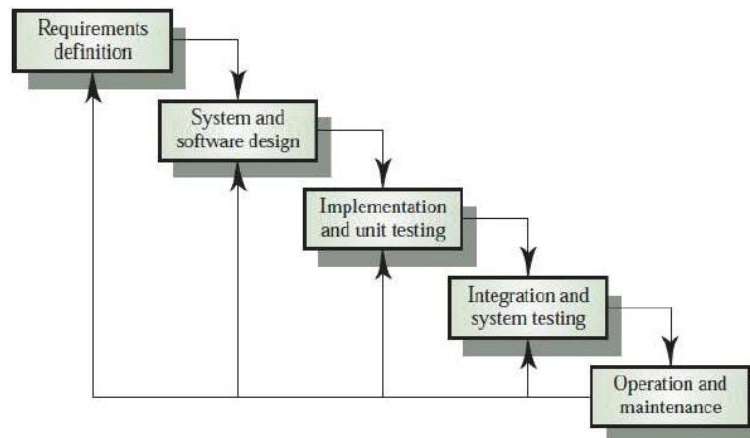


Figure 1. Model Waterfall ( Ian Sommerville, Software Engineering, 2005 : 43 )

## 3. Implementation

### 3.1 Requirement Definition

System requirements are contained in the application software the student information system is :

#### a. Information need

Table 1. Information Need

No.	Information	Goal	Use
1	Access to data processing according to the "Admin Utama" Privileges	Main Administrator	When there is new data that needs to be processed and the required
2	Access to data processing according to Administrator Privileges	Administrator per section	When there is new data that needs to be processed and the

	per Section		required
3	Access to data processing according to the Access Rights as a lecturer (Guru)	Lecturer (Guru)	When there is new data that needs to be processed and the required
4	Search the required data values	User	When Searching Data

### b. Application Need

Application requirements that must be met in the process of making the student information system using PHP software interface are :

1. User

Displaying search results data is a student profile information and the corresponding half of the subjects that have been taken.

2. Main administrator

Enter new data, old data editing as needed, and delete data if it is not necessary.

3. Per Section Administrator

Enter new data, old data editing and deleting data corresponding access rights of each section.

4. Lecturer

Enter new data, old data editing and deleting data corresponding access rights of each section. Data is entered in the form of the data values and personality.

5. Server

Control and data processing according to search data in the form of student profile information data and the student.

### c. Software Need

Software needs in an information system is the need of the accesses necessary to perform the input data, storing data, recording data, and process data. And access needed to perform data retrieval by the user.

Table 2. Description Need

No.	Description Need	Keterangan
1	Menu utama	The Main Menu of Application
2	Login	Login for Administrator Utama, Administrator per Bagian, Guru, and User
3	Logout	Logout for "Administrator Utama", "Administrator per Bagian", "Guru", and "User"
4	Setting database	Perform the addressing database
5	Ganti password	Change password for "Administrator Utama", "Administrator per Bagian", "Tenaga Pengajar", dan "User"
6	Hak akses	Grant permissions for "Administrator per Bagian" and "Guru"

7	Keluar	For close the application
8	Data siswa	Data processing of student profile data
9	Data orangtua siswa	Data processing of the data profile of parents
10	Data pegawai	A data processing school employee profile data
11	Data wali siswa	Data processing of student profile data guardians
12	Data kelas	Data processing of the data class
13	Data tahun ajaran	Data processing of the data of the school year
14	Data mata pelajaran	Data processing of the data subjects
15	Data ekstrakurikuler	Data processing of data in the form of extracurricular
16	Data pengguna	Processing of user data
17	Data wali kelas	Data processing homeroom
18	Data pengajar	Data Processing for teacher
19	Data guru ekstrakurikuler	Data Processing for extracurricular teacher
20	Data jabatan	Data Processing for position
21	Data KKM	Data processing for Minimal criteria for provision
22	Data catatan	Data Processing for student academic record
23	Data kepribadian	Data Processing for personal
24	Data kepribadian siswa	Data Processing for Student Academic Record
25	Data nilai	Data Processing for Student Grade
26	Data nilai ekstrakurikuler	Data Processing for Student extracurricular grade
27	Data siswa naik kelas	Data processing grade students who have

### 3.2 System Desain

System design is done by a structured approach (procedural). Structured approach is a structured formal approach to solving problems in business activity into smaller parts that can be arranged and relate to then be put back together into a single unit that can be used to solve the problem.

#### 3.2.1 Proses Desain

##### a. Data Flow Diagram Level 0

Context diagram describes the sources, processes and outcomes of public information.

There is an outside party or the environment that provides input and output there is the party receiving the application. In detail, the context diagram Students Value Information System is shown in Figure 2, the data flow diagram level 0 or memeperlihatkan context diagram that the value of Student Information System application consists of four processes. The user process as the Main Administrator, the Administrator user as per section, the user process as Lecturer, and the user as User. There are differences in each individual user, as the Main Administrator, has full access

rights in doing pegolahan data. As per Section Administrator and Lecturer, can perform data processing in accordance with the permissions

of each section, while the user is only able to process data search report card.

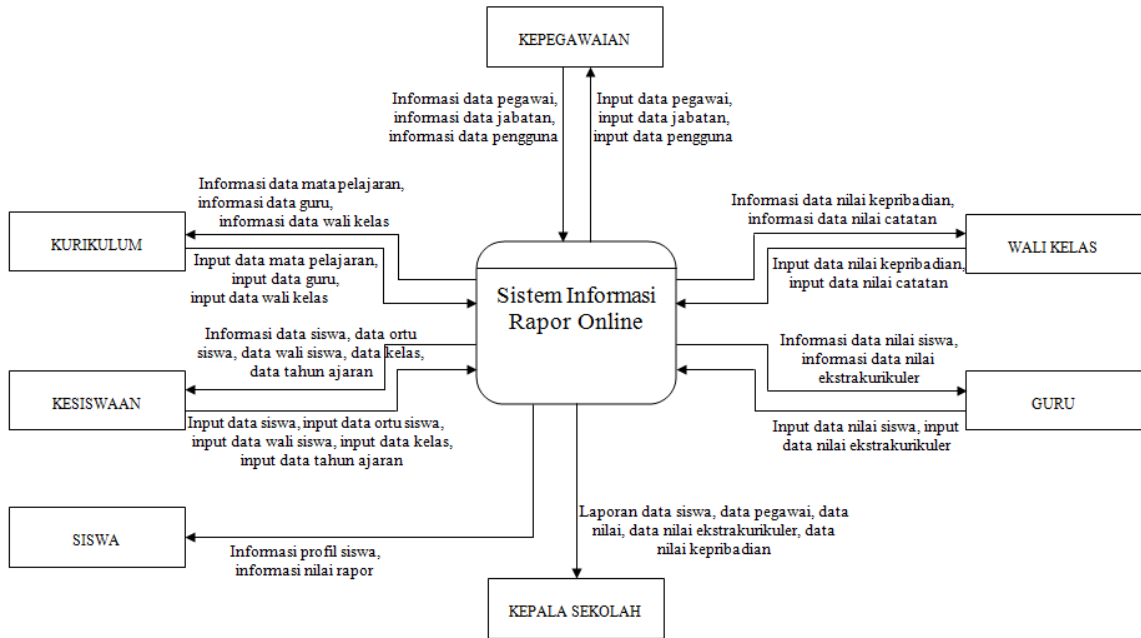


Figure 2. Data Flow Diagram Level 0

Figure 2 shows that the application of data processing is divided into 6 sections which will be split again in the Level 1 DFD, the DFD level 0 is universally explained that there are two processes

that occur to the data, ie data processing and reporting process by Admin (Administrator), while the user is only able to process the data without any data reports.

Definition of all processes that occur in level 0

b. Data Flow Diagram Level 1

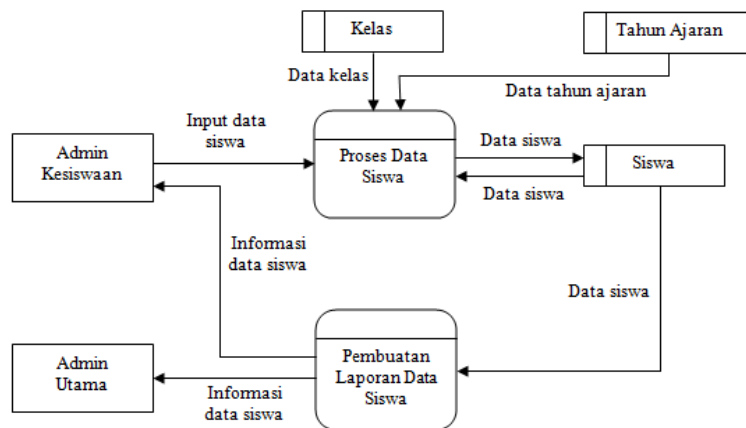


Figure 3. Student data processing

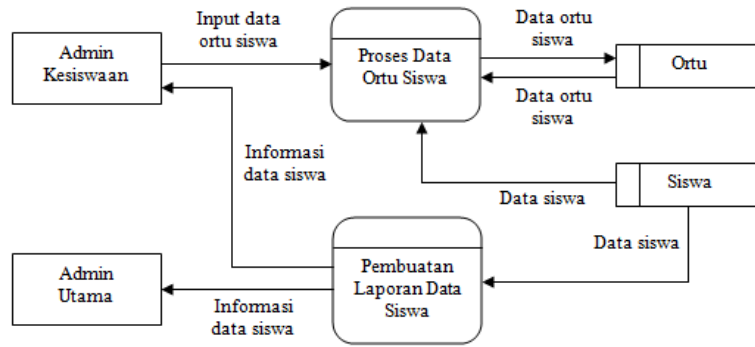


Figure 4. Student's Parent Data Processing

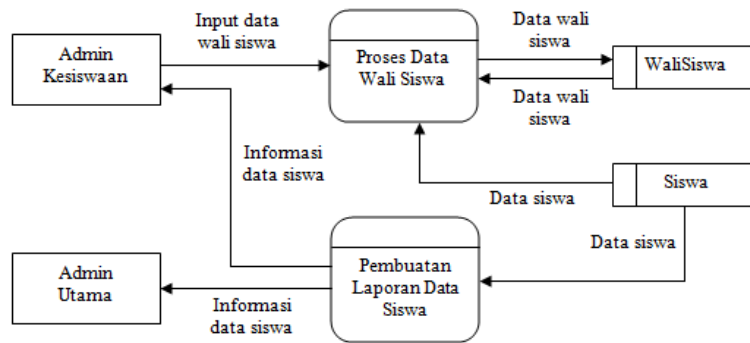


Figure 5. Data Processing For Guardian's Student

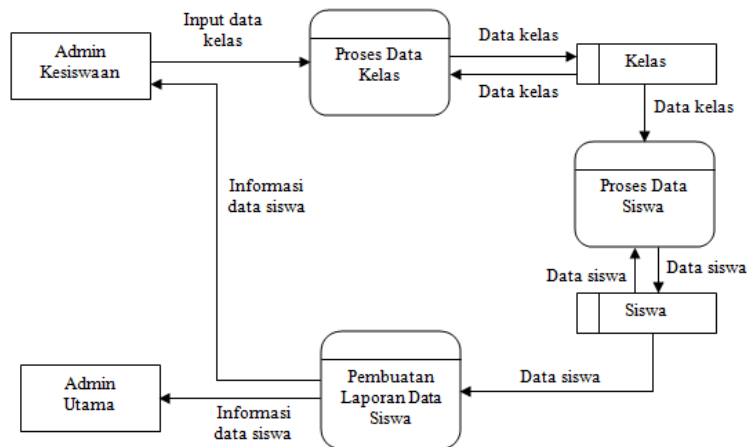


Figure 6. Processing Data for Class Data

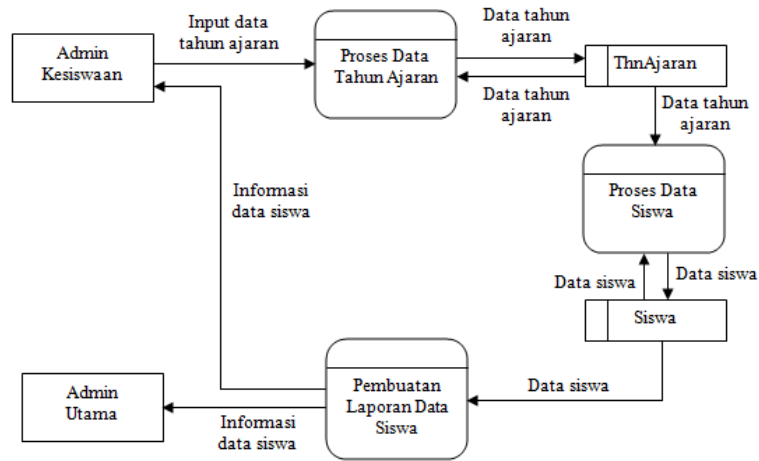


Figure 7. Processing Data for Student Data Report

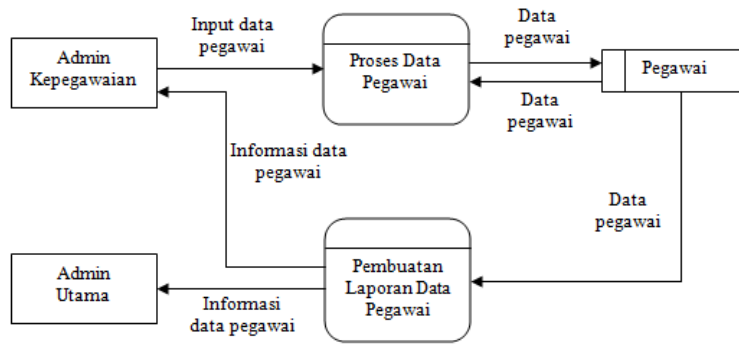


Figure 8. Processing data for Report employee data

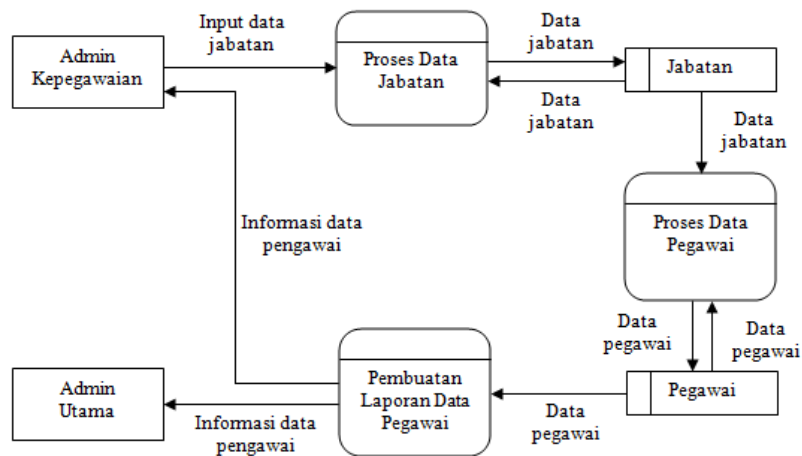


Figure 9. Data Processing for application's user

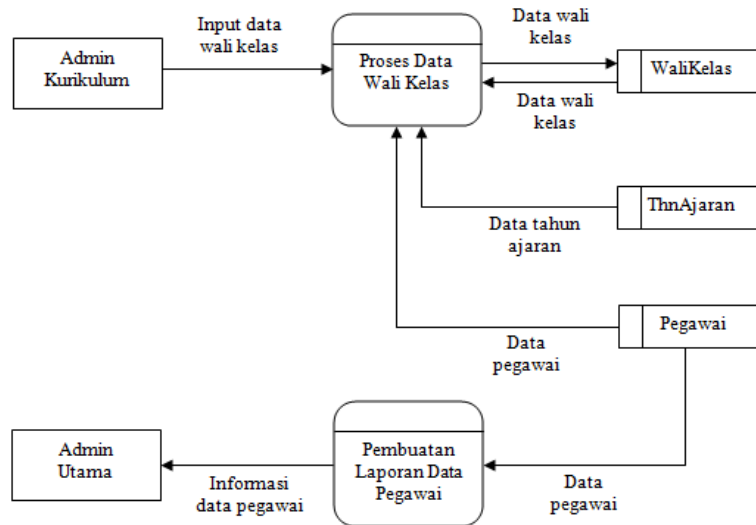


Figure 10. Processing Data for Student's homeroom

#### 4. Conclusion

The design of the resulting system can provide faster, more precise and accurate than the old system, as well as providing ease of library staff in taking the necessary decisions. Data storage to form a file has several advantages such as:

- a) For faster access and space used is not too large.
- b) The errors arise frequently performed by the system can be reduced.
- c) Ease of service in making the report.
- d) Reports can be made with a variety of formats easily, quickly and accurately

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# THE EMPOWERMENT OF VOCATIONAL HIGH SCHOOLS (SMK) BASED TOTAL QUALITY CONCEPT

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## Abstract

Empowering is one of the main functions of management, like, planning, organizing, controlling and other functions of management. In vocational high school, this implies that empowerment is a continuous and connected duty and responsibility of the headmaster.

Total quality management in educational field is a continuous or connected improvement process conducted by the headmaster in order to achieve the qualified schools. The headmaster as the highest management plays an important role in the implementation of total quality management (TQM) in the school. The concept of qualified school is a concept that needs to be considered by the headmaster. The headmaster needs to understand TQM as a philosophy, a method, a technique, and a management strategy to improve the quality of the school, because the performance of school organization is always assessed by the society nowadays. The headmaster and teachers needs to understand the society's expectations towards the school. It is related to how to create an effective school in order to achieve the expectations of the society as the customer of education.

**Keywords:** SMK and Quality concept

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## 1. Introduction

Globalization leads to the tight competition among several fields that previously can be protected by the country regulation. This condition requires all organizations or institutions to be able to make qualified products. One of the forms of organization is an educational institution which also has tighter challenge and competition. By the rapid environment changes and the development of science and informational technology, a sensitivity of the educational institution in responding the upcoming changes is required in order to be existent in the global competition. That is why only the flexible and adaptive educational institutions which can compete in a tight global competition.

Vocational high school (SMK) as one of vocational education institution aims at preparing students to enter the workplace and developing professional attitude, that is preparing students in order to be able to choose their carriers, to compete and to develop themselves in order to achieve a better life. Furthermore, all efforts are needed to improve the competitiveness of the alumnus and other academic products. They can be achieved through the improvement of education quality. In order to achieve the education quality, Total Quality Management (TQM) is needed as a concept containing of good values for developing the organization in all fields. TQM has been widely adopted in several fields, especially, in business and economics, but values existed in quality

management can be implemented in educational field, such as at school.

The dynamics of organization can be seen from the creativity and initiative of people around it. If a certain vocational high school and human resources in the school expect a better performance quality, they should find out the way to benefit creativity and initiative potential in the human resources. The ways to benefit the potentials are basically actions of empowering by activities to improve the ability through the improvements of science and skills, to give authority or opportunity to initiate, to create, and to give motivation in order to participate in achieving a more qualified school performance.

## 2. Vocational High School Empowerment

From the organization's point of view, empowerment is a process to support the employees in determining the goals of their works and to give bigger authority to do decision making in their work range. The goal of empowerment is focused on the improvement of involvement (job-involvement) and employees' work satisfaction to improve the quality of outcomes and services [3].

Nowadays, the empowering concept is developed wider, by the development of empowering concepts that based on the human resources' point of views. [8], Wallace and Zeffane (2001) state that in fact empowerment is the development of creating a positive "can do" mentality among employees. This mentality of

“can do” comes from the self-beliefs of the employees in their abilities to do their works (self-efficacy). It is created through the process of developing employees’ competences, giving supports and persuasions continuously, as well as emotional and modeling supports from the leaders in their daily activities.

Besides that, it has been stated that empowerment is an activity focused on giving authority (liberating), not controlling, to the employees to actualize their energy and to balance (balancing) the achievement of the employees’ personal goals (self-development, welfare, etc.) and goals determined by the organization (productivity, efficiency, profitability, etc.).

In line with those concepts, [2] states that employees’ empowerment (individual empowerment) is giving opportunities and supports to the employees to empower their talents, skills, resources, and experiences to accomplish their works on time. The results of the implementation of the concept in several companies are the improvements of the efficiency and quality in production and services.

Schools need to do some efforts to improve the abilities of people around it, because improving the abilities is an empowerment action. It aims at developing the creativity and initiative of the people to try new ways in their works, so that they can give improvement and progress. In implementing TQM, institutionalizing the educational programs and trainings is an absolute decision.

According to Abraham Maslow, humans’ needs can be categorized hierarchically into five categories. They are physiology, safety, social, self-esteem, and self-actualization needs. For lower employees, the important needs may refer to physiology needs (food, clothing, housing, etc.) and safety (saving, etc.) in which they can be bought by using money in the modern life. Furthermore, duties which can give them money will be accomplished better, including duties to improve the performance quality. For middle-upper employees, the important needs are not physiology and safety anymore, but social, self-esteem, and self-actualization needs. The fulfillment or satisfaction of needs is not by using money but by using ability or self-achievement. Moreover, anything which can motivate these people can directly or indirectly improve their self-esteem. In this case, the discussion is focused on the importance of giving recognition and appreciation to people in order to do some effort to improve their performance quality. By recognizing and appreciating the contributions of the people in order to improve the quality of the school in which they are working, they feel their self-esteem will improve, and it makes them feel their efforts to fulfill their social needs will be easy. In order to

encourage people to improve their performance quality by implementing appreciation system suited to the needs of each group of individuals. Here, the emphasis should be put on the concept that appreciation is not always in the forms of money or material. Recognition and appreciation in public can motivate people to do better.

In order to encourage people to improve the quality (based on self-willingness), the people should get opportunity to act. The opportunity can be in the form of invitation from the leader or other people around them, or freedom to participate, the availability of the facilities to improve the quality, or in the form of authority to participate. Giving authority to everybody to improve their own performance quality is important to encourage their participation in improving the school quality. According to Margono, participation in an organization can be seen in the following chart.

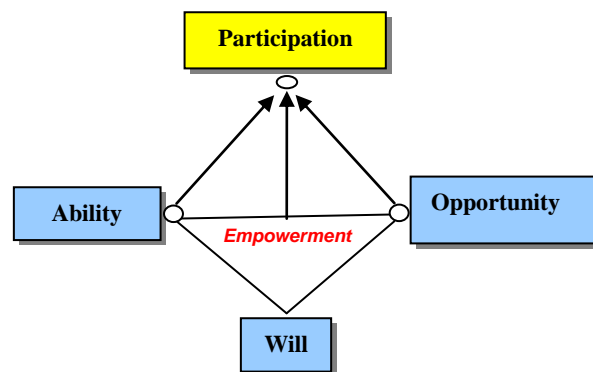


Figure 1. The Components of Empowerment

The figure above explains how participation can appear in an organization, it happens due to some factors, such as, ability, will, and opportunity. In school empowerment, it always needs to do some efforts related to how to create those three factors in everybody. The successful empowerment effort will change the work atmosphere, spirit of work, and cooperation spirit, in which they can create more qualified performance.

The human resources, such as, teachers and employees, including: technician, laboratory keeper, librarian, administration staff, receptionist, phone operator, cleaning staff, security, etc. are a team which is responsible about the overall school components in order to work better. The empowering team will cooperate to improve their performance continuously and achieve high productivity and quality levels. After the empowerment, the vocational high school will be structured well, so that people feel that they can achieve the results based on their expectations, they know what to do; not merely can do what they are asked to do and they get appreciations for what they have done.

### 3. Total Quality Management

Total Quality Management in educational field has grown since 1990s, especially after the publication of Total Quality Management in Education, written by Edward Sallis. The quality of education can be seen from two main points: focusing on educational process and educational outcome. Educational process can be referred to as qualified one, if the all of the educational components involve in the process. Educational process factors include some inputs, such as, materials, methodologies, school facilities, administration and infrastructure supports, other resources, and conducive atmosphere creation. While, education quality in the educational outcome context focuses on the headmaster's achievement in particular period.

[5] differentiates education quality into two; absolute and relative. According to absolute concept, something can be referred to as a qualified one if it fulfills the highest and the most perfect standard. It means that there is nothing better than the thing. If it is implemented in educational field, the absolute quality concept is elitist, because there are only few educational institutions which are able to offer the highest quality to the students and only few students who are able to pay for. In relative concept, a quality means fulfilling of the determined specifications and fitting for their purpose. Sallis states that a quality in relative concept is related to producer, so that the quality means the suitability of customers' specifications. In educational context, the quality in relative concept is especially related to the satisfaction of the customers. The customers or educational services consist of some components. There are at least four components [6] as follows.

Students, they can be called as primary clients or customers (primary external customers). Those who directly receive the benefits of educational services from the institution.

Clients related to people who send them to the educational institution,. They are parents or institutions in which they works, and they are called as secondary customers (secondary external customers).

Tertiary customers, those are the employments. They can be the government or the society who use the outcomes of the education (tertiary external customers).

Other customers, those who come from internal institutions; they are teachers, educational institution administration staff, and the leaders of educational institutions (internal customers). Though they are involved in the service process, they also include customers, if they are seen from the management relation. They concern with the improvement of the institutions, because the more advanced and qualified institutions the more

benefits they will get from them, both in pride and financial.

Based on those explanations, [7] adds that Total Quality Management has some characteristics as follows.

The focus on the customers. The customers are not only outside parties as the services buyers or products from the organization, but also the internal customers, who interact in one service to another in the organization.

The attention towards the development activities continuously. TQM has a commitment to never say satisfy with a certain quality. The expected quality is not only "good" but also "very good". An organization has a philosophy that a quality can always be improved.

The focus on the process. TQM focuses on the work process to create goods and services, so that the continuous development should be done.

The quality development in overall organization. TQM uses wide definitions of quality. It is not only related to the products and the final services, but also how the organization conducts the sending process, receiving complains, and dealing with complains politely.

Accurate measurement. TQM uses statistical technique to measure every important variable in the organization activities. It is conducted through comparing activities by using different standards or through benchmark activities to identify the problems, to find out the sources of the problems and to solve causes the problems.

Empowerment of the human resources. TQM places human as something that should be develop in order to develop the process. Team work should be developed in order to find and solve the problems in the organization.

It has been know that in relation to the process, TQM is based on the Deming's cycle called as PDCA (Plan-Do-Check-Act). The cycle can be seen from this following figure.

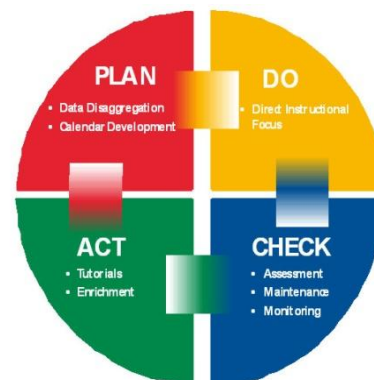


Figure 2. The PDCA Cycle from Edward Demings

All of the activities should be based on plan. Then a test should be done (Do) to avoid fatal errors. It is because one of TQM principals is emphasizing on the preventing actions than solving the problems. Data which is resulted from the

checking process (Check) will be used as the basis to make modifications. The results of the modifications will be used as the basis of the management process implementation (Act). The process is repeated, so that there is always a development process based evaluation and assessment results.

[4] explains that to achieve the educational quality, approach is needed, such as, the importance of mindset changing emphasize and empowerment of the stakeholders and institutions in educational field components, application of technology supporting the educational management system, and other strategic choices, so that, all of them can give supports in order to create good governance especially in educational field.

#### 4. The Empowerment of Vocational High School Based on Total Quality Concept

Every organization that wants to defend their existence by having those above characteristics is required to do some basic management change transformations. The history of Japan related to the growth of its industry after its lose in World War II, has proved that management system known as Total Quality Management/ Manajemen Mutu Terpadu (MMT) has encouraged Japan from the shattered country as the result of the war to be a country that is able to compete with other leading countries. Here is an effort of empowering the vocational high school based on total quality concept in order to improve the school to be qualified school that produce qualified and competitive employees in the global era.

[1], there are key components in the implementation of TQM in education as follows.

1. Getting the supports from all of the components in the school in a supervision chain.
2. The quality should be determined by the customers of the school.
3. The attention should be empasized on every process by continuously giving the idea of the improvement of school quality.
4. The school achievement should be achieved by understanding the vision, not by forcing the school regulations.
5. The school should produce students who have knowledge, skills, wise attitudes, having character and having emotional maturity.

#### 5. Conclusion

- 1 TQM is a movement based on human works in an organization or institution by always trying to achieve the best systematically, consistently, and continuously.
- 2 The implementation of TQM is the key point for every SMK to overcome the tighter

competition. The key components of the implementation of TQM at school are: getting supports from all of the school components, the quality should be determined by customers, the improvement of the school quality should be emphasized in every process continuously based on the vision understanding, and the school should produce students who have knowledge, skills, wise attitudes, having character and having emotional maturity.

#### 6. Suggestions

- 1 Schools should start to implement Total Quality Management to improve the quality of education in Indonesia.
- 2 In the implementation of TQM at schools, it should be implemented truly, so that the expected results can be achieved.
- 3 In the implementation of TQM at schools, some principals, requirements and four TQM philosophies should be considered, so that the implementation will be successful.

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# WORK-BASED LEARNING IMPLEMENTATION MODEL IN VOCATIONAL EDUCATION

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## Abstract

Vocational Education and Training (VET) in Indonesia shows significant progress in this recent 10 years. Better imaging of VET is influenced by some factors, such as policy shift of improving proportion of SMK students, intense imaging of SMK, improvement of vocational education on university level, establishment of National Competence Framework (KKNI) as well as national economic growth. By having this development, all stake holders of Technology and Vocational Education should always conserve this spirit. Reformulation of VET paradigm should be continually conducted in case of democratic society building, social capital development, and national competitiveness aspect. Those will related to policy development, curriculum restructuring, learning model improvement, program evaluation and professional development for teacher education as well as LPTK and DUDI partnership.

The strategy of learning development on VET implementation should always be conducted so that the graduates competence fulfilling market demand. The learning process on VET should apply Work Based Learning (WBL) approach and DUDI cooperation. In line with technology development, dynamic of working setting, working context challenge and higher working competence, VET is demanded to be able to anticipate and face this global challenge by utilizing capability and capacity of industrial partnership.

WBL is a learning approach that utilizes the work place and its experience to contribute to social context, academic, and learner carrier development as well as the supplement of learning activity. The experience of learning in the working area is applied, smoothed, and expanded either on class or work place. By implementing WBL, learners develop attitude, knowledge, skills, insight, behavior, habits, and associations from the experiences of both places and enabling learning process with real working context. Empirical study development of Ro-Ter model (*Rolling dan Terpadu*/Rolling and integrated) in vocational learning of Automotive Diploma III can be developed on VET implementation especially Automotive Engineering Education in LPTK.

**Keywords:** work-based learning, implementation model, Automotive Vocational Education

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## 1. Introduction

Innovation on how education should be conducted has to be continuously carried out by the vocational education practitioners in order to achieve the competitive advantage to answer the challenge of high-quality education. Challenge in a working environment is changing rapidly due to the advance technology and the competition among the educational institutions themselves. This challenge demands that the vocational education institutions to adapt and utilize their capability in dealing with that challenge. In focusing as an agent of change, these vocational education institutions can utilize the sources they have and also utilize the partnership networking with the third party as accumulation of source in conducting the education. Innovation can be described as a process where management, professional staff and any other community in that

institution are flexible (Dyer & Singh, 1998). This condition is in line with the process of education held by the vocational educational practitioners where contextual base, which try to bridge the school education with the industrial field. Contextual teaching and learning (CTL) in vocational education is an approach that "connecting the content students are learning with the context in which the will be used. Connecting content with context is important in bringing meaning to be learning process (Bern & Erickson, 1998).

Developing the implementation of vocational education should always be conducted by its organizer in order to improve the graduates' quality in order to fulfill world market challenge. Its challenge and the working competences are always improved in the line of technology development. In

addition, the work place dynamic requires vocational education institution to be able to anticipate and to deal with the change by utilizing any existing capabilities. Various signals from the quality of education have been the problem background in managing of vocational education (for example in Automotive education S1 or Automotive Diploma III Study Program) by implementing Work Based Learning approach (WBL). WBL is a learning approach that utilizes the work place and its experience to contribute to social context, academic, and learner carrier development as well as the supplement of learning activity. Learning experience in work place is applied, smoothed, and enlarged on the learning process for both university and working place. By implementing WBL, the learners develop their attitude, knowledge, skill, insight, behavior, habits, and association from the experience of both places with enabling to create the learning process related to real-life work activities (Lynch&Harnis, 1998).

The quality of learning outcomes for Automotive education S1 Study Program (for example) either process or product is highly influenced by its learning method. It is difficult to conduct vocational education without having cooperation among the education institutions, business areas, and industrial areas. The theories of experiential learning, context teaching and learning and also work based learning become really relevant in managing vocational education. It requires the development model in managing vocational education by implementing those theories to improve the quality of learning result that will give impact on the quality of learning result and the graduates' competence. In managing vocational education based WBL, it needs some learning strategies and methods.

The current research findings suggest that the implementation of WBL in education had positive influence on achievement, motivation and continuing education process (Bailey&Merrit, 1997). Research and study evaluation show that there was a correlation between outputs and graduates' outcomes with the school learning model and industrial experience. When the program goal, curriculum and work based experience were arranged and implemented also accompanied with adequate staffs support as well as appropriate evaluation, those would give positive impact (Lynch&Harnish, 1998; Fallow & Weller, 2000; Braham & Pickering, 2007; Garnett, 2008).

The purpose of Automotive education S1 Study Program is to prepare teachers/personnel who fulfill the working area demand. It is interesting to have a study on various models of managing work based learning in industrial partnership context. The

development of WBL implementation on Automotive education S1 Study Program is investigated comprehensively to reveal its role in improving the quality of learning result and the graduates which cover (1) to find the model in managing WBL in Automotive Vocational Education, (2) to know the output of WBL implementation with the developed model toward the aspects of learning result quality, (3) to examine the factors that influence the quality of learning result in the implementation of WBL model, (4) to reveal the response from the organizer of Automotive Vocational Education and the factory management toward the developed model.

## 2. Methods

The subject for testing the analysis of working effectiveness model was 50 students of WBL Ro-Ter participant as experimental group and 50 students of PI/PL/PKL participants as control group including the substitution of experimental mortality of 5% and using random sampling technique. The sample of experimental and control group represented the population of Automotive Diploma III Study Program in Yogyakarta region and Central Java which covered 3 state university organizers (UNY, UNS Surakarta, UNNES Semarang) and 3 private university organizers (Politeknik Muhammadiyah Yogyakarta, Politeknik Pratama, Solo, and UM Magelang). This research was conducted in Training Centre in Agen Pemegang Merek (APM) or Automotive Authorized Dealer Agency in Jakarta, Karawang, Tangerang and Bekasi by placing sample in a boarding and the practical area then rolling stage was implemented for each APM. This research was conducted in 7 months, 3 months (1 January – 08 April 2010) was for limited test and 4 months (1 July – 29 October 2010) was for model testing. The entire variable data were taken by inventory and analyzed with the assistance of SPSS 17 Program.

## 3. Findings

Two cycles of the research, i.e. (1) hypothesis validation model, and (2) application testing model. The first cycle, model validation of hypothesis was to examine the relationship between variable by implementing correlational test and double regression. The second cycle was testing the application model that covered (1) model effectiveness testing, (2) observation of a changing tendency in the participants' quality, (3) measuring the response of organizing management towards the implementation of Ro-Ter WBL Model. The relationship model of empirical causal among the variable was represented on Figure 1, t-test of inter group was concluded in

Table 1, and WBL Ro-Ter Implementation Model were shown Figure 2.

#### 4. Discussion

##### Rolling and Integrated WBL Model/Ro-Ter WBL Model

The implementation of Ro-Ter WBL Model is a model application, planning, execution, monitoring & supervising and learning program evaluation based working context which is conducted by organizing management of vocational education Automotive Diploma III with working industrial partnership and working context. Ro-Ter WBL Model is development model from the current industrial practicum, the improvement itself covers, (1) expanding the duration, practicum period from 3 credits or one and a

half month or equivalent with 256 hours is added into 3 months or 90 days in 3 different places; (2) grouping implementation by placing in mess with the goal of unity, time and place efficiency and discipline training as well as teamwork; (3) rolling implementation, groups of student gain experience from 3 different places in order to obtain complete experience in automotive spectrum and also to give the students better understanding of any corporate culture in reflection process, abstraction & generalization; (4) integrated implementation, there is theoretical material provided on each location that is considered as credit and the material presenter is a qualified instructor from industrial spectrum while the material itself adjusted with industrial characteristic.

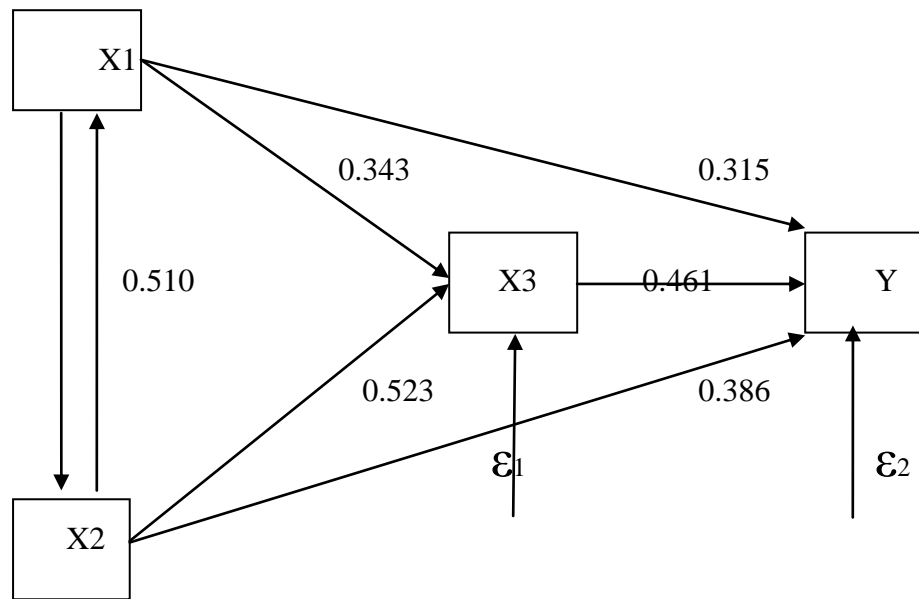


Figure 1. The final Model of Empiric Causal Variable

Explanation:

X1 : The working performance of management organizer (students' perception)

X2 : students' Organizational culture

X3 : The quality of WBL Learning

Y : The quality of WBL Learning result

Table 1. The summary of T-Test result of the entire variables from each group (significance of 0, 05)

Variabel	Observation 1			Observation 2			Observation 3		
	F	Sig.	Conclusion	F	Sig.	Conclusion	F	Sig.	Conclusion
The working performance (X1)	.077	.046	Significant	.324	.001	Significant	.024	.000	Significant

students' Organizational culture (X2)	2.843	.105	Unsignificant	4.940	.004	Significant	2.675	.000	Significant
The quality of WBL Learning (X3)	.253	.013	Significant	1.974	.006	Significant	.175	.000	Significant
The quality of WBL Learning result (Y)	3.152	.093	Unsignificant	6.307	.275	Unsignificant	.693	.000	Significant
The Competence of the beginner of Automotive Engineer (Y1)	.757	.700	Unsignificant	.002	.885	Unsignificant	2.027	.000	Significant
Students' Profesional Attitude (Y2)	.364	.748	Unsignificant	.743	.469	Unsignificant	.010	.001	Significant
The Readiness of Work Mental ity (Y3)	1.112	.767	Unsignificant	4.558	.146	Unsignificant	1.623	.000	Significant
Students Autonomous/ Personality (Y4)	2.262	.036	Significant	2.606	.088	Unsignificant	.983	.000	Significant

Experimental test result showed that the implementation of Ro-Ter WBL Model had significant influence towards the quality of learning result which covered some aspects, such as beginner automotive mechanical knowledge, professional attitude, readiness of working mentality and students' autonomy. Experimental class had higher mean point for those variables compared with control class which implementing conventional apprentice method for its field practicum program.

In this recent period, industrial or field practicum puts more emphasis only on cognitive and skill aspect. Meanwhile, by implementing WBL method, affective, working readiness, and autonomy aspects were significantly improved. Progress also happen in other aspects which influence learning result quality as well, i.e. working performance of organizer management (based on students' perception), WBL learning quality, and students' organizational culture. This result showed that Ro-Ter WBL Model was effective to improve the learning quality. It has

similar implication with some studies about the implementation of work based learning in some countries at some schools and colleges (Bragg, 1995; Rezin&McCaslin, 2001; MallikaModrakee, 2005).

The response of organizing management towards the implementation of Ro-Ter WBL Model is also categorized as high. It means acceptability level for this model to be applied on their training center was good. High category was also obtained on their perception toward Ro-Ter WBL model, WBL program, and soft skills which should be trained in this model. By adding the duration of industrial experience into 3 months and applying 3 places rolling, the learning process has better-quality, students' perception toward organizer working performance is higher, and students' organizing culture is improved and at last the learning result increased significantly. The students obtain better tutoring either individually or group. Besides, the students attain longer-term experience and it makes the students have



deeper reflection, generalization & abstraction, and transfer in experiential learning. In this model, the learning experience is so complete such as, togetherness in daily life (in dormitory or mess), mentoring (group or individual), autonomous learning (making productive training program supervised by an industrial mentor), adequate training facility (in training center) and a conducive atmosphere for studying (working environment, time discipline, teamwork, clear learning target)

The result findings will be appropriate to be applied in APM which has complete training Centre, such as adequate mess with high discipline regulation, well-organized CSR program, human resource management standard, and complete facility. However, essentially, this model can be applied to some APM workshop in rural areas which has no dormitory or mess. Generally, the workshops of APM in rural area have applied after-sales service standard, such as selling, service, and spare part. There is no big difference among the standard of workshop/service after-sales or the facility between the center workshops and workshop in rural area. In addition, in rural area, they already had standard and continual mechanical quality control, well-procedure operation standard, broad networking, and well-established corporate culture. Although Ro-Ter WBL Model have not covered all automotive spectrum (only light vehicle engineering, auto body engineering, and autotronic engineering), the researcher believes that this model can be applied to two other spectrums. By having participation from various APM in broad spectrum, Ro-Ter WBL Model has a great chance to be applied and the students' competence combination will be more complete, if there are various APM getting involved. The combination of three of five automotive spectrums will give interesting point to be applied in various implementations.

The efforts of improving management performance for the organizer cannot be separated from the description of the components and its arranged indicators. Based on the propensity score, each indicator and the arrangement items, some strategic attempts need to be done according to the priority, i.e. (1) improving management performance for the organizer especially on professionalism development, guidance, mentoring, monitoring, evaluation, (2) improving the performance in managing the additional tasks by giving chance

to have a big role in any other activities, (3) improving the ability on lesson planning in accordance with the agreed curriculum, (4) improving the ability in implementing the learning process related to learning method, media or learning evaluation.

In this study, management performance of the organizer was also assessed from the observation of their respond toward WBL model. The result of descriptive analysis showed the same tendency to self-assessment such as, overall, management performance of the organizer categorized as high level which was indicated from the high score of the performance in acting and evaluating the learning process, lesson planning and conducting the duties beyond the main ones. Meanwhile, the aspect of professionalism development needed to give more attention due to its low score.

The result of descriptive analysis showed that the students' organizational culture, consisted of school culture and corporate culture, classified as moderate level with the percentage of 58.50%. In the line with the definition of school culture as well as university culture, it can be referred to values, faith, norm, thinking style of school/ university member (Owen, 1991: 79), system of shared meaning of the school member (Robbins, 2006: 72) or deep meaning of value, faith, school tradition which was formed by the time process (Paterson, 1990:122) in general categorized as moderate level. That score hadnot fulfilled good level standard yet and it was far below the maximum point (100%), therefore, both cultures, school and corporate, needed to be developed to achieve the maximum point.

The effort in improving school/university culture, such as (1) improving the students togetherness through several programs and activities so that the students have the sense of belonging and supporting one another, (2) improving the affiliation between the students and campus society in order to create comfortable atmosphere in accomplish the department goal, (3) improving the academic atmosphere so that the students can fulfill their needs by developing ability professionally, (4) improving professional collaboration between students and campus society through deliberation, brainstorming, discussion and finishing the tasks with the lecturers. Based on analysis descriptive, it can be formulated that overall, students organization categorized as moderate level which was supported by the

score of professional collaboration, efficacy of self-determination, and afflictive relationship. Meanwhile, collegial relationship aspect needed to be put on the highest priority to be solved.

Statistical analysis showed that the quality of WBL learning became the main determining factor of WBL learning result for WBL Ro-Ter model. In same line, Arie Senduperdana in his research found that there was positive and significant relationship between the quality of learning and the students' learning result. 21 % of the students learning result can be predicted from the quality of learning (Arie Senduperdana, 2007:31). The research conducted by S. Eko Petro W. (2008:279) showed that 64% of learning output in social sciences influenced by its previous learning process. Therefore, to improve learning output, it should be preceded by developing the learning quality which had been conducted. For the sake of developing the quality of learning, the improvement of learning input should be conducted at the beginning.

Meanwhile, Mallika Modrakee (2005) in her Doctor's Dissertation in University of Victoria Australia entitled *Vocational Education Development in a Work Based Learning Programme* in Aksorn School of Technology Pattaya, Thailand found that, historically, the main point of vocational education was school based education. It gave emphasis on teacher-centered learning which less experience in working context. Therefore, it made the students are lack of preparation and not ready to take part in working environment. This study implemented WBL to give better preparation to the students and gave contextual experience trough job placement. By providing culture and working experience in the broader working place, conducting skills and competence practicing suited with working context. Based

on Cohort study with 10 students for 3 months in 2 cycles by implementing observation, interview and data collection, it showed that WBL program was potential to solve any problems in carrier development. Then, WBL became the key point for the students in making a decision involving working practices and contributed to the development of the stakeholders in case of professional importance.

CFA results of the data quality of WBL learning outcomes found that the hypothesis of the construct model for learning quality outcomes was match to the model obtained from the field. Determinant coefficient of indicator towards the lowest dimension was 11.90% and the highest was 25.50; each indicator was the coefficient determinant of the quality of student learning outcomes in the WBL program. The result of different Test from each group and each treatment showed that the implementation of WBL Ro-Ter program can improve the quality of learning outcomes in both competence aspects of automotive mechanic and other aspects such as professional attitudes of the students, working readiness, and independence / student personality.

The analysis results showed that the direct influence of organizational culture on the quality of learning outcomes was very significant, and the indirect one through the implementation of WBL model was also significant. It suggests that the ability of the students and work-based learning adaptation had a meaning in describing the influence of organizational culture and management performance of WBL organizer program towards the quality of learning outcomes. Better organizational culture will give positive impact on the quality of student learning outcomes and determining the high quality of graduates at last.

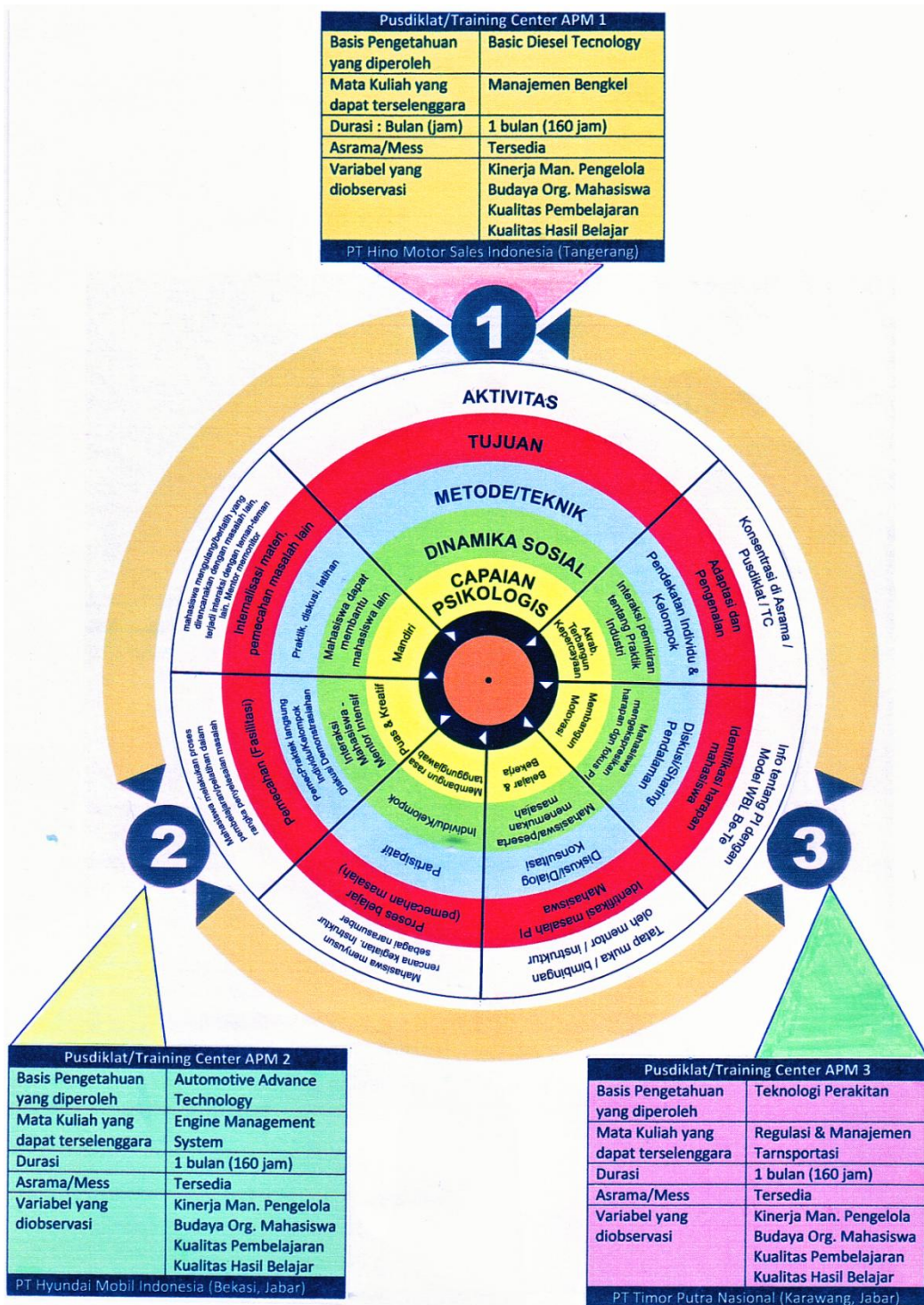


Figure 2. WBL Ro-Ter Implementation Model

## 5. Conclusion

1. Based on the results of testing and development, the implementation model of Rolling and integrated WBL (Ro-Ter) in automotive vocational education found it significant to improve the quality of student learning outcomes covering aspects of automotive mechanic competence, professional attitude, working preparation mental, and autonomy/ students personality.
2. The results of descriptive analysis showed that these aspects of quality learning in WBL categorized as high. Student cultural organizations, management performance of WBL organizer, the quality of WBL learning, were the important factor for the quality of student learning outcomes on WBL program.
3. The success of WBL Ro-Ter implementation was proved by the higher automotive engineer competence, better professionalism attitude, job mental readiness was more established, the autonomy/ personality of the students was significantly better than the conventional classroom model over the years, the testing results of WBL Ro-Ter model met the requirements of Research and Development included accuracy, realistic, and in terms of benefits. Validity and reliability of the instrument, the requirements of the respondent, the grouping of experimental and control class, documentation, had fulfilled other research requirements.

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# **CURRICULUM DEVELOPMENT IN VOCATIONAL HIGH SCHOOL (SMK) OF THE INTERNATIONAL STANDARD SCHOOL PILOT (RSBI): A study at SMK RSBI Automotive Engineering**

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## **Abstract**

Vocational High School (SMK) of The International Standard School Pilot (RSBI) is a school that meets all national education standards (SNP) that is enriched with a certain quality advantages derived from OECD member countries or other developed countries. These standards include: (1) content standards, (2) competency standards, (3) process standards, (4) standards of educators and educational staff, (5) facilities and infrastructure standards, (6) management standards, (7) financial standards, and (8) assessment standards. According to government regulation, SBI curriculum is based on content standards and standards of competency that is enriched with the standards of OECD member countries or other developed countries. The curriculum contains programs that are prepared in the form of competencies that will be implemented in the learning. Under the influence of internal dan external factors, then the curriculum should be developed. The purpose of curriculum development SMK RSBI is to achieve relevance and flexibility in the form of graduates are absorbed in the word of work and can adapt to the conditions in the workplace. Curriculum development in SMK RSBI involved various stakeholders including schools, governments, universities, and the work of the world. Based on the parties involved, determining the curriculum content can be done with various approaches. These approaches are philosophical, introspection, DACUM, task analysis, Delphi techniques, and other approaches. Based on government regulation and varous approaches in determining the curriculum content, curriculum development in SMK RSBI can be done with an approach that involved the world of work as a largest stakeholder. Curriculum development in SMK RSBI was done by defining the philosophy, identifying competencies, designing and implementing learning process, and assessment.

**Keywords:** curriculum development, vocational high school (SMK), international standard school pilot (RSBI), national educational standard (SNP), curriculum content, OECD

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## **1. Introduction**

This article is a research proposal about curriculum development in vocational high school (SMK) to prepare conducting a research as a part of final duties in doctorate program in Graduate School of Yogyakarta State University. The proposal will discuss a plan of curriculum development in SMK RSBI Automotive Engineering in Yogyakarta and Central Java. Really, curriculum development is an usual activity in every school, but it is a special activity for SMK RSBI, because the SMK RSBI is assumed an extra ordinary school. The curriculum is a programmed learning experience to achieve educational goals. On educational practices, curriculum serve as guidelines in the implementation of learning. In the curriculum contains standards of competence and basic competences that will be outlined plans the learning process and also the implementation of the learning process. The curriculum is based on a particular philosophy, the philosophy of the state and also in educational philosophy. The curriculum of SMK RSBI in Indonesia is based

on the Indonesian state philosophy and philosophy of vocational education in Indonesia and in the world. Thus curriculum of SMK RSBI in Indonesia prepared taking into account local wisdom and influence of globalization.

On the one hand, local wisdom is everything that exists in certain areas that are considered to be strengths. The strength of tradition, ethics, customs, value systems and the like that have been recognized by the nation. Through this local wisdom of all the traditions, customs which have been considered a good potential can be maintained. On the other hand, globalization is the effect of global economic system, including production process, technological development, values in a certain country. Globalization usually come from countries more developed than the countries concerned.

In general, SMK Automotive Engineering program is now divided into five spectrums, namely: (1) light vehicle engineering, (2) heavy equipment, (3) ototronics techniques, (4) motorcycle engineering, and (5) the vehicle body engineering. Curriculum of Automotive Engineering in SMK RSBI will be developed with consider the five spectrums. The problem is,

how to develop the curriculum in the field of Automotive Engineering in SMK RSBI? How do we develop the curriculum of Automotive Engineering in SMK RSBI based on local wisdom and globalization?

## 2. Characteristics of SMK RSBI

The Pilot of International Standard School (RSBI) schools program in Indonesia is based on the fact that the ability of Indonesian in some important aspects are relative lower than the ability of other countries. Human Development Index (HDI) also show that from 2005 to 2011 the position of Indonesia at relatively low ranking compared to other country. Even in 2011, according to the version of the HDI, the position of Indonesia is at position 124, which means that position is drastically decreased. The Human Development Index is a comparative measure of life expectancy, literacy, education, and standards of living for countries worldwide. It is a standard means of measuring well-being, especially child welfare. It is used to distinguish whether the country is a developed, a developing or an under-developed country, and also to measure the impact of economic policies on quality of life. [http://en.wikipedia.org/wiki/Human\\_Development\\_Index](http://en.wikipedia.org/wiki/Human_Development_Index) (download on March 25, 2012 at 09.39 pm).

To improve the quality of education in Indonesia, in Law of Republic of Indonesia Number 20 Year 2003 on National Education System in Article 50 paragraph (3) stated that each regency/cities are held at least one international school. Based on the Law, since 2006 the government of Indonesia has set a program RSBI schools as preparation for SBI schools, including SMK RSBI. There are sixty SMK RSBI in 2006, and one year later (2007), SMK RSBI number increased to 119 schools. Number of SMK RSBI in 2009 increased drastically to 320 schools comprising 230 SMK RSBI with state funds, and 90 SMK RSBI with Asian Development Bank (ADB) funds. In the year 2012, the number of vocational schools RSBI is 335 consisting of 246 SMK RSBI with state funds, and 89 SMK RSBI with ADB funds. The above description shows that the government is very serious in improving the quality of educational programs.

Regulation of Minister of National Education No. 78 of 2009, the Government of Indonesia declared SBI are schools that had met national standard of education (SNP) that is enriched with the quality advantage derived from OECD member countries or other developed countries. The regulation also is applied in SMK SBI. In this formula, X is defined as quality advantages on national standard of education (SNP) derived from OECD member countries or

other developed countries. Eight of national standards of education consist of : (1) content standards, (2) competency standards, (3) process standards, (4) standards of educators and educational staff, (5) facilities and infrastructure standards, (6) management standards, (7) financial standards, and (8) assessment standards.

According to the Regulation of the Minister of National Education No. 78 of 2009, some of the purpose of SMK SBI is that graduates: (1) has competence in accordance with established standards of competency, (2) has a comparatively high competitiveness and excellence featuring locally at the international level, and (3) has the ability to compete overseas work. Although it is a national school, but graduates must have an international competence. The international competence is not only from schools in OECD member countries or other developed countries, but also it is from the international world of work both abroad and at home. The world of work in the OECD member countries or other developed countries is of the industries and other business areas. Competence and products of industrial and business areas usually have an international standard in the industry represented by the ISO. However, most of national or international industrial and business areas in Indonesia already has an international industry standard demonstrated by the ISO by as well.

Relating to issues concerning the competency of graduates, Trilling and Fadel (2009: p. 7) wrote that a few years ago, four hundred hiring executives of major corporations were asked a very simple but significant question: "Are students graduating from school really ready to work?" The executives' collective answer? Not really. The study clearly showed that students graduating from secondary school, technical college, and universities are solely lacking in some basic skills and a large number of applied skills: (1) Oral and written communications, (2) Critical thinking and problem solving, (3) Professionalism and work ethic, (4) Teamwork and collaboration, (5) Working in diverse team, (6) Applying technology, and (7) Leadership and project management. The description of Trilling and Fadel above illustrated that the skills of 21st century are the competencies needed by graduates of SMK SBI.

## 3. Curriculum of SMK RSBI

Understanding of the curriculum has been declared by experts with a variety of reasons. Nevertheless, it was agreed that curriculum is a guideline in providing education. Finch and Crunkilton (1999: 11) wrote that curriculum may be defined as the sum of the learning activities and experiences that a student has under the

auspices or direction of the school. Beane et.al. (1986: 29) stated that definitions of curriculum fall into one of four categories: (1) curriculum as a product, (2) curriculum a program, (3) curriculum as intended learnings, and (4) curriculum as the experiences of the learners. Ornstein and Hunkins (2009: 10-11) specify five basic definitions of curriculum. First, curriculum can be defined as a *plan* for achieving goals. Second, curriculum can be defined broadly, as dealing with learner's *experiences*. According to a third definition, less popular than the first two, curriculum is a *system* for dealing with people. Fourth, curriculum can be defined as a *field study* with its own foundations, knowledge domains, research, theory, principles, and specialist. Zais (1976: 6-10) proposed six concepts of the curriculum, namely: (1) curriculum as the program of studies, (2) curriculum as course content, (3) curriculum as planned learning experiences, (4) curriculum as experiences "had" under the auspices of the school, (5) curriculum as a structured series of intended learning outcomes, and (6) curriculum as a (written) plan for action.

The above description shows that the curriculum tends to be interpreted as a program of planned learning experience, as a system of program, as a product used as a guide. In the Regulation of Minister of National Education No. 78 of 2009 on the Second Part of Article 4 of paragraph (1) stated that SBI curriculum was arranged by content standard and graduates competency standard enriched with a standard from OECD member countries or other developed country. In implementing the program of education, SMK RSBI Automotive Engineering in Indonesia use Education Unit Level Curriculum (KTSP). The curriculum can be organized and developed by the education unit (school).

Based on preliminary observation made in several SMK RSBI Automotive Engineering in Yogyakarta and Central Java in 2010 showed that the curriculum implemented is KTSP and curriculum spectrum 2008. Based on the information presented the school, the curriculum was designed jointly by the school, the world of work, educational experts, and local government. Reviewed from the structure of existing programs, curriculum of SMK consist of seven programs or activities, namely: (1) normative program, (2) adaptive program, (3) productive program, (4) local content, (5) personal development (extra curricular), (6) visits to industry, and (7) industry practice. Normative program is a competency development program related to personality development as a citizen of Indonesia. Adaptive program is the development of competencies related to the fundamental of

engineering or basic science of automotive engineering. Productive program is the development of competencies related to key areas of Automotive Engineering, namely basic vocational subjects and practical vocational subjects. Suchs programs consist of a variety of subjects, activity in the non-subjects, the activity in the school, and outside school. Thus competence in the curriculum can be attributed to the above programs. These competences are in the form of normative competence, adaptive competence, and productive competence.

Finch and Crunkilton (1999: 14-18) stated that the basic characteristics of the vocational and technical curriculum include: (1) orientation, (2) justification, (3) focus, (4) in-school success standards, (5) out-of-school standards, (6) school-community relationships, (7) federal (central government) involvement, (8) responsiveness, (9) logistics, and (10) expense. Finch and Crunkilton also stated that there is a rationale for curriculum development in vocational and technical education, namely: (1) data based, (2) dynamic, (3) explicit outcomes, (4) fully articulated, (5) realistic, (6) student-oriented, (7) evaluation-conscious, (8) future-oriented, and (9) world class-focused. Based on description of Regulation of Minister of National Education, Trilling and Fadel report and statement of Finch and Crunkilton above, then the curriculum of SMK RSBI Automotive Engineering should be developed. How is the way to develop the curriculum of SMK RSBI Automotive Engineering?

#### 4. Curriculum Development in SMK RSBI

Marsh and Willis (in Ornstein and Hunkins, 2009: 211) stated that curriculum development refers to a collection of procedures that results in curriculum changes. Curriculum development consist of various process (technical, humanistics, and artistic) that allow schools and schoolpeople to realize certain educational goals. There are something related to curriculum development. One of procedures in the curriculum development is to determine the curriculum. This procedure is carried out after planning the curriculum, and conducted before the implementation of the curriculum. Finch and Crunkilton (1999: 129) stated that determining curriculum content for vocational and technical education is very rewarding and yet extremely frustrating. The rewarding aspect is the final product: content that may be actually used in the instructional environment to aid vocational students in achieving their fullest potential. The frustrating aspect of determining curriculum content consist of identifying that which is truly relevant to both instructional and occupational settings. Finch and Crunkilton (1999: 129-135) proposed six factors



associated with determining curriculum content, included: (1) time and dollars (moneys) available, (2) internal and external pressure, (3) federal state, and local content require-ment, (4) skills needed by employers, (5) academic and vocational education content concerns, and (6) level at which content will be provided.

There are six strategies or approaches of curriculum content determination, namely: (1) Philosophical Basis, (2) Introspection, (3) DACUM, (4) Task Analysis, (5) The “All Aspects” of Industry Approach, (6) The Critical Incident Technique, and (7) The Delphi Technique. DACUM approach is considered as a the most appropriate approach in determining the content of the curriculum. DACUM is acronym for Developing A Curriculum. DACUM is an approach where skilled expert-workers from industry or bussiness world are asked to reflect on the content of the cirriculum, without the involvement from of school personnel. This approach is based on the assumption that determination of the content of technology education and vocational curriculum should have a high relevance to employment needs, while teachers and instructors involved in teaching everyday just cannot give a positive contribution.

Based on description above, the research methodology of curriculum development in vocational high school (SMK) of International Standard School Pilot (RSBI) in Automotive Engineering is proposed as follows:

#### **4.1 Research Objectives**

The planned objective of this research is: (1) to describe the curriculum that is being used in SMK RSBI Automotive Engineering, (2) to assess the suitability of curriculum of the SMK RSBI Automotive Engineering used so that the competence of the graduates are recognized nationally and internatinally, (3) to understand the development of curriculum that has been done in SMK RSBI Automotive Enginee-ring, (4) to carry out curriculum development should be done in SMK RSBI Automotive Engineering, in oder to meet the needs of the workforce in industry and bussiness world recognized nationally and internationally, and (5) to quantify the impact of curriculum development for students’ SMK RSBI competences.

#### **4.2 Planned Research Method**

Methods of research will be conducted by Research and Development (R & D) approach according to Borg and Gall (1989: 784-785) with ten major steps as follows: (1) research and information collecting, (2) planning, (3) develop preliminary form of product, (4) prelimi-nary field testing, (5) main product revision, (6) main field testing, (7) operational product revision, (8)

operational field testing, (9) final product revision, and (10) dissemination and implementation.

#### **4.3 Model of Curriculum Development**

Model used in the curriculum development in SMK RSBI Automotive Engineering is DACUM strategy. Curriculum development with the use DACUM strategy will enhance the participation of industry and bussiness world in the planning students compe-tences in SMK RSBI, so that graduates have the competencies recognized nationally and internationally.

#### **4.4 Procedure of Development**

According to the approach suggested by Borg and Gall above, the curriculum development procedure is describe as follows: (See Fig.1)

DACUM strategy will be implemented by inviting some skilled worker from automotive service industry to conduct an inventory of work standards of the industry. The DACUM is done by a workshop activity through the Focused Group Discussion (FGD) guided by a panelist. This workshop can be attended by some shool teachers as observers. Results of inventory of the industrial jobs is the content of the curriculum that will be compiled in SMK RSBI Automotive Engineering. Trial results of this curriculum content are expected to be taken in to consideration to make a prototype of curriculum of SMK RSBI Automotive Engineering.

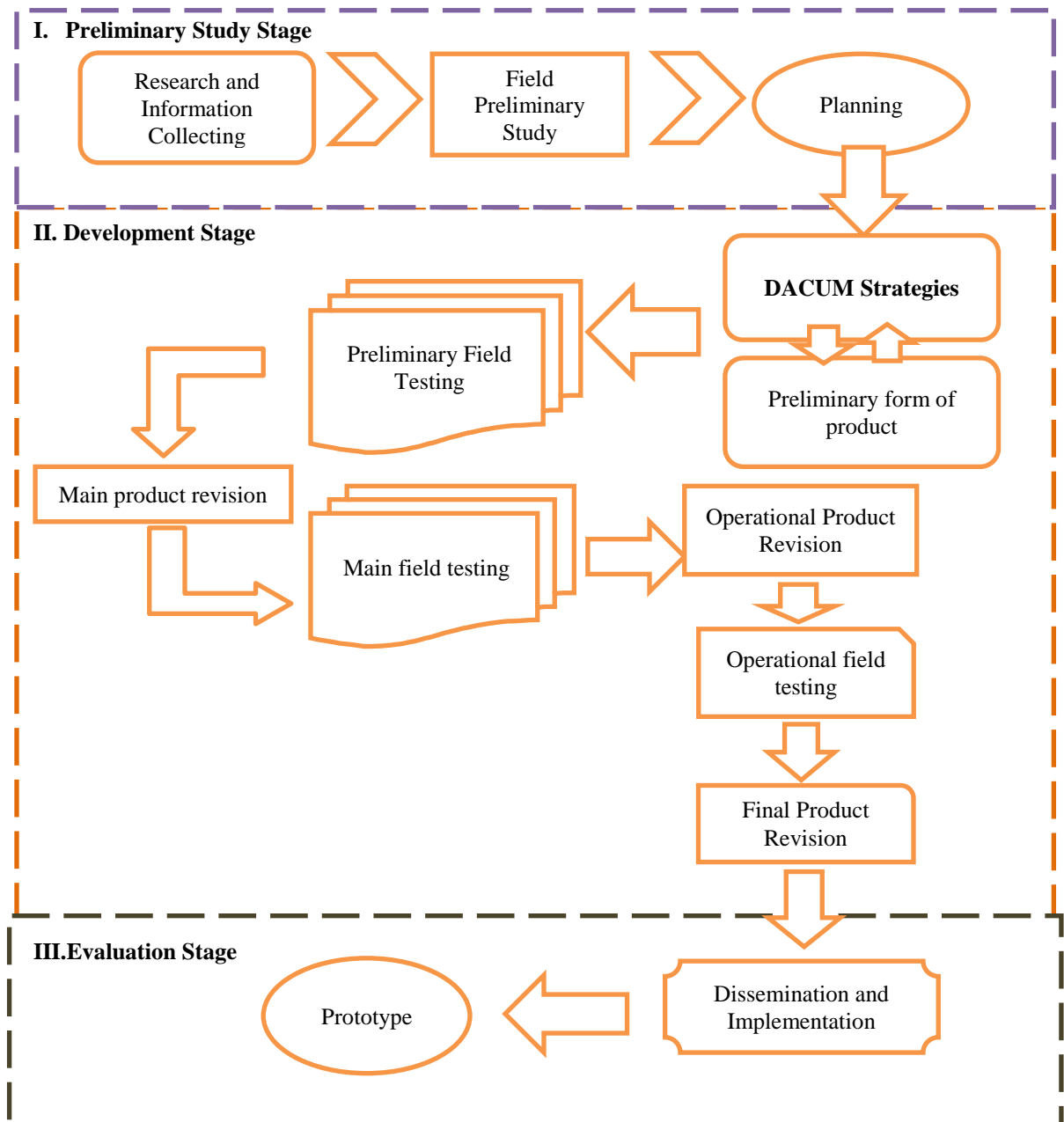


Figure 1. Procedure of Curriculum Development

#### 4.5 Subject of the Research

This research will be conducted in SMK RSBI Automotive Engineering with state funds and in SMK RSBI Automotive Engineering with ADB funds in Yogyakarta and Central Java Province (See Table 1)

Table 1. Table 1. SMK RSBI Automotive Engineering in Yogyakarta and Central Java as subject of the research

	SMK RSBI with state funds		SMK RSBI with ADB funds	
	Yogyakarta	Central Java	Yogyakarta	Central Java
SMK Public	2	5	1	1
SMK Private	1	2	-	-
<b>Total</b>	<b>3</b>	<b>7</b>	<b>1</b>	<b>1</b>

#### 4.6 Collecting data and Instrument of the research

Data of the research will be collected by observation, documentation, question-naire, and interview. Instrumen of this research are observation sheets, documents, questionnaire sheet, and interview guide. Data of the impact of curriculum development for students' SMK RSBI competences were collected by test in quasi-experiment.

#### 4.7 Technique of data analysis

Data of curriculum feasibility were analyzed by qualitative descriptive and quantitative technique by percentage calculation. Data of the impact of curriculum development for students' SMK RSBI competences were analyzed by statistical t-test.

### 5. Conclusion

This article is a research proposal that will be conducted to develop a curriculum of Automotive Engineering in SMK RSBI. The curriculum development is based on the assumption that graduates of SMK RSBI must have the competencies nationally and internationally recognized by the world of work. The research is conducted by Research and Development (R & D) approach according to Borg and Gall with ten major steps. To develop the curriculum of Automotive Engineering in SMK RSBI can be done by DACUM strategy. DACUM strategy is a part of overall curriculum development in SMK RSBI, namely: defining the philosophy, identifying competencies, designing and implementing learning process, and assessment. DACUM is one of the most appropriate way in determining the content of the curriculum for SMK RSBI, because

the content is developed by some incumbent skilled workers in motor vehicle service industry. Curriculum development by DACUM strategy is conducted by workshop activity of some incumbent skilled workers in a Focused Group Discussion (FGD). The result of workshop is a list of work required in the industry. The result will be tested on a limited and extensive field tryout in several SMK RSBI in Yogyakarta and Central Java. The expected result of the research is a curriculum prototype that can be used in SMK RSBI Automotive Engineering for preparing graduates to achieve competencies recognized nationally and internationally. This result of curriculum from DACUM is expected to be appropriate with priorities in curriculum planning in technical and vocational education according to Asia and the Pasific Programme of Educational Innovation for Development/APEID (1992: 13-17) namely: (1) multi-skilling, (2) flexibility, (3) retrainability, (4) entrepreneurship, (5) credit transfer, and (6) continuing education. In order to accommodate the above priorities and considerations, curricula of courses are formulated around the following main components: (1) broadacademic base, (2) basic training, (3) specialized training, and (4) industrial upskilling.

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# DEVELOPMENT OF LEARNING COMPETENCY BASED ELECTRICITY IN THE VOCATIONAL HIGH SCHOOL

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## Abstract

The purpose of this study are: to produce a competency-based learning software engineering of electrical power installations that meet the category used in a valid and effective learning in the Vocational School.

This study uses the development of research methods. Conceptually and procedures, research and development carried out referring to the model of Plomp (1997) and SCID models (2008) are summarized into four stages, namely: the initial assessment, design, realization and testing. Pre-development stage of the analysis begins with the competence of the workforce needs of electricity, competency and learning needs of schools. Identification of the work through the technical competence DACUM (Developing A Curriculum) by the experts of the specific electrical work. FGD is then performed with the involvement of educational practitioners to formulate competency profile, as something to be made SKKD development in instructional design and learning components of the device. The resulting product is validated by experts and teachers. The first assessment done through test validation by matter experts, expert research and evaluation, vocational technology education experts. Further assessment by teachers in the implementation of two trials conducted in 5 SMK, SMK 3 in Makassar and SMKN 1 Pallangga, Vocational Technology in Gowa. Learning the instrument validity test, performed by computational program package Microsoft Excel and statistical package SPSS for Windows 15.0.

The results are: (1) the electrical field of competency-based learning is embodied in the implementation manual pembelajaran and learning modules, (2) devices that meet the criteria for effective learning and practical competency-based learning is used in the electrical field in the CMS, because the process active learning, learning objectives achieved so that individual students get an average value exceeds the value of working capital.

**Keywords:** Development of learning, competence field of electricity

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## 1. Introduction

Realization of improving the quality of vocational education continues coveted by communities, especially communities directly involved in the working world. It is expected that learners do have vocational education qualifications as a workers who have specific skills relevant to their expertise, have adaptability, and can adapt to teknologi developments. One-a-year national education development strategy 2005-2009, which set out the policy of the government, regarding the development of secondary vocational school (SMK) for the fulfillment of middle-level manpower, the comparison of the proportion of vocational plans: high school with a composition of 70: 30 a good number of schools and number of learners.

In accordance with the purpose of vocational above, the "PKL" who performed the students in the world of work, making the students have work experience, then it is assumed that the vocational school graduates will gain experience in the world of work. Kemdiknas follow-up plan, (2008) is the

ratio of students to vocational, the proportion of vocational composition: secondary school level in 2004 to 67: 33 in 2014. This policy is intended to be more output-oriented education in the workforce and meet the needs of business and industry. Incompatibility should be recognized that the issue has become a major issue in the debate between education and the workforce, both at national and regional levels. Considered to be prospective vocational school anymore, because although the world of work-oriented but not necessarily be guaranteed upon graduation, immediately getting a job, (<http://depnakertrans-depdiknas-kembangankurikulum-berbasis-kompetensi>, diakses 10/12/2009).

Muhaimin, (2009) states that employment opportunities are available but can not be filled by graduates of educational and job seekers. This is due to the lack of job competence and expertise needed labor market. This problem is supported by several findings, the results of the study Samsudi (2008), that ideally the national vocational graduates who can immediately enter the workforce of about 80-85%, but the fact that the new merged 61%. In 2006 graduated from

vocational school in Indonesia reached 628 285 people, while the projection of manpower requirements absorption or vocational school graduates in 2007 were 385 986 people (61.43%).

The same statement from the Electrical and Mechanical Association of Indonesia (AKLI) in Yogyakarta Region, stated that the number of workers certified electricity is still lacking, it is said that only with bagging a certificate, the marketability of the workforce will be increasingly taken into account, Aji Karnanto (Tribun Jogja -27 November 2011). The lack of this certified workforce, according to him because of the education system that runs for this out of sync with the needs of existing industries. The observations in the field of electrical field players and a team of certified vocational competency tests in the field of electricity Makassar, said that the curriculum is implemented in the field of electricity is still lacking, even some of the basic competencies that are considered important, not yet included in KTSP (Riana, 2010).

The phenomenon is an indication that the quality or competence of graduates do not meet the expectations of the workforce. Necessary changes in the nature of the learning achievement of targets indoktrinatif curriculum, a learning-oriented learner achievement of competencies as required in the implementation of the vocational curriculum. Operational reference very concerned about the diversity of KTSP, funding, and environmental characteristics of the area. So that the operational curriculum should be developed according to the needs of potential schools and areas, compiled by and implemented in each educational unit. The learning function is needed to help teachers implement learning.

Associated with competency-based learning process-oriented world of work, demanding implementation of innovative learning that focuses on the learner (student centered) and provide more opportunities for learners to construct knowledge independently. Opinions are more focused towards the establishment of competence by Sagala, (2010); Benny (2009) that learning is an activity of interaction with their environment, are being made to have the competence of the skills and knowledge required.

Behaviorism theory emphasizes the importance of conditioning effects in the learning situation is designed as a condition of teacher learning. Conditioning of learning by Gagne, (1972), is that learning is not a single process, learning is the mechanism by which one becomes a functioning member of society is complex.

Another learning theory that can complement Behavioristic learning theory is the theory of cognitivism, where cognitive learning theory, a theory which is based on the thought processes behind behavior change. Pioneer Jean Piaget's cognitive theory (1952), stated there are four stages of cognitive development in individuals, namely, sensory motor, pre-operational, concrete operational and operational format. Implications for learning and the material should be prepared in a concrete form to the development of life by giving students the opportunity to students to learn actively with its environment.

Behavioral changes observed and used as an indicator of what happens in the brains of students, so the emphasis in cognitive learning theory became one of the basic approaches in the process of behaviorism. Djemari Mardapi, (2008: 103) that almost all purposes to have cognitive affective component. Affective abilities are part of the learning outcomes and has an important role in the learning process.

Even emphasized that the success of learning in cognitive and psychomotor domains is largely determined by the affective state of students. Several way that can be taken to achieve an innovative and contextual learning, such as by improving the curriculum, improvement of learning resources and so forth. But sometimes there are factors both in terms of school management, as well as in learning systems, learning in the classroom.

It is therefore necessary learning tools that can be used as guidelines for teaching and learning resources. Module that can serve as teaching material. According to Dirjen PMPTK (2008) that the module is instructional materials designed to be studied independently by study participants. Module the media for self-study because it has been equipped for self-study guide. That is, the reader can do without the presence of teaching and learning activities directly. Module is a tool or a means of learning containing materials, methods, limitations, and how to evaluate systematically designed and attractive to achieve the expected competencies in accordance with the level of complexit. A module can be said to be good and interesting if has the following characteristics: (1) self instructional, ie through one module or the learners are individual learning, do not depend on the other hand, (2) self-contained, ie, all learning kit from one unit competencies or sub competencies learned in one single module as a whole, (3) stand alone , ie, a module that was developed is not dependent on other learning kit or

should not be used in conjunction with other learning (Dirjen PMPTK, 2008).

Learning approach will use the Contextual Teaching and Learning (CTL), with delivery starting in the classroom techniques, according to Nurhadi, (2004: 65), CTL learning is a process of education that aims to help students see meaning in the lesson material in a way to connect with the context of their lives daily. Santrock, (2008:8) contextual learning is rooted in Dewey progressivisme theory and research findings that show that students will learn best when what is learned associated with they know and when they are actively learning itself.

Based on the description on the background of the problem, some problems can be identified, namely: (1) the emergence of areas of expertise incompatibility issue affects the quality of vocational workforce that reflects the quality of Indonesia, as a result the number of certified workers are still lacking electricity, (2) vocational curriculum for the eyes lesson is simple to install electrical installations of buildings have been revised through the KTSP, but regarded by the world of work is still lacking electricity, (3) the plan RPP, an indicator of competence and basic competences required the workforce, have not been met, (4) much-needed development of appropriate learning tools with competency-based learning field of electricity, (5) teachers need is a means of learning modules containing instructional materials in electrical competency-based learning.

The review in this study is limited in vocational technology group electrification program, the field of power engineering installations, an interesting problem to be developed according to this research topic, namely: development of curriculum (KTSP) based on competency-based learning SKKD in the field of electricity. The purpose of this study is to find a learning device (learning modules) on the Electricity Sector KTSP models and used appropriate vocational learners in the field of electrical installation expertise.

## 2. Research Methods

Learning devices developed in this study belong to the type of research & development (Research & Developmental). Richey and Nelson, (1996: 122) states that through the research process-oriented product development, the most important thing is the process of development is described as precisely as possible and the final product were evaluated. Development patterns that are used refer to the model Plomp, (1997: 5).

Plomp consists of five distinct phases in the process of resolving the problem, as described into the following five stages: (1) the initial investigation stage, (2) Design, (3) Phase realization / construction, (4) testing, evaluation and revision; (5) Implementation. Description of the activities in each phase as follows: (1) Preliminary Phase Investigation, the most important thing in this stage is to identify and plan activities to define the problem, (2) Design Phase, the planning is done at this stage that aims to design problem solving, involves a systematic process to divide the large problem into problems of small problems, (3) Realization Phase / Construction, built a prototype at this stage, the main design is based on a preliminary draft document, (4) Phase test, Evaluation, and Revision, at this stage the most important thing is to consider the quality of the design components learning will be developed, (5) Implementation phase, at this stage, activities to implement the designs that have been evaluated and revised. This activity relates to the pilot phase to validate the developed device. The five steps are presented in schematic form in Figure 1:

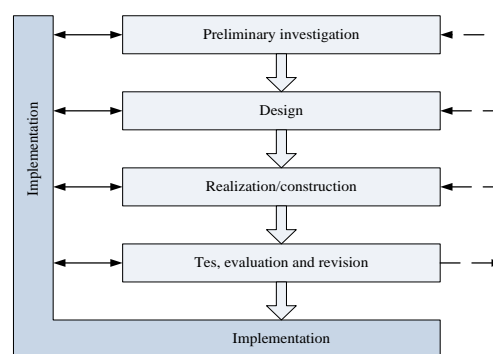


Figure 1. The general model of educational problem solving (Plomp, 1997)

## 3. Discussion

As was explained above that the development activities consist of two main activities, namely: (1) the research or pre-development and (2) development activities, the results of research studies according to the procedure outlined as follows:

### 3.1 Pre-Development Activities

Initial assessment phase of the information gathering stage is mainly concerned with the electrical engineering curriculum competencies and gathering information from the world of

electrical work. Through these stages are found job competence in the electrical engineering. With the identification of competencies through workshops involving expert worker of Electrical and Mechanical Association of Indonesia (AKLI) found Makassar, competency profiles installing electrical installation simple building, which belongs to a class of low voltage, power 450 VA up to 197 kVA, which can be seen in Table 1.

Table 1. Competency profiles  
Simple Installation Installing Electrical Building

No	Basic Competencies
1	Application of Occupational Health and Safety (K3)
2	Electrical of single phase installation
3	Single-phase circuit breaker panel
4	Installation Grounding

Workshop Januari 2011

Competency profiles are then analyzed according to indicators of achievement of competencies which is used as the source of information for the preparation of Questionnaire Identification of Learning Needs in the School. Questionnaire was distributed to schools, which responded by learners and teachers. The results of the questionnaire responses of the identification of learning needs in schools, then studied by analyzing, classifying appropriate verb to each competency element instructional objectives into three domains of learning, namely cognitive, affective and psychomotor, according to Blooms taxonomy of learning objectives (1989), and tabulated in Table matrix Competency Profile. The next stage is to conduct focus group discussions (FGD) conducted with education practitioners. The results of a source of information for designing a learning device. So that the results of initial development phase is the prototype of the electrical engineering, in the form guide the implementation of learning, evaluation tools and learning modules.

The next stage of realization, at the conceptual stage of validation is performed on the initial prototype. In order to validate conceptual models, the first step was to show the validator, which developed the initial prototype. Composed of five experts (expert judgment) and education practitioners.

Validator was then asked to give his assessment by filling in the instrument that has been given to him. Requesting consideration as a matter experts and education practitioners, about

the feasibility of the instruments that had been developed, including the design criteria of success (Rubric), the design of learning tools and assessment instruments. Validator assessment results in the form of the assessment form were analyzed using descriptive statistics and computational data analysis performed with the aid of program package Microsoft Excel and SPSS statistical package for Windows. To measure the level of inter-rater agreement (inter-rater reliability) of the validation results of the research instruments, statistical analyzes used Cohen's Kappa Coeffisien, (Nitko & Brokhart, 2007: 80). The instrument is said reliable if the coefficient reliabilitasnya  $(r) \geq 0.70$ .

### 3.2 Development activities

Activities of product testing is done two times intended to collect data on product quality, which is a series of verification activities and revisions to the school to find effective and practical products. Test activities carried out twice, which consist of small groups and test expanded. Small group of test is a test that applies to a small group (one class) samples on the actual situation.

Through test involving a small group of twenty-eight (28) of the students and two teachers in the study, as subjects try, test activities performed four times with the use of four learning modules. Assessment criteria used are the assessment scores ranging from one to score four score, and then categorizes the corresponding score value. According Suharsimi Arikunto, (2004: 32) by using the assessment scores, and then categorizes scores into categories of assessment, will avoid the entry of any element of subjectivity in the self-appraisal, because it follows the assessment criteria, point by point is fundamental to a personal decision. After implementation of the testing is complete, the evaluation conducted through focus group testing results, along with experts and practitioners pendidikan. Saran-advice that appears in the FGD then be reviewed and analyzed, a repair material that is ready to be tested on a model test of the expanded groups on three different schools as a subject.

The final product of this development a learning device. A competency-based learning products electrical fields, which produce the development of learning tools that meet the category of effective and practical for use in learning. The realization that the implementation guidance and learning tools in the form of learning implementation plan (RPP) and rubric

assessments, learning modules and assessment instruments.

#### 4. Conclusion

Based on the development and review of the final product which has been described in the previous section, then the conclusion is the finding in this study as follows: Research, development, is a procedure in developing learning tools in the field of electricity. Through the procedure of identification of learning needs and competency, competency matrix is found, then used in the validation of FGD material to formulate standards of competence profiles and competence base (SKKD) is needed in putting up the building electrical installation is simple. The resulting learning devices are: (a) learning guide, containing, among others, background, structure and components, guidelines for implementation of learning, competency standard profile set up a simple building electrical installations, supporting the theory, assessment guidelines, (b) the learning device, namely ; lesson plans, learning modules, (c) the evaluation of the scoring rubric and competency assessment tools. To determine the quality of the learning models have been developed, initial procedure performed on the conceptual validity of the test. To measure the level of inter-rater agreement (inter-rater reliability) of the validation, the validation results were analyzed using SPSS statistical program: Coefficient Cohen's Kappa, which is said to be reliable on the coefficient ( $r \geq 0.70$ ). The results of validation shows the results valid and reliable, so that all the feasible and can be used for the development of data capture. Based on the evaluation of data on the test results both in test I (small groups) and in test II (extended test), it was found that the learning tools are developed, effective and practical criteria are used in learning for students implimentasi vocational fields of electrical installation expertise.

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# PROJECT BASED LEARNING MODEL IN THE BUILDING CONSTRUCTION AND DRAWING COURSE AT VOCATIONAL SCHOOL

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## Abstract

Graduate diploma in civil engineering is required not only understanding the structure of the system but also to understand as well as to produce project drawing documents. How to construct a suitable learning model to match the competence of civil engineering diploma graduates with the requirements of professional workforce is still in question. This paper aims to discuss the most appropriate model of Project Based Learning (PBL) to be applied in building construction drawing course on civil engineering diploma program. This model was developed through a comparative study of PBL models which are selected based on consideration of the suitability of "substance" and "order" procedure. Then the selected model is implemented in an action research on building construction drawings course in order to get the most appropriate model of PBL. The study concluded that the four phases of the Schneider's PBL model can be effectively applied in building construction and drawing course, but need to be modified especially in the content of procedure in the third (project implementation) and fourth (completion) phases.

**Keywords:** modified Schneider's model, Project Based Learning, building construction drawing course

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## 1. Introduction

Learning process in the paradigm of student center learning requires students to cope with real problems and tasks in the workplace. Involving students in professional projects during the course will help students in understanding the work process and standards. In addition, the introduction and engagement of students in professional projects are expected to stimulate student motivation to improve their ability to fit the demands of professional work. This approach is also favorable for teachers, since with this approach they are expected to stimulate their competence both in teaching and learning process and adapting to the development of knowledge and technology.

Basic competencies to be achieved in the Building Construction and Drawing 2 (BCD 2) course that students are able to do prepare two-storey building structure and the details drawings properly. The kind of construction drawings to be completed consist of: reinforced-concrete structure for low-rise building, the steel roof construction, and building utility include of plumbing and electrical systems.

Since this course requires a comprehensive understanding of the whole system of the building, so far most of students have difficulty in completing their tasks. Their main problems include the difficulty of understanding the parts of the building systems, its functions and methods of construction, combining these parts into a whole building system, including to present project document according to drawings standard.

To address shortage and to improve the learning process of BCD 2, then the Project Based Learning teaching methods tested in this study. Project-based learning (PBL) is a learning approach that aims to encourage students to learn through real projects. (Blumenfeld, Soloway, Marx, Krajcik, Guzdial, & Palincsar, 1991 in Zhou and Lee, 2009).

Several previous studies have been done before, such as research and Mokhtar Hashim Roslan Mohd Azizi Din (2009), Benjamin C. Cartier and Brad A. Gibson (2007), and Cynthia Hsieh and Lorrie Knight (2007) showed that the Project Based Learning teaching methods successfully improve the competence of students in learning, particularly in the field of engineering. The results of these studies has inspired the need to test this PBL method in BCD 2 courses through an action research, with consideration to the character of the course, condition of the student, and structure of the existing curriculum in the Department of Civil Engineering and Planning Education.

The purpose of this study was to find out the most appropriate model of PBL to be applied in building construction drawing course to improve the student competence in understanding and preparing low-rise building's structure drawings in accordance with professional drawing standards through the trial study method.

## 2. Method

In order to find out the most appropriate model of PBL to be applied in building construction

drawing course to improve the student competence, the study was conducted through many steps: First, do a comparative study of models of PBL; Second, do the selection of an appropriate model in accordance with the characteristics of the construction drawing course; Third, implement the model through classroom action research; Fourth, do an evaluation and construct pre-development model.

The model developed in this study is limited in the pre-model; it is an implementation test of the Schneider's PBL model as a reference model. This implementation test conducted in classroom action research at building construction and drawing course. The expected results of this study are: a description of the impact on model implementation, a description of the difficulties encountered during the implementation and finally a proposed model for the building construction drawing course.

### **3. Project Based Learning Model**

#### **3. 1. Model Development**

Project Based Learning (PBL) is a collaborative teaching approach which places students in situations that require them to use all their capabilities to accomplish the project objectives. Project based learning will be able to nurture students' interest, if only the projects are well designed so as to increase a sense of curiosity and a higher level of thinking (Thomas, 1998).

PBL is a model of learning activities that are differently designed from the general classroom which characterized by teacher-centered management. Instead of that, PBL emphasizes classroom management activities based on a long-term, interdisciplinary, and student-centered learning characteristic. This model places the student at the center of learning and provides the opportunity for them to deeply study a wide range of topics. Model implementation provides benefits for students as they will be more independent when they themselves possible to discover and develop the importance of their learning process. (Egbokhare and Chiemeké, 2007).

Due to this learning model needs to be carried out by organizing learning in a project, classroom activities should be designed as a complex and comprehensive learning. Projects be completed by providing a challenging task or problem; involve students in learning design, problem solving, decision making, or the investigation to solve their problems; provide an opportunity for students to learn independently in a specified period and produce real products or presentations (Jones, Rasmussen, & Moffit, (1997), Thomas, Mergendoller, & Michaelson, (1999). In this implementation, process of learning carried out by applying a cooperative approach learning,

reflection, and cooperation among adults (Diehl, Grobe, Lopez & Cabral, 1999).

PBL provides many benefits to the quality of student learning process, including: a) Increasing the attendance rate of students in the classroom, develop self-confidence, and improve attitudes toward learning process (Thomas, 2000), b) Students who are involved in project-based learning indicates significant progress in increasing their responsibility for their own learning than those who were involved in traditional classrooms (Boaler, 1997; SRI, 2000), c) Provide an opportunity for students to develop complex skills, such as thinking on a higher level, cooperating, and communicating (SRI, 2000), d) Allowing students engage in the job and work habits in a particular field, e) Provide an opportunity for students to organize their own learning activities, changing the way learning: from memorization and repetition to discover, integrate and present; from listening and reactive to communication and responsibility; from just acquiring knowledge about the facts, the term and the contents change into understand the process, from understanding theory to application of the theory (Intel, 2003).

Besides providing benefits to students, PBL model also provide benefits for teachers, including: a) Increase the professionalism and cooperation among teachers as well as provide the opportunity for teachers to build relationships with students (Thomas, 2000), and b) find an appropriate learning model to accommodate various types of learners (SRI, 2000).

There are two essential components of projects based learning: a) A driving question or problem that serves to organize and drive activities which taken as a whole amount to a meaningful project, b) culminating in the product or multiple representations as a series of artifacts, personal communication (Krajcik), or consequential task that meaningfully addresses the driving question. (Brown & Campione, 1994).

There are several models of PBL which possible to be applied in learning process, including PBL model of Tony Lagos, Paul Hamilton (2012), Daniel K Schneider (2006), BIE (2002), and Erika Baker or PEI (2011). PBL model of Tony Lagos consists of several steps, that is the general introduction, making the team learning, PBL implementation, inter-group meetings, and follow-up meetings, and evaluation.

Paul Hamilton model is composed of several steps consisting of activities such as get an idea, design the project, tune the project, do the project, and exhibit the project. While K Schneider model consists of several basic steps consist of the following activities: an explanation of the project specifications, the selection of projects by the group, arrange the project schedule, the feedback

mechanism both in the group and classroom, project presentations, and assessment.

BIE model consists of the following steps recognizing students' inherent drive to learn, highlighting provocative issues or questions, solve problems that specify products, performance-based assessments, multiple products that permit frequent feedback, and encouraging collaboration in small group and class.

PEI model comprises the following steps of: asking questions (for science) and defining problems (for engineering); developing and using models; planning and carrying out investigations; analyzing and interpreting data; using mathematics, information and computer technology, and computational thinking; constructing explanations (for science) and designing solutions (for engineering); engaging in argument from evidence; obtaining, evaluating, and communicating information.

### 3. 2. Appropriate Model Implementation

To get an appropriate PBL model for building construction and drawing course is necessary to study on several models in order to obtain an overview of advantages and disadvantages of each model. Before comparing each PBL model, it is needed to first describe the conventional learning procedure that based on teacher learning center to recognize its characteristics and shortage of this model.

Conventional learning on building construction drawing course can be generally described in the following activity: explanation of the project specification, determination of building projects, construction theory explanation, drafting of project drawings, frequent feedback, revision and improvement, and finally drawing submission. In this conventional method, the teacher took a dominant role in determining the project, explained the theory of construction associated with the project, provide feedback on student work, and assess the final project; while students usually work individually. This learning process is linear, monotone, individual, and controlled. Students are only passively accept the project, listening to lectures construction theory, receives input only from a teacher, and receive final project assessment is also dependent on a teacher.

These will be presented a comparison between PBL models to evaluate which model is most suitable according to the characteristics of a building construction course. Lagos Model consists of several steps, that is: general introduction, making the learning group, PBL implementation, inter-group meeting, follow-up meeting, and evaluation. Learning model developed by Lagos is still in general; it only emphasizes the importance of inter-group meetings and follow-up meeting. It

seems difficult to totally convert the conventional learning of BCD 2 into this model.

PBL model developed by Paul Hamilton (2012) comprises the steps: get an idea, design the project, tune the project, do the project, and exhibit the project. Hamilton model is quite suitable to be applied at BCD 2. Conventional procedures in the form of "explanation of the project specification" and "determination of the project" can be converted into step "get an idea" and "design the project" in this model. While the step "progress" can be converted into "do the project". Steps "final project submission" can be converted into step "exhibit the project" in this model. Step "providing inputs" may be converted into step "tune the project", but the order process is still not in accordance with the characteristics of the task.

Schneider model consists of the following steps: an explanation of the project specifications, the selection of projects by the group, making the project schedule, project implementation, feedback mechanisms both within the group or classroom, improvement, project presentations, and assessment. It seems the whole of "substance of learning" and "order process" in the conventional method can be converted into this model. Significant difference is that the paradigm of learning in Schneider is no longer based on teacher learning center but student learning center. Students are required to participate actively in learning, and are no longer completing assignments on an individual basis only. Eventually be possible for them to present their final projects in classroom to get comments, feedback and assessment of inter-group; something that is not facilitated by the conventional method.

BIE and PEI models, also seems less in accordance with conventional methods, both in substance and process of learning. BIE model may be appropriate to increase the problem solving skill especially in creating specific products. While PEI may be appropriate models for science and engineering teaching, but less suitable for building construction drawing course.

Description of the five models of PBL is shown that two models of Hamilton and Schneider are the appropriate approach to be implemented at BCD 2 course. However, Schneider model is the most appropriate, both in "substance of procedure" or "order of procedure" to be used.

Schneider PBL models organized learning process into four steps: getting the start, the initial team activity, project implementation, and completion. In the first step (getting start) learning activities carried out by discussing the project, time limits, method of assessment, resources, requirements and team building. In the second step (initial activity), the learning is done by setting the specifications of the project, formulation of

objectives, targets and time planning, teacher feedback mechanism, revision of specifications and do plans. In the third step (take action), the learning process needs to pay attention to the following activities: a) control the student to complete the task within the allotted time, b) ensure that students are involved in regular meetings, c) conduct task improvement, d) ensure sharing among team members, e) conduct feedback, and f) problem

solving. In the fourth step (completion), each student must: a) complete a final project and prepare a presentation, b) involved in the class room assessment activity in order to get suggestions from all participants, and c) involved in the closing activity to share project experience. Conversion of conventional learning models into models of Schneider described the scheme in the form below.

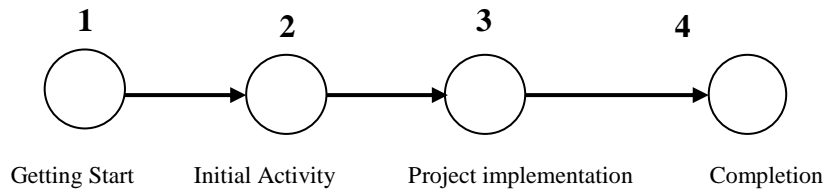


Figure 1. Procedure of Schneider’s PBL Model

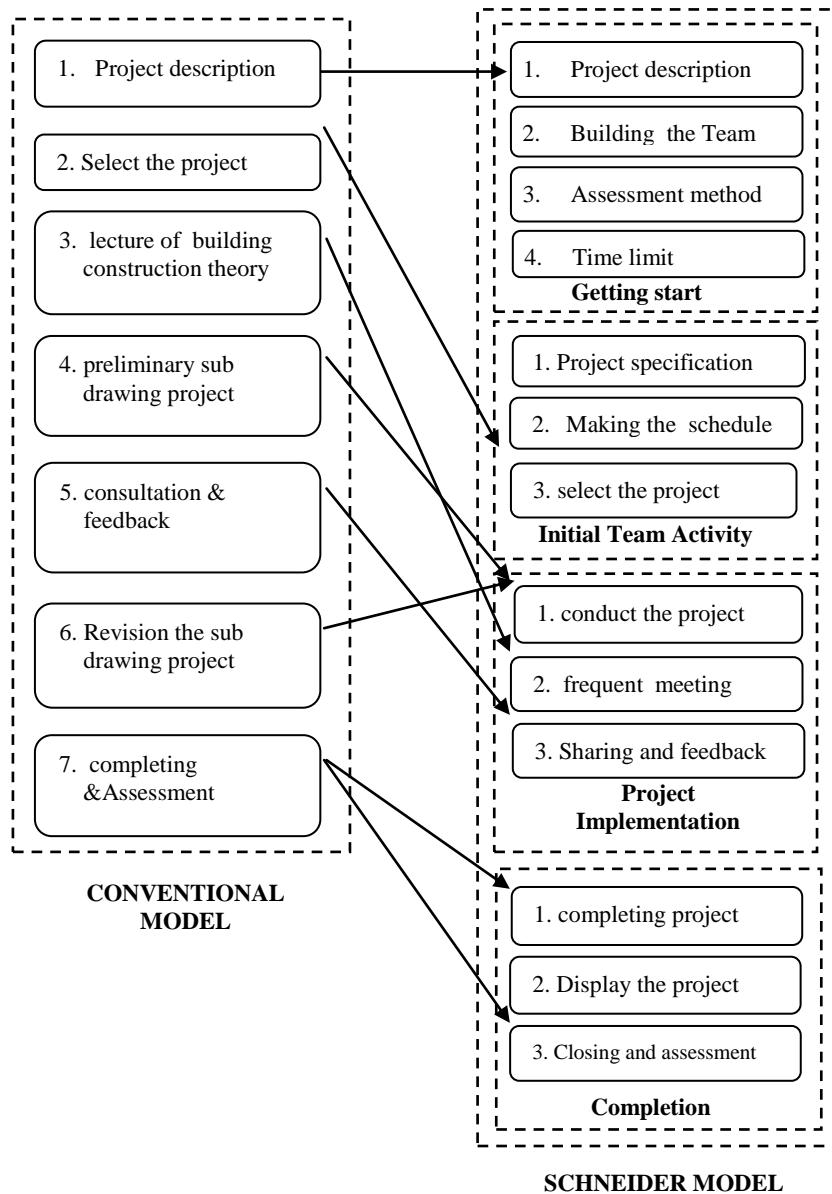


Figure 2. Conversion of cConventional Model into Schneider’s PBL Model

The study of a modified Schneider PBL model that implemented at BCD 2 course getting some findings follows: a) the performance of the group will be effective as group members are relatively equal ability, b) initial students do not have adequate knowledge of building construction, making them less able to provide significant input to the discussions in groups c) a group with insufficient construction knowledge, tend to be late in completing their tasks. Both provision of theoretical knowledge of building construction and field work project can improve students' knowledge significantly, d) Project construction drawings are composed of serial types of sub-projects, each of which can be completed separately but sequentially e) each sub-project implemented through the draft design drawings of the project, sharing in the classroom, feedback, revision, and completion. This means that all projects are carried through the model of Schneider with repeated cycles in each

sub-project, f) assessment process allowing for peer assessment among students as a consideration for the teacher to determine final score, g) at the phase of completion, all projects of each group presented and displayed in the classroom to get an appreciation of other groups, h) to improve the standard or quality of the project drawing and to encourage discussion within the group, it is recommended that each group has a professional project drawing document.

#### 4. Recommendation

Some results obtained in this classroom action research should be considered in the pre-model preparation of project-based learning for building drawing construction course. This pre-model of project based learning modified from Schneider model is proposed in accordance with the characteristics of learning project that composed of sub-projects which each possible to be completed separately but sequentially.

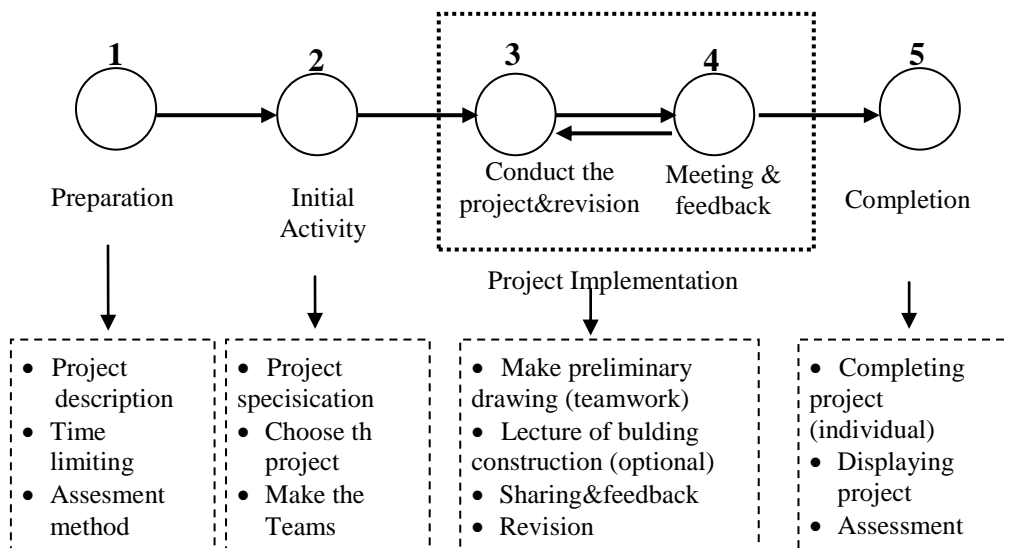


Figure 3. The Modified Schneider PBL Model for Building Construction Drawing Course

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# REORIENTATION LEARNING IN VOCATIONAL HIGH SCHOOL

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## Abstract

Being a vocational high school teacher in the global era definitely not easy, this is because vocational teachers have a very tough task in preparing its graduates to be ready to work. This is reasonable because the world of work in a global era is always characterized by uncertainty, the more rapid and frequent change, and demands for greater flexibility. This change fundamentally not only demanded the labor force that has the ability to work in the field (hard competencies) but also very important to master the ability to deal with change and take advantage of the change itself (soft competence). Therefore, the challenge of vocational education (SMK) to be able to integrate these two kinds of components in an integrated competency in preparing the human resources that have the ability to work and grow in the future.

Learning is the essence of education. Thereby solving the problem of vocational education at the vocational school will not be released from the need for innovations that are focused on improving the quality of learning. Form, shape, and the efforts of these innovations can vary but all have the same common goal, namely the establishment of a quality learning process so as to enhance the competence, ability, skill, and competitiveness of graduates.

Learning model based on constructivism, contextual learning (Contextual Teaching and Learning), media computer-assisted learning and holistic assessment is an appropriate learning model is applied in an effort to improve the quality of vocational school graduates.

**Keywords:** a reorientation of learning, constructivism, contextual.

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## 1. Preliminary

The rapid development of science and technology and the challenges of the global era requires educational institutions to actually produce graduates capable of competing, adaptive and anticipatory responses to changes and new conditions, open to change, able to learn how to learn (learning how to learn), multi-Skilling, easily retrained, as well as have the basics of broad capabilities, powerful, and fundamental to evolve in the future. Further Pardjono (2003), states that can exist in the face of changes in employment structure, are also required communication skills, interpersonal, leadership, team working, analytical, academic discipline, understand globalization, trained and have the ethics, and have the ability in the mastery of language foreign.

Education is a conscious and deliberate effort to create an atmosphere of learning and the learning process so that learners are actively

developing the potential for him to have a religious spiritual strength, self-control, personality, intelligence, noble character, and skills needed him, the nation and the state ((UU No. 20 Tahun 2003, Pasal 1). Are learning is a process of individual effort made a conscious effort to obtain a change in a relatively sedentary behavior, both of which can be observed and can not be observed directly, which occurs as a result of training or experience in interacting with the environment.

Vocational education as preparation of the main institutions of labor (as a bridge to enter the working world) is supposed to be oriented in accordance with the conditions and guidance needs of the community, as well as pioneering the transformation desired by the community.

In essence the process of learning and learning outcomes are influenced by two groups of factors, ie factors derived from the individual who is learning and factors originating outside the individual. Factors contained in the individual are grouped into two factors:



psychological factors and physical factors. Which includes psychological factors such as: cognitive, affective, psychomotor, mix, and personality, while including physical factors such conditions: the senses, limbs, body, glands, nerves and organs in the body. Factors originating outside the individual can be classified into natural environmental factors, socioeconomic factors, educators / teachers and non teachers, the system of teaching / learning models, curriculum, program, course materials, facilities and infrastructure. Thus the goal is reached or absence of vocational education in preparing a qualified workforce that is highly dependent on the quality of inputs and a number of variables in the educational process. One important factor that determines the achievement of these objectives is the learning model used.

## **2. Principles of Competency Based Learning (CBT)**

Competence is a combination of knowledge, skills, values and attitudes are reflected in the habit of thinking and acting. McAshan (1981, in Mulyasa, 2003) suggests that competence is the knowledge, skills, and abilities are controlled by a person who has been a part of him so that he can perform the behaviors of cognitive, affective, and psychomotor as well as possible. In line with this further Finch and Crunkilton (1979) defines competence as mastery of a task, skills, attitudes, and appreciation necessary to be successful. It shows that competence includes tasks, skills, attitudes, and appreciation necessary to be successful. Directed competency-based learning to develop knowledge, understanding, skills, values, attitudes and interests of learners in order to do something in the form of proficiency, accuracy, and success with full responsibility.

Various attempts have been made by secondary vocational education institutions in this CMS, in order to produce graduates who are truly needed by the workforce as a form of accountability to the public. These efforts include the implementation of the policy appear to link and match, dual system of education, competency-based education, Broad-based Education, and Life Skill Education, all of which aim to improve the quality of graduates according to real needs in the workplace. Competency-based learning that has been

implemented in the CMS requires a reorientation of learning (classroom reform) from model to model learning by teaching centered on the learner (student centered learning). This model puts students as learning subjects that have to actively develop themselves. Learning activities should be directed to help learners to master at least a minimal level of competence so that they can achieve the goals set. In accordance with the principles of learning and talent development thoroughly, each student should be given the opportunity to achieve goals in accordance with the capacity and speed of each study. The learning process is an educational interaction between students with learning environments. In the process of learning based on competencies (Competence-Based Training), there is freedom to choose the strategies, methods, teaching techniques are most effective in accordance with the characteristics of the subjects, student characteristics, teacher characteristics and condition of the resources available.

In education, the old paradigm of learning theory or assumption is sourced in John Locke's tabula taste. Locke (in Anita Lie, 2002) states that the mind of a child is as pure white blank piece of paper and scribble-scribble ready to wait for the teacher. In other words, a child's brain is like an empty bottle of a completed with all the knowledge and wisdom of the great teachers. Put more teachers in the teaching activities based on the principles: (1) transfer of knowledge from teacher to students (tasks and duties of teachers are giving students are accepted), (2) fill up the blank with the knowledge (students are passive recipients of knowledge and teachers have knowledge that is to be memorized by the students), (3) mengkotak-kotakkan students (teachers group students based on value and include in the category and the ability of students evaluated the ranking and was reduced to the figures), and (4) drive the students in each beat competition (students work hard to beat his friend and have not been asked to work together)

In addition to the above characteristic of conventional learning tends to be classical mass. This means that educational programs be implemented to serve as many number of students. This teaching model follow the pattern of one-size-fits-all (Tomlinson, 1995). The weakness of this model is the child who has the abilities and special talents or high (gifted

children) to be unnoticed. Though the talent or the ability of gifted children should be attended to and developed through education programs. Along with the rapid development of science and technology, development of learning theories with the findings indicate that the old paradigm has been properly abandoned. Theory, research and implementation of teaching and learning activities to prove that the teacher must change the paradigm of teaching to empower students.

There are at least three underlying theoretical foundation CBT. First, the shift from teaching to the individual learning group. In the individual learning of each student can learn by themselves according to the manner and the ability of each and do not depend on others. Second, the development concept thoroughly studied (mastery learning) or learn a mastery (learning for mastery) which states that most students can master what is taught and conditioned learning task is a learning environment that enables learners to master a given learning materials. Third, the redefinition of talent. Each student can achieve an optimal learning if given enough time.

The third theoretical foundation CBT above give some implications on the desired

learning, among others: (1) learning needs to be more emphasis on individual activities performed in the classical style though, and need to pay attention to the differences of students, (2) need a conducive learning environment sought by the method and media varied to allow each student to learn in a calm and pleasant, and (3) the learning needs to be given sufficient time, especially the completion of tasks or practice.

Further aspects of learning in the Ministry of Education (2002) states that a competency-based curriculum has the following five characteristics: (1) Emphasis on achievement of competencies students both individually and classical. (2) results-oriented learning and diversity. (3) Submission of learning using a variety of approaches and methods. (4) The source of learning not only teachers but also other learning resources that meet the educational element. (5) assessment process and the emphasis on learning outcomes in an effort to achieve mastery or competence. If the learning system that uses a competency approach (CBT) and the non-competence (Non CBT) compared the difference can be seen as in the table below.

Table 1. Learning Differences Non-CBT and CBT

<b>Non-CBT</b>	<b>CBT</b>
Focusing on the completion of the material / absorbent	Focuses on the mastery of competence
Emphasis on the duration	Emphasis on performance
In general, classical	Individual
Oriented needs of the group	Oriented individual needs
Indirect feedback	Direct feedback
Using the book	Using module
Limited field experience	Learning in the field
Focused on teacher	Centered on student
Subjective criteria	Objective criteria
Using PAN	Using the PAP
Oriented on the score	Competence-oriented

Learning model is actually a more appropriate use in an attempt to prepare a qualified workforce (competent)?. Answers to these questions can we trace from the demands of the development of science and technology and the rapid flow of information today and in terms of learning theory. In relation to the demands of the development of science and technology and the rapid flow of information

today, some of the learning paradigm shift in the emphasis that should be addressed: (1) of the role of teacher as transmitter to a facilitator, counselor and consultant, (2) of the role of teachers as a source of knowledge is a friend of learning, (3) of the study directed by the curriculum to be directed by learners themselves, (4) of the study are strictly scheduled to be open, flexible as needed, (5) of

berdasarkan facts to learn and problem-based projects, (6) of based learning theory to the world and the real action and reflection, (7) of the habit of repetition and practice to the design and investigation, (8) obey the rules and procedures of a discovery and creation, (9) from competitive to collaborative, (10) of focus class to focus on the community, (11) of predetermined outcomes to the outcomes that are open, (12) of learning to follow the norms to be creative diversity (13) from the use of computers as a learning object to the use of computers as a learning tool, (14) of the presentation static media into a dynamic multimedia interaction, (15) of the extent of classroom communication are not limited to communication, (16) from a normative assessment of learning outcomes into a comprehensive performance measurement.

Furthermore, the learning paradigm shift has implications for the determination of a particular order in constructing theories of learning. Particular order are the focus of learning theory based on the nature of the demands of science and technology development. Some of this trend, among others: (1) placement of UNESCO's four pillars of education: learning to know, learning to do, learning to be, and learning to life together as a paradigm of learning, (2) trend of shifting the orientation of teacher centered learning to student centered, (3) the trend shift from content-based curriculum toward competency-based curriculum, (4) changes in the theory of learning from model to model of constructivist Behavioristic, and (5) theoretical approach to contextual changes, (6) Standardization of the learning paradigm shift to customization. When viewed from the theories of learning, in general there are three theories of learning that can be used in learning. The third theory is behaviouristik learning, cognitive, and constructivist.

Behaviouristik a learning theory based on changes in behavior. Behaviorism emphasizes the new behavior patterns that are repeated samapai become automatic. This theory was pioneered by Pavlov, Watson, Thorndike, and Skinner. In general behaviouristik learning principles include: (1) Emphasizing attention to changes in behavior can be observed after one treatment, (2) behavior can be strengthened or

stopped through reward or punishment, (3) teaching is planned to develop instructional goals can be measured or observed, and (4) teachers do not need to know knowledge of what is already known and what happens to a person's thought processes. Teachers put more emphasis on the behavior of what should be done on the understanding of learners rather than learners of something.

Cognitive theory is based on the thought processes behind behavior. Changes in behavior were observed and used as an indicator of what happens in the brain learners. The main idea of the theory of the main initiators of this Piaget is representative of one's ideas mental. semua represented in mental structure called a schema. The scheme will determine how data and information received will be understood. If the information in accordance with the existing scheme the students will absorb the information in this scheme. If not in accordance with the existing scheme, the information will be rejected or modified, or coinciding with the scheme or schemes to be changed or adjusted.

Constructivist cognitive theory starting from birth. According to adherents of constructivist knowledge is actively constructed their own by someone who thinks. A person will not absorb knowledge passively. To build a knowledge Baru, the students will adjust to new information or new knowledge is presented teachers with the knowledge or experience you have had through social interaction with other learners or teachers. Merrill and Smorgansbord (in Yulaelawati, 2004) stated a few things about constructivism: (1) knowledge builds upon existing experience or prior knowledge, (2) learning is a personal interpretation of the world, (3) learning is an active process in which meaning is developed based on experience, (4) knowledge grows because of the negotiations (negotiation) meaning through a variety of information, or to agree a view to interact or collaborate with others, (4) learning must be situated in the background (setting) a realistic, assessment should be integrated with the task and not a separate activities. An approach / theory of learning is not a choice in whether or not a good alternative, but more in conformity with feasibility considerations. For your consideration we can observe some of the advantages and disadvantages of these models:

Table 2. Pros and Cons Learning Model

Learning Model	Negative	Positive
Behaviouristik	Learners can be in a situation where the stimulus of the correct answer does not exist	Learners focused on clear objectives that can respond automatically
Kognitif	Learners can be in a situation where the stimulus of the correct answer does not exist	The application of cognitive theory aims to train students to mammpu tasks in the same manner and consistent
Konstruktivistik	Learners learn anything but how to accomplish the task chosen way is not necessarily	Learners are encouraged to understand and interpret reality and experience, he will be better able to cope masalah in real life.

Based on the characteristics of behaviouristik theory, cognitive, and constructivist are the experts through his researches are more likely to suggest that the learning competencies (CBT), constructivist theory is more feasible to be applied predominantly in the learning process

### 3. Learning Model

Revitalization of learning by applying the constructivist approach to complement or further the actualization of the applied current competency approach is believed to provide greater opportunities to support the success of education in workforce preparation. In order for this approach provides optimal results then some of the principles to be followed are:

- a. Organized learning environment with real experience and an alternative, because it is necessary to allow a person to proceed in learning (learning to know, learning to do, and actually doing) contextually
- b. Learning content must be designed to be relevant to the characteristics of the learner as the learning function as an adaptive mechanism in the process of construction, deconstruction and reconstruction of knowledge, attitudes and abilities
- c. Learning content must be understood and designed within the framework or context of the initial stock (entry level behavior) learners, so learning experiences can be effected optimally.
- d. Assessment of students as a formative done to adjust to the diagnosis of a learning experience on an ongoing basis within the framework of lifelong learning (Life-long-continuing-education)

e. Educators who serve as facilitators provide flexibility and encourage the emergence of kemajemukan in perspective and schematic organization of knowledge and skills, knowledge or skills that students master is rich in context.

The principles mentioned above in accordance with the theory of vocational education, known as the Sixteen Prosser's Theory (Prosser and Allen, 1952), three are as follows:

- a. Effective vocational education can only be given if the task is done by training, tools, and machines the same as that applied in the workplace;
- b. Vocational education will be effective if the individual is directly and specifically trained to get to work and think on a regular basis;
- c. Foster an effective work habits students will occur only if the training and learning provided in the form of a real job and not just exercise.

As for some models of learning that can be applied to the preparation of labor, among others:

- a. Active student learning
- b. Contextual approach to learning
- c. Cooperative and collaborative learning
- d. Learning discovery-learning
- e. Thematic learning (project / task)
- f. Learning problem-solving.
- g. Information technology-based learning model

### 4. Models of active student learning (Learning by Doing)

Dewey's theory: learning by doing (1959-1952), is the basis of active learning. Dewey strongly disagree on rote learning, or learning by rote. He is

applying the principles of learning by doing, ie students need to be involved in the learning process spontaneously. Curiosity learners (students) to encourage active involvement in the learning process. Faculty role in providing a means for students to learn. On the other hand is an active learning approach to the management of the learning system by means of active learning to learn independently. Self-learning ability is the ultimate goal of active learning. Self-learning, defined as an individual effort from students to achieve an autonomous competence (Kozma, Belle, William: 1978). Students had the opportunity to set goals, plan the process, using sources, and make decisions. Independent learning does not mean isolating students from the guidance of teachers who serve as a resource, a guide and encouragement. Students do not depend on the direction of continuous teaching. He also has his own creativity and initiative with reference to the guidance obtained (Self Directed Learning, Knowles: 1975). In other words, meaningful learning occurs when students actively participate in the learning process and ultimately be able to decide what will be learned and how to learn

### **5. Contextual Learning Model**

According to Blanchard (2001), contextual learning (Contextual Teaching and Learning), is a study that attempted to link learning content with real-world situations and motivates students to make connections between knowledge and its application in their daily lives. With this model of learning will be more meaningful and enjoyable for students. In contextual learning model, there are seven important aspects to be considered are: (1) discovery, (2) ask, (3) constructive, (4) community learning, (5) authentic assessment, (6) reflection, (7) modeling (The Washington State Consortium fo Contextuel Teaching and Learning,).

With contextual learning is believed to be students more easily understand the subject matter with a more concrete, learning closer to life and will eventually create a meaningful and enjoyable learning. Thus this learning model can be used to develop the know-how of students, and students will more easily understand the concept and recorded in long term memory.

### **6. Cooperative and Collaborative Learning**

Slavin (1987) suggested that cooperative learning can assist students in defining motivation and organizational structure to foster collaborative partnerships (collaborative partnership).

Collaborative learning that focuses on a variety of cognitive advantages that arise because of the intimate interaction when working together. Modify learning objectives than just the delivery of information (transfer of information) into the construction of knowledge (construction of knowledge) by students through study groups.

### **7. Thematic Learning Model**

Develop cross-thematic learning learning across subjects and even subjects. This learning model can improve the efficiency of the learning process because in a learning activity can include many subjects and even the subject of several subjects. Form of learning is usually in the form of project tasks.

### **8. Discoveri Learning Model Learning**

Discovery learning is not merely find the answers to things that are already known to teachers. The learning process is also not a mere process of acquiring knowledge (acquisition). Discovery learning is based on constructivism is a learning process to discover something new (invention), individually or in groups.

### **9. Problem-Based Learning Model Learning**

In this model offers the freedom to students in learning (Barrows, 1970). Learners are expected in the research process can identify problems, collect data and use data for troubleshooting. Problem-Based Learning gives control to students, both individuals and groups to learn according to their interest and attention. Not infrequently the students involved are very intensive, so the motivation to continue learning and continue to find out is increasing.

### **10. Information Technology-Based Learning Model**

Advances in information and communications technology has made it easier for humans to interact with the fast, easy and affordable as well as the potential for innovative learning model. Development of information technology affects the learning model innovation. The discovery of different types of technology that can be used to educational facilities such as computers, CD-ROM and LAN has encouraged beneficiaries of innovation in learning models. Approach to the use of new technologies combined with learning theory has spawned paedagogik e-learning (Rosenberg in Situmorang, 2004). E-learning has a profound influence in the

innovation model of learning. E-Learning is identical with the use of internet technology to deliver course material.

Sensitivity to changes in science learning and rapid progress required him to use information technology in communication and learning. Innovation model of information technology-based learning begins from the use of computers in learning it offline and then developed with the use of the web in online learning.

Development of computer based learning software is deemed worthy and important because it has several advantages including: (1) is a highly effective learning media and can facilitate learning and improve instructional quality, (2) may increase the motivation to learn, (3) can be used as a transmitter of direct and immediate feedback to learners effectively, (4) strongly support individual learning, (5) train the learners to choose the parts skillfully learning the desired content, (6) allows learners to get to know and be familiar with computers is becoming increasingly important in society modern, (7) learning becomes more interesting because it is equipped with color, songs, pictures, graphics and animations that are able to present an interesting study.

Of the effectiveness of computer mediated learning strategies, Roblyer and Hanafin (1988) classify the characteristics of effective computer-assisted learning in the twelve following properties: (1) program is designed based on the destination instruktorsional. Made very clear instructional objectives and measurable so that it can be read by the designer of learning, student / student and teacher / lecturer, (2) program is designed in accordance with the characteristics of learners. Computer-assisted learning program designed specifically, to determine the level of knowledge / skills of learners, (3) is effective in maximizing the interaction, (4) is individualized. This program has the potential to organize learning activities in accordance with the needs of students, (5) effective in maintaining the interest of learners, being able to combine different types of media, moving image information is printed properly, (6) can be approached in a positive student, (7) can be prepared variety of feedback, (8) match the learning environment, (9) is effective in assessing the appearance of a worthy, (10) using the computer resources maksimal, (11) was designed based on the principles of instructional design, (12) the whole program has been evaluated.

Learning to use computers is growing very rapidly, especially after the availability of computers "superhighway" and "internet". Learning system through the internet known as: e-learning, online learning, virtual learning, virtual campus, school net,

web-based learning, resource based learning, distance learning, and other names. Development and application of this learning in the schooling is becoming increasingly important given the development of information technology and the increasingly rapid pace of Indonesia and with other nations, especially in the quality of education and human resources to face the global era, APEC and AFLA. Therefore, the importance of internet in education, especially in the use of the web for education is the fact that we all know (Arsham, 2002). By using the Internet over a rich source of learning and learning techniques. When discussing new things such as teachers and students can use a variety of instances that are accessed via the internet. Because of this learning program can be called the internet melaklui berbasis learning a variety of sources (Resource-Based Learning). In this learning process-oriented rather than oriented to students and teachers such as conventional systems. In these students to be self-reliant and actively seek the information necessary for their own learning.

Some advantages of the Internet as a medium of learning, as quoted Anung Haryono (2003), among others: (1) can provide real examples of integrated knowledge, (2) is very useful to support the learning program based on various sources, because the Internet can provide lessons (courses), can identify and use various sources of learning, can be used for communication and discussion, can be used to conduct activities and assessment, can be used to work together, and can be used to manage learning and counts the support of student learning, (3) capable of provide learning options such as to provide opportunities for students to learn according to their individual learning pace, allowing students to learn in a pleasant place for him, allowing students to learn the material not covered in pembelajaran received lessons in the classroom, giving students the chance to learn the various types of media, technology, giving the opportunity to direct their own learning, giving students the chance to participate in school or university program of good quality and without having to switch majors, (4) can deliver the content at any time in all directions, can be renewed (updating) learning material immediately, can increase the interaction between students and tutors, and can use elements of the CD-ROM-based learning. By considering the characteristics of internet-based learning, where learning is grounded immediately applied in any school or educational institutions.

## 11. Conclusion

1. The rapid development of science and technology and the challenges of the global era demands

pendidikan especially vocational institutions to actually be able to produce graduates capable of competing, adaptive and anticipatory responses to changes and new conditions, open to change, able to learn how to learn (learning how to learn) , multi-skilling, easily retrained, as well as have the basics of broad capabilities, powerful, and fundamental to evolve in the future.

2. In accordance with the principles of learning and talent development thoroughly, each student should be given the opportunity to achieve goals in accordance with the capacity and speed of each study.

3. Improvement of the quality of education can not be separated from the learning system is used. Therefore, for the preparation of highly qualified workforce need for a reorientation of learning from model to model learning by teaching centered on the learner (student centered learning). This model puts students as learning subjects that have to actively develop themselves.

4. Learning models suitable for the preparation of labor between the assessments are: active learning, contextual, cooperative and collaborative, thematic, discoveri learning, problem-solving model (problem-solved learning) and information technology-based learning model.

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# INTERNET AS A LEARNING RESOURCE (Theory Planed Behavior Review)

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## Abstract

This research aimed to determine (1) intention, (2) attitude, (3) subjective norm, (4) perceived behavioral control with respect to students' AILR (Adoption of Internet as a Learning Resource). The research also aimed to find out (5) the relationship between attitude and intention of the students, (6) the relationship between subjective norm and intention of the students, (7) the relationship between perceived behavioral control and intention of the students; (8) the contribution of attitude, subjective norm and perceived control behavior for the student's intentions in relation to AILR of third grade students of SMK N 3 Yogyakarta.

The method applied in this research is survey. This study population is all third grade students of SMK N 3 Yogyakarta in the academic year 2010/2011. The sample taken for this study is 44 third grade students from all majors. Sampling technique used was purposive random sampling (PRS) for the sampled students were only active in daily process of teaching and learning. For this, two permanent teachers had assisted. Data collection technique was to use the questionnaire filling. Data analysis techniques involved Pearson product moment correlation and multiple linear regression to test the hypotheses.

This research found that (1) the average student has an intention of AILR which was categorized into strong, (2) The attitude of student toward AILR at the average was categorized into like, (3) subjective norm of student with respect to the AILR at the average was categorized into supportive, (4) The perceived behavioral control of the student with respect to AILR was categorized into easy, (5) There was a positive and significant relationship between attitude and intention of the students with respect to AILR, (6) There was a positive and significant relationship between subjective norm and intention of the students with respect to AILR, (7) There was a significant and positive relationship between perceived behavioral control and intention of the students with respect to AILR; (8) There was a positive and significant simultaneous contribution of attitude, subjective norm, perceived behavioral control of the students towards their intention with respect to AILR.

**Key words: intention of internet adoption, learning resource, attitude, subjective norm, perceived behavioral control**

## 1. INTRODUCTION

Koesnandar cited in Suroso and Adi Winanto (2009:3) explained that the internet has a big role in learning, namely the reference for current science, knowledge management tools, network of diverse science experts, networks among educational institutions, center for developing teaching material, curriculum development rides and community comparison of standards of competence. Unfortunately, many teenagers, especially the students have not optimized it to be a learning resource.

Ferguson & Perse cited in Giles (2003:267) found that adolescents did not use the internet to search for information about subjects at the interest. Young and Griffiths cited in Giles (2003:268) found

that excessive Internet adoption were targeted more to the social interests of building relations than to the collection of information about the subject matter. Research conducted by Astutik Qomariah Nur (2009:13) dealing with the behavior of internet adoption among urban adolescents found that internet adoption among adolescents in urban areas was devoted more to pleasure activities (leisure / fun activities) than to other purposes such as information retrieval (information utility), communications and transactions.

The description above led the research interest to the investigation of the behavior of AILR from the perspective of its intention as the antecedent variabel. The subject of this study includes third grade students SMK N 3 Yogyakarta. It was intended to reveal the extent to which students use the internet as a learning resource. The



results of this study is expected to be used as basis for decision making that is instructional and lead to improved student learning facilities in all departments at SMK N 3 Yogyakarta.

Ajzen (2006:1) further revealed that the factors that cause an individual to do certain behavior, which in this case is AILR consist of two factors. The first is the individual intention to perform the behavior. The second is the perceived behavior control on the performance of such behavior.

Finally, this study only examined intention of AILR. This study also examined its predictors consisting of attitude, subjective norm and perceived behavioral control and the relationships between each and the intention of AILR.

The limitation of the study led to the eight formulations of the problem. The eight formulations of the problem is (1) how was intention of AILR, attitude toward the AILR, AILR related subjective norm of the students'; (2) how was the relationship between attitude and intention, subjective norm and intention, perceived behavioral control of the students' related with the AILR?; (3) how was the simultaneous contribution of attitude, subjective norm and perceived behavioral control towards intention of the students' in association with AILR?.

## 2. INTENTION OF AILR (Adoption of Internet as Learning Resource)

Intention is the tendency of a person to choose to do or not do any work. Intention is assumed to be the motivating factor in influencing individual behavior. This intention is reflected in how much the desire to try and how strong effort allocated to achieve specific behavior (Ajzen, 1991:181).

Intention to perform a behavior in this case is formed of the combination attitude toward the behavior (AILR), subjective norm about the behavior and perceived behavioral control related to the behavior. The final result is that when the degree of determination to achieve a certain level which is considered sufficient, one may be possible to realize these intentions into behavior along with a note that there are opportunities (Ajzen, 2006:1).

## 3. FACTORS OF AILR INTENTION

AILR intention as revealed by Ajzen (2006:1) has 3 factors. The first is the attitude towards AILR. The second is subjective norm about AILR. The third is the perceived behavioral control on AILR.

### 3.1 Attitude Toward AILR

Attitude is formed of the collection of beliefs called as behavioral beliefs which believe that a behavior produces certain benefits and evaluation of the expected results which can be obtained from the behavioral manifestation.

Fogarty & Shaw (2004) cited in Ketut Ima Ismara (2010:32) stated that attitudes is translated into the power of faith in the behavior (behavioral belief) and is determined on the basis of evaluation of the expected results (outcomes). Mathematical model of the attitude formation can be seen in equation (1).

$$A_{\beta} = \sum b_i \cdot e_i \quad (1)$$

(Fogarty & Shaw, 2004 cited in Ketut Ima Ismara, 2010:32)

$A_{\beta}$  refers to attitude toward behavior B.  $b_i$  refers to behavioral belief that performing B will lead to outcome i.  $e_i$  refers to the evaluation of outcome i. i equal to index behavior and attitude.

Various studies show that there was a relationship between attitude and intention of AILR. Among them are Sitorus, T.G.E. (2009) and Lili Adi Wibowo, Ratih Hurriyati, Maya Sari (2010).

Sitorus, T.G.E. (2009) conducted a study on the adoption of the internet as a resource of information searching with the subject of research consisting of the users of local library. The result is about 80 percents claimed to have a positive attitude towards the adoption of the internet as a resource of information searching. These results are directly proportional to the recognition of 57 percents of the respondents that their intention to adopt the internet is for searching information.

Lili Adi Wibowo, Ratih Hurriyati, Maya Sari (2010) conducted a survey research on the use of ICT in BHMN group higher education institute with 290 respondents consisting of students, faculty and academic staffs. The result is that there is a significant positive relationship between attitude and

intention to adopt the internet as a source of information searching for t test coefficient 8.26 and t critical value 1.96.

*Hypothesis 1: there was a positive relationship between attitude (X1) and intention (Y) with respect to the adoption of the internet as a source of class III student of SMK Negeri 3 Yogyakarta.*

### 3.2 AILR Related Subjective Norm

Subjective norm is the individual's perception of environmental stress in his or her life about to do or not do certain behavior. Perception is subjective in nature therefore the influence of environmental factors is also called the subjective norm. Like attitude toward the behavior, subjective norm was also influenced by beliefs. The difference is if the attitude toward behavior is a function of individual beliefs about behavior to be performed while the subjective norm is a function of individual beliefs obtained from the views of people who are relative important for the individual in the surrounding environment, such as parents, teachers, classmates and others about supporting or not supporting the specific behavior (Nur Handono, Sulastris and Rama Prastiyo Hendi, 2010:35-36).

The strength of the subjective norm lies in each normative belief (n) multiplied by motivation to comply with social pressure (m) which is directly proportional to the sum of the products produced. Subjective norm formula is written in equation (2).

$$N = \sum n_i \cdot m_i \quad (2)$$

(Fogarty & Shaw, 2004 cited in Ketut Ima Imara, 2010:33)

SN refers to subjective norm.  $n_i$  refers to normative belief concerning referent  $i$   $m_i$  refers to motivation to comply with referent  $i$ .  $i$  equal to index.

Various studies showed that there was a relationship between subjective norm and intention of AILR. Among them was Chen, Chen & Kinshuk (2009) and Lili Adi Wibowo, Ratih Hurriyati, Maya Sari (2010).

Chen, Chen & Kinshuk (2009) conducted a study on the use of the internet to share their knowledge with the subject

consisting of students of business and information technology in China. The result is that there was a positive and significant relationship between subjective norm and intention to share knowledge via the Internet with a correlation coefficient  $r$  of 0.302 and its significance value (Sig.) less than 0.01.

Lili Adi Wibowo, Ratih Hurriyati, Maya Sari (2010) conducted a survey research on the use of ICT in BHMN group higher education institute with 290 respondents composing of students, faculty and academic staff. The result is that there was a significant positive relationship between subjective norm and intention to use the internet as a source of information search for t test coefficient of 4.27 and t critical value of 1.96.

*Hypothesis 2: there is a positive relationship between subjective norm (X2) and intention (Y) with respect to the adoption of the internet as a learning resource of third grade student of SMK Negeri 3 Yogyakarta.*

### 3.3 AILR Perceived Behavioral Control

Perceived behavioral control is an individual perception on the availability of information or facilities and the strength of the effect influencing the individual perception on easiness of performing the behavior (Ajzen, 1991 cited in Nur Handono, Sulastris and Rama Hendi Prastiyo, 2010:37).

Perceived behavioral control is obtained from multiplication of control belief (c) and power belief (p). This perceived behavioral control is formulated as written in equation (3).

$$PBC = \sum c_i \cdot p_i \quad (3)$$

(Fogarty & Shaw, 2004 cited in Ketut Ima Ismara, 2010:34)

PBC refers to perceived behavioral control.  $c_i$  refers to control belief that factor  $i$  will be present.  $p_i$  refers to the power of factor  $i$  to facilitate or inhibit performance of the behavior.  $i$  equal to index.

Various studies show that there was a relationship between perceived behavioral control and intention of the adoption of the internet as a learning resource. Among them

was Chen, Chen & Kinshuk (2009) and Lili Adi Wibowo, Ratih Hurriyati, Maya Sari (2010).

Chen, Chen & Kinshuk (2009) conducted a study on the use of the internet to share their knowledge with the subject consisting of students of business and information technology in China. The result is that there is a positive and significant relationship between perceived behavioral control and intention to share knowledge via the internet with a correlation coefficient  $r$  of 0,265 and its significance value (Sig.) less than 0.01.

Lili Adi Wibowo, Ratih Hurriyati, Maya Sari (2010) conducted a survey research on the use of ICT in BHMN group higher education institute with 290 respondents consisting of students, faculty and academic staff. The result is that there is a significant positive relationship between perceived behavioral control and intention to use the internet as a source of information search with  $t$  test coefficient of 2,15 and  $t$  critical value of 1,96.

*Hypothesis 3: there is a positive relationship between perceived behavioral control (X3) and intention (Y) with respect to the adoption of the Internet as a learning resource of third grade student of SMK Negeri 3 Yogyakarta*

Further finding obtained by Chen, Chen & Kinshuk (2009). The finding revealed that attitude, subjective norm, perceived behavioral control and social awareness to share knowledge via the Internet proved to significantly predict the intention to share knowledge via the internet with a R square value of 0,59.

*Hypothesis 4: there is a positive significant contribution between attitude (X1), subjective norm (X2), perceived behavioral control (X3) on intention (Y) with respect to the adoption of the internet as a learning resource of third grade students of SMK N 3 Yogyakarta*

#### 4. RESEARCH METHOD

The study was conducted from June 1 to December 30, 2010 on the campus SMK N 3 Yogyakarta. Research subjects are third grade students of SMK N 3 Yogyakarta in the academic year 2010/2011. The sample amounted to 44 people consisting of representatives from each department. Sampling technique used was

purposive random sampling. Students or members of the sampled population are those who are active in daily teaching and learning process. Sampling was assisted by two permanent teachers. The data was collected through filling close-ended questionnaire. Preparation of a closed-ended questionnaire was done by filling the open-ended questionnaire. The open-ended questionnaire is to collect data related to the beliefs espoused study subjects related to the adoption of the internet as a learning resource such as behavioral beliefs, normative beliefs and behavioral control beliefs. The results of the filling close-ended questionnaire covered a number of raw score for each of the variables attitude, subjective norm, perceived behavioral control and intention of AILR. The raw numbers were then processed for the purposes of data analysis. There are 4 variables measured in the closed questionnaire. Each variable consists of two constructs except intention variable. The validity test of instrument revealed that all 32 items of closed questionnaires are valid. Meanwhile, the instrument reliability test revealed that all 32 items of all 4 variables are reliable despite the level of the reliability varied.

Calculations and data analysis were performed with a computer program of SPSS version 16 for windows because of the consideration of its precision and efficiency. Analysis techniques used in this research are the bivariate correlation and multiple linear regression. This study aimed to determine the relationship between the all three independent variables with the dependent variable both simultaneously and individually.

## 5. RESULT AND DISCUSSION

### 5.1 Results

The level of confidence selected is 95 percents. The results of descriptive statistical analysis reported that the average of student's AILR intention is categorized strong with mean value of 3.54 in the range of 1.00 until 5.00. The mean of students' attitude toward AILR is categorized liked with mean value of 3.84 in the range of -3.40 until 9.60. The mean of students' subjective norm is categorized supportive with mean value of 2.48 in the range of -2.00 until 7.33. The mean of students' perception of behavioral control is categorized easy

with mean value of 2.21 in the range of -2.14 until 5.86. The test of the parametric analysis prerequisite includes test for normality, linearity and multicollinearity. The result of normality test using Kolmogorov Smirnov technique showed that all the variables considered normal because each of them has a significance value above 0.05. Linearity test result showed that all independent variables have a linear relationship to the dependent variable. It is because the relationship between each independent variable and the dependent has F value which smaller than the critical value. Multicollinearity test result show that the correlation coefficient (r) between the independent variables does not exceed 0.8. Ultimately, the parametric prerequisite test was well-fulfilled. Then, the parametric analysis, including pearson product moment correlation analysis and multiple linear regression was eligible to be executed. The result of pearson product moment correlation analysis reported that the alternative hypothesis 1, 2 and 3 declared acceptable. This was because all hypotheses have correlation coefficient (r) exceeding the critical value. They are 0.667, 0.645 and 0.678 respectively. The results of regression analysis showed that the alternative hypothesis 4 was accepted. This was because F value was greater than the critical value. The F value was 20.364 and its critical value was 2.84 in the degree of freedom of 3/40. The multiple correlation coefficient was 0.77.

## 5.2 Discussion

The mean of AILR intention of the students was categorized strong. This means that the average student has a strong intention to adopt the Internet as a learning resource. Average of students' attitudes toward AILR (Adoption of Internet as a Learning Resource) categorized like. This means that the average student likes to adopt the Internet as a learning resource. The liked-categorized-attitudes was based on the recognition of respondents through an opened questionnaire about their belief which said that AILR could provide (1) the ease of doing school work, (2) a more detailed explanation and straightforward about the subject matter of the school, (3) the ease, convenience and speed in the learning process, (4) the opportunity to download free antivirus when using the internet, (5) the opportunity to perform other internet activities such as chatting and browsing. The mean of students'

subjective norm against AILR was categorized supportive. This meant that the average student felt that the important people for them support to adopt the internet as a learning resource. People who were important to them, according to their recognition, were the teachers, classmates and parents. The mean of AILR related perception of behavioral control of the students was categorized easy. This meant that the average students had the perception that the adoption of the internet as a learning resource is easy to do. This easy perception is recorded by respondents through filling an opened questionnaire covering the control belief saying that to do AILR the students have (1) the ability to use the Internet as a learning resources, (2) friends who are willing and able to help when experiencing difficulties in using the Internet, (3) mobile phone which can be used for internet access, (4) knowledge of the website addresses corresponding to the subject matter desired to search, (5) sufficient money to pay for the internet cafe, (6) supporting facilities, such as a laptop or a computer connected to internet network , (7) not-slow internet access speed rate. Three independent variables namely attitude, subjective norm and perceived behavioral control are categorized into liked, supportive and easy respectively. They were directly proportional to the dependent variable intention to list in a strong category. This is also corroborated by the finding that each independent variable has a positive and significant impact on the dependent variable. The positive and significant relationship between independent and dependent variables made the intervention to increase AILR possible to do. The Increasing for AILR can be done through increasing one or more of the independent variable which is empirically low. All the independent variables attitude, subjective norm and perceived behavioral control belong to the not-low category when viewed from the overall data interpretation. More detailed assessment found that subjective norms and perceived behavioral control students were necessary to be increased again because there are some normative and control belonging to the low category.

The suggested approach in increasing AILR based on this research result was divided into three approaches. They were attitude based approach, subjective norm based approach and perceived behavioral control based approach. Increasing the AILR of the student through attitude

based approach was done by spreading the issue of AILR through (1) school printed media such as poster atau pamphlet sticking on the public space like wall magazine and so forth, booklet and leaflet spreaded out in each classroom. Besides, The spreading AILR issues could be done through (2) oral of the teachers such as teacher conveying about the benefit of AILR in every chance. Beside that, increasing the AILR of the student could be done through subjective norm based approach. It was done by (1) doing the persuasive step such as conducting discussion with all the teachers dealing with AILR related topics therefore the oneness of vision could be reached. Beside that, (2) after the persuasive strategy being occupied, the principal was eligible to enforce every teacher involved internet either complimentarily or fully in on-going instruction process. (3) Spreading the issue of AILR for the sake of students to the parents or the students parental representatives in every chance, for example, every student academic advisor discuss the issue to the parents in every semester instruction evaluation publication. (3) Beside that, forming the ambassador of AILR composing the student representative from each class could one of the alternative way. This ambassador had a function for encouraging another students to optimize AILR. This is an optional step.(4) Another step was commanding the teachers to assign the students to enrich each matter of subject with internet. Increasing the AILR of the student through perceived behavioral control based approach was done by providing more factors which may facilitate or ease the students to perform AILR. (1) First step was ensuring the internet laboratory opened at least in the school hours. It should be completed with the schedule of use of the laboratory accommodating all classes. For the sake of the optimization of the adoption of the laboratory, the schedule of the one who takes responsibility for each session of the laboratory use was required. The officers who take responsibility for the laboratory maintenance should be prepared well. They could compose of teachers or the existing staff who is relevantly competent. The second step for increasing the AILR of the student through perceived behavioral control based approach was providing the subject matters which could widely access through internet. It could be done by providing the catalogue of relevant website addresses, relevant learning online forum and so forth.

## 6. CONCLUSION AND SUGGESTION

### 6.1 Conclusion

- 1) Intention use of the Internet as a source of student learning based on the average nilai fall into the strong category. Average means the student has a strong intention to make use of the Internet as a learning resource.
- 2) The attitude of students towards the use of the Internet as a learning resource belongs to the category of love. This means that the average student likes to use the Internet as a learning resource.
- 3) Students' subjective norm regarding the use of the Internet as a learning resource belongs to the category of support. This means that the average student to feel that people are important to them that in this case is the teachers, fellow students and parents to support them to make use of the Internet as a learning resource.
- 4) Perceptions of control student behavior associated with the use of the Internet as a learning resource fall into easy categories. This means that the average student has a perception that the use of the Internet as a learning resource can be done easily.
- 5) There is a significant positive relationship between attitudes and intentions regarding the use of the Internet as a learning resource.
- 6) There are positive and significant relationship between subjective norm and intention of the students regarding the use of the Internet as a learning resource.
- 7) There is a positive relationship between perception and exhibited significantly control student behavior and intentions with respect to the use of the Internet as a learning resource.
- 8) There are positive and significant contribution of attitude, subjective norm, perceived behavioral control on intentions regarding the use of the Internet as a learning resource.

### 6.2 Suggestion

- 1) The principal and staff need about the benefits mewacanakan AILR (Use of the Internet as a Source of Learning) among students. Pewananaan can be through (1) printed media

- such as posters, pamphlets or leaflets, (2) an oral teacher as the teacher explains about the benefits AILR at every opportunity.
- 2) The principal and staff provide information to parents about the benefits AILR for students.
  - 3) The principal assisted the staff do a search and collection of any sites that are relevant and worthy to be a source of learning for students.
  - 4) The principal assisted the staff do a search and collection of online forums to learn what is relevant and worthy to be a source of learning for students.
  - 5) The principal requires each teacher to make learning an online forum related to training that Amnestied eyes and make it as a complement to the learning resources that have been used so far in the learning process.
  - 6) The principal and staff published the results of the search and collection of sites and forums online learning through the library and the school bulletin board so that all students know it.
  - 7) The teacher requires students to enrichment through the internet to any material of any eye that has been given training.
  - 8) The principal further facilitate the students with the facilities and infrastructure that support the use of the Internet as a learning resource, such as:
    - a) Dibukanya laboratorium internet paling tidak selama jam sekolah, dengan catatan bahwa fasilitas yang ada dapat dimanfaatkan semua siswa secara merata;
    - b) Menjadwal secara memadai guru-guru atau teknisi yang berkompoten minimal dalam bidang internet untuk menjadi operator supaya pemanfaatan labotatorium dapat optimal;
    - c) Untuk kepentingan pemeliharaan dan perbaikan laboratorium dapat memberdayakan petugas yang sudah ditunjuk sebelumnya.

### 6.3 Limitedness of the Study

This study has the following limitations:

- 1) Population included only one grade from one school to the samples are not representative because it numbered 44 people. Considered a representative sample shall be 50 percent of the population, in this case is 310 people;

- 2) Reliability of the instrument in the average category enough;
- 3) Investigating the behavior of internet usage is done indirectly through the investigation of the intention to do so;
- 4) Research instrument that is only one type of questionnaire.

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# DEVELOPMENT FOR VOCATIONAL TEACHERS' PROFESSIONALISM

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## Abstract

Within the last five years, the development of vocational teachers' professionalism has obtained significant attention from the government. With the policy of Ministry of National Education, it has been implemented in various programs, including the teacher certification program, recognition of prior learning, educational with minor authority and others. Through the teacher certification program, it is expected that in 2014 2.6 millions teachers will have been certified. This target seems too ambitious, considering that up to 2010, the total number of teachers having been certified is only 743,070 (28.5%).

Developing vocational teachers' professionalism constitutes a systematic process to develop their competencies concerning their knowledge and skills, with the aim to improve the teachers' performance by means of supervising, training, and education. Developing the vocational teachers' professionalism supported by the information and communication technology (ICT) will be able to reach the teacher community in more diverse spectrum of geographic, educational level, and teaching experience, so that the number of teachers being served will be much greater.

Developing vocational teachers' professionalism through ICT-based programs of education, training, or tutoring, will be able to improve the teachers' competence efficiently.

**Keywords** : information and communication technology, developing vocational teachers' professionalism

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## 1. Introduction

Recognition of professional positions for teachers and educators take 60 years. Nearly one human generation. Legally, the state recognition of the educational professions was materialized in 2005, namely with the publication of Law No. 14 of 2005 on Teachers and Lecturers. With the issuance of Government Regulation (*Peraturan Pemerintah*, PP) No. 74 in 2008 on the teacher. Based on the PP No. 74 Article 8 and Article 12, there are two different programs of certification, i.e. certification program for pre-service teachers and certification program and in-service teachers. The pre-service teacher certification program is implemented through the pre-service Professional Teacher Education (PPG) Program, which is intended for prospective teachers who already have gained academic qualifications D4 (diploma) or S1 (graduate) degree. While the certification program for in-service teachers is carried out taken by: 1) in-service Professional Teacher Education (PPG) Program, 2) competency test through portfolio assessment, and 3) administering the teacher certificates directly.

Four years after the implementation of Certification Program for in-service teachers, the Ministry of National Education (Kemdiknas) is still looking for an appropriate certification program which can be accepted by all parties. Various programs of teacher certification have been carried

out, showing a noble effort of the government to ensure that the certification program for all teachers can be completely implemented in 2014. Is this target likely to be realized by Kemdiknas? Data in Kemdiknas shows that in 2010 the total number of teachers in Indonesia is as many as 2,607,311 teachers. Strategic Plan of the Directorate of Teachers and Educational Staff Management Development (PMPTK) has planned the completion of education certification program in 2014. Referring to the data above, PMPTK had set the target that, in 2010, 1,434,021 or (55%) teachers would have been certified. With a quota of 200.000 teachers per year who will follow the certification program through portfolio assessment and /or the Teacher Education and Professional Training (PLPG), it might take nine years (to be completed in 2019), meaning that the strategy completion of professionalism programs for teachers through the certification process track your portfolio and / or difficult PLPG expected to reach the target by 2014.

With a quota of 200,000 teachers per year who will follow the certification program through portfolio assessment, it will take 9 years to complete the program, which means that all the teachers in Indonesia will have been certified in 2019.

Lately, the Directorate General of Higher Education (Dikti) roll out various programs to enhance the professionalism of teachers, among

other programs: Recognition of Prior Learning (PPKHB), Integrated Teacher Education Profession (PPGT), Professional Teacher Education Collaborative (PPG Kolaborasi), and the Education Authority Additional (KKT), etc.. Some programs are partially intersect with teacher professional development Vocational Senior High School (SMK). Data “Balitbang” year 2008/2009, the number of vocational teachers as much as 246.018, consisting of 88.563 school teachers (35.99%) 157.455 teachers and private teachers (64.01%) teachers. Based on educational background, vocational teacher education under S1/D4 much as 45.404 teachers (18.46%) and above S1/D4 many as 200.614 (81.54%). This means that there are still one-fifth (18.46%) vocational teacher who still can not say as a teacher of professional worth.

Certification program for vocational teacher pursued by the current government, is a noble and dignified effort to improve the professionalism of vocational teachers. But the essence of professionalism as vocational teacher, the government should facilitate the development of vocational teacher’s professionalism programs on an ongoing. Therefore, that development programs and vocational teacher professional development strategies domain should be assessed in the forum of the National Convention to VI Technology and Vocational Education Association (APTEKINDO) 2012.

## 2. Development of Teacher's Professionalism

Being a professional has the meaning of having a job or an activity which is carried out and become a source of income to make a living that requires expertise, skills, or competencies that meet certain quality standards or norms and require professional education (Article 1, point 4 of Teachers and Lecturers Act). Meanwhile, the term teachers refer to professional educators with the primary task of educating, teaching, guiding, directing, training, assessing, and evaluating students in elementary education and secondary education (Article 1, point 1).

Teacher's professional development is a process where teachers and principals learn, improve and use the knowledge which is appropriate to the skills and values. The idea of appropriateness itself must be based on considerations of shared values and public values to the needs and best interests of the students (Bolam, 2000). The development of teacher's professionalism can be reached through various stages as follows:

1. Early preparation stage. At this stage, the educational institutions provide training to teachers-to-be (prospective teachers) by giving a number of experiences, related to the activities both inside and outside the classroom.
2. Induction stage. This stage is the first year for students (prospective teachers) to teach. The Prospective Teachers begin to do a process of synthesis of various obligations required by the education programs or the related schooling program.
3. Sustainable development stage. At this stage mentors (senior teachers) participate in various opportunities to shape professional character of the prospective teachers, to sharpen their skills and provide opportunities for prospective teachers to collaborate with the group and to develop plans in subsequent years.
4. Renewal stage. In each stage, the mentors are able to participate in activities that could contribute to renewing their activities both personally and professionally. Renewal can lead to a professional who is highly motivated and trained, so as to meet the demands of his job.
5. Recruitment and selection stage. The mentors, in collaboration with various stakeholders such as the partner schools and Field Experience Program, will develop a teacher recruitment program, which can indirectly help prospective teachers to prepare themselves in the process of recruitment. Students (prospective teachers) are encouraged to pursue their career choices, so that eventually they could present themselves optimally (McNergney, RF and Herbert, JM, 2001).

Development and training for teachers is a human resource development activity which often obtains the largest proportion in the field of education. In general, development and training is defined as the systematic process of developing a job related to knowledge and skills of a person, with the aim of improving his/her performance (Swanson, 1996). Davis and Davis (1998) explain that, development and training is a systematic process to develop the skills, provided information, and attributes to help improve individuals who work in an organization, so that the performance of the organization becomes more effective and efficient. Training helps schools to meet the target and purpose of the schools. Related to the development of teacher's professionalism, the knowledge and skills implemented is associated with pedagogic competence, personality, social and professional (field of study).

According to David and David (1998), training is focused more on the new teachers or to help prospective teachers to meet the required competencies, so that the teachers' competencies should really add value to the school, while development is relevant for teachers who have a



great chance to contribute to the development of school's potentials.

In the midst of this rapid development era, information and communication technology becomes a necessity that cannot be abandoned. Information and communications technology does not only spread out in urban schools, but has also reached the schools in rural areas. It is an inevitability that the development and training for teachers which have been developed by Education Department or professional educational institutions are based more on information and communication technology (ICT). ICT-based development will encourage the teachers to be ICT-literate and eventually the teachers will make use of ICT in the teaching-learning process in the classroom. ICT-based or internet-based learning and computer aided learning has become a tendency for academic options to achieve better results from student learning.

Considering the essence and natural usefulness of ICT to assist the duties of professional teachers, then the program of development and training conducted by Education Department or related institutions must give priority to how teachers are able and skilled in using Internet-based learning and interactive multimedia instruction.

### 3. Internet-Based Education

Some practices of the utilization of information and communication technology (internet) in schools are, among others, to improve the quality of academic information system, information system management, learning management system, and learning resource system. Since the proliferation of the use of Internet as a learning management system, various terms related to internet appear such as: e-learning, online learning/internet-based learning, e-education and web-based learning. Globally, those terms have similarity in common. Fery (2000) slightly distinguishes three areas of learning based on information and communication technology, i.e. e-learning, internet-based learning, and web-based learning.

*E-learning* is the concept of learning based on electronics technology, such as video technology, audio technology, information technology, or communication technology. According Hartanto (2002) e-learning can be defined as a form of information technology applied in educational field in the form of a virtual campus. The definition of e-learning itself is actually very broad, and even a portal that provides information about a certain topic can be included within the scope of e-learning. However, the term *e-learning* is more appropriately addressed as an effort to create a transformation of teaching and learning processes

that are formerly available on campus into a digital form that is abridged by the Internet technology.

*Online-based learning/internet-based learning* is the concept of learning that uses information and communication technology, especially the Internet, where the teaching process conducted by teachers and learning process conducted by students are carried out via e-mail, discussion forums, a particular web site, and all internet-based applications.

*Web-based learning* is a system of distance learning based on information technology using web interface. According to Jolliffe, et.al. (2001), web-based learning is the process of sending and accessing data to coordinate a collection of learning materials using a server to send the material, a browser to access it, Transmission Control Protocol (TCP) or Internet Protocol (IP) and Hypertext Transfer Protocol (HTTP) as an intermediary that is used for connecting the host computer to the Internet. The HTTP of the main protocol used is *World Wide Web*. HTTP can be understood as how a certain message is prepared and transmitted.

Because these terms in principle have the same core that is a learning process that uses internet technology, here one term is selected to be henceforth used, i.e. e-learning, a form of applied information technology used in education in the form of virtual schools, the process of delivering and accessing data to coordinate a collection of learning materials with electronic media using a server to send the material, a browser to access it, TCP / IP and HTTP protocol as an intermediary.

Fery (2000) says the development of Internet technology runs very fast and almost everyone who has already known it will be willing to indulge in the facilities provided by this technology. Various types of information can be accessed through the pages at a particular Internet web site address. Then, what is the difference between a web site that only provides general information and a learning website that conveys a specific educational mission? Web sites that only convey general information or messages will not cause the receiver (audience) of the information to feel responsible for conducting an act or performance that can be measured or assessed. Oftentimes, web sites like this present something that is common to give a description of the idea or on a particular topic. A website is said to be a learning website if the information and messages that are presented requires responsibility from the receiver (audience) to perform an act which can be measured and accounted instructionally. Learning web sites, besides displaying a learning management, also causes the recipients of the program to be able to prove that they have made the learning process.

In the context of developing e-learning in schools, designers of the course material (content developer), teachers, and students have to equate

the concept and the perception that the presence of online learning materials is not to replace the role of teacher in delivering face-to-face instructions, but the online materials should function as a supplemental materials or enriching learning materials. Thus, besides the learning management of scheduled lessons, independent tasks and structured tasks, the learning system through e-learning is still in control and monitored.

### 3.1 Characteristics of Internet Based Learning

Just like the growth of other applications available on the internet today, e-learning is also increasingly diversified and always experiences renewal. For example: a college degree can be obtained by learning via the web, information of books and journals can be accessed via *e-library*, live radio broadcast about the concept of learning, virtual laboratories that connect some researches, and countless number of trainings and education programs.

Jolliffe, et.al. (2001) states that of the many methods and technologies used in e-learning, there are several common characteristics, i.e.: 1) learning materials consist of text, graphics, and multimedia elements like video, audio, and animation; 2) the presence of synchronous and asynchronous communication application such as video conference, chat rooms, or discussion forums; 3) using a web browser, 4) storage, maintenance and administration of the material are carried out in the web servers; and 5) using TCP / IP and HTTP to facilitate communication between students and learning materials or learning resources.

Soekartawi (2002) explains that an e-learning should have several characteristics, namely: 1) using the services of electronic technology, where teachers and students, students and fellow students or teachers and fellow teachers can communicate relatively easily without being limited by the bureaucratic protocol, 2) taking advantage of the computer (digital media and computer networks); 3) using independent-/self-learning materials) which are stored in the computer so they can be accessed by teachers and students anytime and anywhere when they need; and 4) utilizing the schedule of learning, curriculum, the learning progress and other matters related to educational administration which can be viewed on the computer at any time.

### 3.2 How to Submit Internet-Based Learning

Jolliffe et.al. (2001) and Sukartawi (2002) state that the way of delivering teaching materials (the delivery system) with e-learning system can be classified into 2, i.e.: one-way communication and two-way communication. Communication that takes place between teachers and students can be done using any or both of the 2 ways above. Learning communication using e-learning system is

better conducted in two-way communication. The two-way learning communication in e-learning system is divided into two, namely:

- a. Direct way (synchronous), involving the people who are communicating in real-time, meaning that when teachers deliver the instructional materials, students can directly be involved and can communicate with the teachers. Synchronous communication mode can be applied by using chat rooms, real-time audio, discussion forums and computer video conferencing.
- b. Indirect way (asynchronous), meaning that the delivery of instructional materials by the teachers is not carried out directly to the students but are done by previously preparing the instructional materials and upload them for the students who later download them to learn, or send the materials via e-mail.

### 3.3 The Advantages of Internet-Based Learning

The advantages of internet-based learning include: 1) learning materials can be delivered anytime and anywhere, 2) teachers can use some elements of the CD-ROM- based learning but have to add the element of communication, 3) the learning materials are relatively easy to update, 4) it can to develop the number of interactions between students and teachers or the intermediaries, 5) it allows students to earn both the formal and informal communities, 6) it makes possible the use of problem-based learning and/or task-based learning, 7) teachers/students may use the resources that already exist on the internet, 8) teachers and students can be connected in real time using video conferencing, video streaming, or discussion rooms, 9) it has the ability to integrate various media elements such as text, graphics, audio, video, and animation into the learning materials, 10) information for students can be obtained through the available materials while the manager must be able to check each student's progress, 11) students, for some reasons, find the e-learning environment more enjoyable and motivating, allowing them to submit ideas or demonstrate their knowledge to other students who require it (Jolliffe et.al., 2001).

### 3.4 The Weaknesses of Internet-Based Learning

The weaknesses of internet-based learning have a close relationship with the technical limitations of the technology, communications, computers and the internet itself. Over time, however, these problems will be reduced, although of course new problems may appear as well. Jolliffe, et.al. (2001) identify the weaknesses of internet-based learning as follows: communication

and interaction is only done in front of the computer, learning activities becomes expensive, teachers must have sufficient knowledge and skill in designing computer-based learning materials, the limited bandwidth while downloading the teaching material integrated with graphics, video or animation, some learning activities require the students to have a special computer, and students and teachers must have the knowledge and skills to access the Internet.

According to Bullen (2001) in Sukartawi (2002), the weaknesses of utilizing internet for learning are: lack of interaction between teacher and students or even among students themselves, a tendency to ignore academic aspects or social aspects and encourage the growth business/commercial aspects, the teaching-learning process tends to lead towards training rather than educating, the shifting role of the teachers who originally as agents of knowledge transfer into facilitators, supervisors and guides to the students' learning activities, teachers are required to know the teaching-learning techniques using ICT, students who do not have a high motivation to learn will tend to fail, and not all areas have the internet facilities (perhaps this is related to the problem of availability of electricity, communication networks or computer).

### 3.5 Development Model of Internet-Based Learning

Jolliffe, et.al. (2001) state that the use of media is significantly influential in choosing a learning strategy. Therefore, determining the design of internet-based learning should be planned appropriately by considering the characteristic factors of instructional materials and the audience who become the subject of study. Note that internet-based learning has unique characteristics. According to Haughey (1998), in the development of internet-based learning there are three learning systems, i.e.: 1) web courses, 2) web-centric courses, and 3) web-enhanced course.

*Web course model* is the use of internet for educational purposes where students and teachers are completely separated and do not provide any face-to-face learning. All aspects of learning that include: instructional materials, discussions, consultations, assignments, exercises, exams, and other learning activities are fully delivered via the internet. In other words, this model uses a system of distance education.

*Web-centric course model* is the use of internet that combines distance learning and face-to-face (conventional) learning. Some materials are delivered via the internet and some other are through face-to-face learning, each of which functions as complementary to the other. In this model teachers can provide instructions to the students to study the teaching materials via the web

that have been made. Students are also given directions to find out other sources of relevant sites. In the face-to-face meeting, students and teachers have more discussion about the findings of material that has been learned through the internet.

Web-enhanced course model is the use of internet to support the improvement of quality of learning that is done in class. The function of the internet is to provide enrichment (supplements) materials as well as communication between students and teachers, among the fellow students, among students of group members, or between students and other sources. Therefore, the role of teachers in this case is required to master the technique of searching for information on the internet, guiding students to seek and find sites relevant to learning materials, presenting the material through the web in attractive and enjoyable ways, providing guidance and communications over the internet, and other required skills.

The main differences between the design of internet-based instructional materials with multimedia-based instructional materials include four factors: 1) material design, 2) organizational design, 3) page design, and 4) graphic design (Jolliffe, et.al., 2001). In *material design* (design of instructional materials), students who use internet-based learning do not only look at the presented information, but they also need interactions in new ways that are not provided by other learning resources. *Organizational design* is the fundamental reasons associated with the organization of materials to divide some great information collection into several parts. Some basic knowledge that is used in a web environment should be designed so that the number of variables should be kept in minimum conditions. *Page design* is the organization of graphics and text that is performed efficiently, but still has to be able to help students understand the lesson, draw their attention, help them get information and help them interact to each other in interesting ways. *Graphic design* (graphical models) is optimizing the feeling, seeing and learning experiences which constitute very important aspects for the learning efficiency with web learning in the internet-based learning. Using the graph in full screen or graphic as the background, can make students have to wait quite some time for loading the graph. To avoid such problem, it needs considering the strategy of designing a suitable picture to related to the download time.

### 3.6 Internet-Based Learning Components

Jolliffe, et.al. (2001) state that internet-based learning includes all or part of the following elements:

a. A learning event plan

A learning event plan describes and directs the various learning activities,

assessment to student learning achievements in detail, and the time required to complete the learning activities for students.

b. Learning materials presentation

Component of learning materials are presented to students, just like the presentation of material in face-to-face setting. These materials are specifically designed with a text that is supported by a variety of media to enhance the delivery of learning materials. This component can also involve student interaction through the provision of the quiz, open questions, and summaries that the students should make.

c. Learner assessment

The assessment method used in this component will vary depending on the needs of students and the topics being studied, but there are basically three types of assessment namely: online quizzes, written assignment to be completed offline, and examination.

d. Internet resources

Internet resources are available to assist students in enhancing their understanding to the materials. These sources may include an online library and a list of relevant websites.

e. Instructional support

Internet-based learning services include electronic services and facilitators for students. Electronic services can be made in the form of a glossary or a list of Frequently Asked Questions (FAQ). Facilitator services include: e-mail, mailing lists or e-conference (conference using computers).

f. Technical support

Services include some form of technical assistance that will answer students' questions regarding the learning activities, learning resources or the computer itself.

#### 4. Conclusion

With the number of teachers reaching 2.6 million and 246 thousand vocational teachers, the conventional efforts in developing teachers' professionalism will require much expense and time. Various parties have recognized that professional development for in-service teachers should be carried out systematically and continuously. ICT-based teacher professional development is an innovative as well as efficient strategy for human resource development. These efforts will be successful and effective if the program is designed in an integrated, systemic way

and in accordance with the needs of the teachers and schools.

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# AUTOMOTIVE VOCATIONAL TEACHER CANDIDATES: PROBLEMS AND SOLUTIONS NEEDED

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## Abstract

This research was conducted to study the problems faced by automotive vocational teacher candidates especially in automotive electrical subject. The subject in this research was limited in automotive ignition system controlled by electronic control unit which generally become the main problem. This research was an expose facto research to reveal the real handicaps met by vocational teacher candidates. The population was the automotive student of teacher training in Yogyakarta and Semarang consisting of 145 students who had passed automotive electrical system subject. All of the population members were to be the sample of this research. The result showed that 70% student got difficulties in mastering computer controlled ignition system. The most difficult matter (56%) was in understanding the operation of the ignition system. Learning the matter through reading books was not effective for 62% respondent stated difficult. Although there were learning media, they did not helped yet. Based on the result, it is concluded that automotive vocational teacher candidates suffer from difficulties in understanding the operation of computer controlled ignition system. The available reading material and learning media were not effective yet. That's why computer based multimedia being able to facilitate the basic principle and operation of computer controlled ignition system is urgently needed.

**Keywords:** vocational teacher candidates, automotive electrical system, ignition system

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## 1. Introduction

Now days in Indonesia, vocational education is being developed to fulfill work force in any sector of industries and economical society. Vocational education is designed to prepare individuals or skilled personnel for one or a group of occupations, trader or jobs <sup>[1]</sup>. There are three different purposes which a vocational education and training (VET) system needs to support if it is to make a valuable contribution to society, these are the labor market, the wider education system, and the historical position: at any point in time a VET system is on a trajectory of adaptation from what went before towards new social and economic circumstances <sup>[2]</sup>.

To produce skilled personnel, vocational school must be equipped by competent teachers. Teachers' competence is crucial for students' academic achievement. The quality of teachers is thus crucial to the quality of the education system. The only way to improve performance is to improve education <sup>[3]</sup>. The concept of vocational and technical education is rooted on preparation of students for acquisition of necessary skills, knowledge and attitude to earn employment as expert assistant to professional in any field of technology and engineering <sup>[4]</sup>. The vocational technical education is basically occupational education which makes individuals self-sufficient and reliant<sup>[4]</sup>.

vocational technical education (VTE) which is seen by many as an essential educational system going by its great and intimidating qualities and potentials should be properly and adequately administered and supervised if its goals and objectives are to be attained. Also, for VTE to be functional, all processes that are involved must be strengthened, adequately and properly packaged, efficiently and effectively delivered <sup>[5]</sup>. In vocational education, teacher or instructors teach in an environment that requires simultaneous academic and occupational instruction that integrates theoretical and hands-on knowledge while working with a unique student population that has distinct learning needs <sup>[6]</sup>. Therefore, vocational teacher candidates should be prepared well to meet the requirements of vocational teachers.

Pre-service and concurrent teacher education program is generally a fully institutionalized scheme of training in which student teachers participate on full-time basis with a curriculum consisting of subject area content, professional preparation, including principles and methodology of teaching, philosophy, sociology, curriculum theory, educational administration, planning, measurement, finance, history and psychology and teaching practice both micro and field practice <sup>[7]</sup>. Teaching is a profession that needs specialist knowledge and skill. Because of this, education of teachers is crucial process <sup>[8]</sup>. Vocational teachers

have entered the teaching profession using criteria much different from other common school teachers. This made a different road map for vocational teachers as compared to general education teachers [9].

Teaching/education and training play a critical role in developing societies by making intended changes in individuals' behaviors and attitudes with the aim of developing their abilities and providing them with the necessary experiences which enable them to successfully take parts in various tasks and roles [10]. Candidates preparing to work in schools as teachers or other school professionals know and demonstrate the content knowledge, pedagogical content knowledge and skills, and professional dispositions necessary to help all students learn. [11].

In preparing vocational teacher, there are some problems faced by teacher candidates. There is a noticeable lack of teacher preparation and in-service programs and also difficulty in recruiting well educated teachers with skills and competence in vocational and technical education [12]. Also, there are lacks of professional and experienced teachers. The implication of this is that teachers should be professionals and experienced in the teaching of vocational subjects, teachers should be motivated to teach, and there should be cordial relationship between teachers and students [13].

In automotive field, one of the subject area content which has to be mastered by vocational teacher candidates is automotive electrical system. Based on research, after automotive electrical learning process, the students' competence to describe automotive electrical system operation was not satisfying (average score less than 50). As automotive teacher candidates, they are demanded to master automotive electrical system before teaching practice at vocational high school. The lack of competence to describe automotive electrical system is an urgent problem to solve [21]. Based on the lack of competence to describe automotive electrical systems of the automotive teacher candidates, the problem of this research to be revealed is what makes the automotive teacher candidates difficult to master automotive electrical system? The electrical system studied in this research is limited on automotive ignition system controlled by electronic control unit (computer control ignition system) which generally become the main problem.

## 2. Method

This research was an expose facto research to reveal the real handicaps met by vocational teacher candidates. Ex post facto research is a research started by a phenomenon and looking behind to identify the causal factors. The phenomenon in this

research is the difficulty of mastering automotive electrical system especially in automotive ignition system controlled by electronic control unit. This research is conducted to identify the causal factors. The population was the automotive students of teacher training in Yogyakarta and Semarang consisting of 145 teacher students who had passed automotive electrical system subject. All of the population members were to be the samples (participants) of this research. Instrument used in collecting data was a questioner consisting 8 items. The items were developed from four aspects namely subject matter, reading books, teaching media, and difficulty in studying automotive ignition system. The instrument was validated by six experts concerning with this research topics.

## 3. Result and Discussion

Based on data collected, it is showed that 65% of respondents got computer controlled ignition system matter as having automotive electrical system subject. It means that most of lecturer teaching the subject explained computer controlled ignition system. Although the students had received the matter, unfortunately 70% of students felt difficult to learn computer controlled ignition system. The most difficult matter (56%) to be understood is to comprehend the operation of computer controlled ignition system, followed by basic principle, and components and their function, 29% and 15% respectively. 50% students said that text books concerning with the matter were easy to get, but by reading books 62% respondents were still difficult to learn. Actually, there are also enough teaching media (79% student had learning media), but 57% students were not helped yet. 56% learning media were given by lecturer/ teacher.

Based on the result, some problems faced by automotive teacher candidate can be identified as follows: 1) most of student got computer controlled ignition system matter but most of them feel difficult to learn, 2) the most difficult matter is to understand operation of computer controlled ignition system, 3) text books are available but they do not facilitate yet to comprehend the matter, 4) the existing learning medias do not help the students yet.

As vocational teacher candidates, the students have to master the automotive electrical system especially computer controlled ignition system, for recent development of vehicle lies on computer control system including ignition system. The ability of teacher candidates to master the operation of ignition system is the basic knowledge to be able to troubleshoot the failure of ignition system. That's why operation of ignition system must be mastered by automotive teacher candidates. Learning the

matter through reading books was not effective yet. Although there were also learning media, they did not help yet. Based on the result, it is concluded that automotive vocational teacher candidates suffer from difficulties in understanding the operation of computer controlled ignition system. The available reading material and learning media were not effective yet. That's why computer based multimedia being able to facilitate the basic principle and operation of computer controlled ignition system is urgently needed.

The multimedia has to describe the mater in detail, systematically, and can animate the flowing current in computer control ignition system slowly. Based on the problem mentioned above, the characteristics of needed learning media which enable to solve the problems are 1) easy to learn; 2) easy to use; 3) describing basic principle of computer control ignition system, components and their functions, and operation of ignition system in detail; 4) each phenomena occurred during ignition system operation should be illustrated well; and 5) computer operated media being easy to learn anytime and anywhere.

Using computer operated media, automotive teacher candidates can improve their ability in utilizing computer as a teaching tool. A potential challenge to experiential nature of service and vocational education programs in the 21<sup>st</sup> century is the potentially narrow usage of computer in schools. The challenge to vocational/experiential educator is to ensure that using computer and the internet have experiential components or that the computer features of the courses are designed to enhance community-connected activities <sup>[14]</sup>. Applying computer in education has become a must, as a form of technology diffusion to gain an effective learning and teaching. Effective teaching is all about obtaining results in the form of student achievement. It's not about covering the subject matter, it is about student learning <sup>[16]</sup>.

Computer-assisted education has been used frequently in modern educational systems because of its benefits like providing persistence in learning in general, providing a learner-centered learning process, getting the event of learning out of four walls and making it independent from space and time, providing the possibility to practice frequently and providing a quick access to information <sup>[17]</sup>. Concerning with automotive electrical system, computer can be optimized to facilitate learning process in order all students can use it to make learning easier.

Improving capability of vocational teacher candidates will also increase the quality of vocational education. Education enhances the skills of labor and facilitates the diffusion of technology,

which raises productivity and economic growth. There is a positive and significant correlation between economic growth and vocational education and technical training. Mass vocational education enhances technology diffusion, labor productivity and economic growth <sup>[15]</sup>. Rethinking of educational programs like teacher education programs, calls for integration of ICT goals such as computer literacy. Pre-service teacher trainers are yet to adequately integrate ICT tasks in the teaching and learning <sup>[18]</sup>. Need for aggressive implementation of the use of ICT in teaching-learning processes in technical and vocational education beyond Email access and social networks <sup>[20]</sup>.

Computer assisted learning applied in automotive electrical system subject will create an active learning and student centered learning. Student are able to study automotive electrical system anytime and anywhere with minimizing teacher roles. In learner-centered teacher education, through reflective thinking it is possible for teachers to develop important skills for their profession, such as reflecting on learning experiences that enhances learning and analysis, understanding the events in the classroom, creating a classroom environment that induces critical thinking, organizing activities that aim at developing creative thinking, supervising their own professional development, and reorganizing their teaching-learning environment based on the new concepts <sup>[19]</sup>.

#### 4. Conclusion

Some problems faced by automotive teacher candidate can be identified as follows: 1) most of student got computer controlled ignition system matter but most of them feel difficult to learn, 2) the most difficult matter to study is to understand operation of computer controlled ignition system, 3) text books are available but they do not facilitate yet to comprehend the matter, 4) the existing learning medias do not help the students yet. To overcome that problems, the characteristics of needed learning media which enable to solve the problems are 1) easy to learn; 2) easy to use; 3) describing basic principle of computer control ignition system, components and their functions, and operation of ignition system in detail instead of reading books; 4) each phenomena occurred during ignition system operation should be illustrated well to equip existing media; and 5) computer operated media being easy to learn anytime and anywhere.

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# DEVELOPING SOFT SKILLS FOR THE WORK READINESS IN INDUSTRY OF VOCATIONAL HIGH SCHOOL STUDENTS

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## Abstract

The development of the vocational high school (VHS) students' soft skills is urgent to prepare the graduates to be ready in the field of work which always changes and varies. This study aims to: (1) find out a model for developing the soft skills of the VHS students to make them possess work readiness in industry; (2) investigate the manifest capability of the soft skills development to reflect students' work readiness; and (3) investigate the contributions of the soft skills development to the work readiness in industry of the VHS students.

This study was a research and development study consisting of (1) a model design through FGD, Delphi, and expert validation; and (2) model tryouts through an individual tryout, a small-scale tryout, a large-scale tryout. The research subjects comprised VHS students in the Province of Yogyakarta Special Territory. The model fit was analyzed using the analysis of Structural Equation Modelling (SEM) by means of the LISREL 8.71 software.

The results of the study are as follows: (1) a development model for VHS students' soft skills can be made based on the high level of agreement among experts, the instruments' high readability for students, the good implementation of the learning scenario that satisfies the dimensions of the soft skills development; (2) the effectiveness of the model based on the results of the measurement of the exogenous latent variables shows a high category in work motivation (81.15%), work commitment (65.57%), and work appreciation (62.30%), while work ethos (67.21%) and work culture (52.46%) are in the moderate category; all work readiness aspects of 2.89 are strong enough as a work readiness indication; and (3) the contribution of the soft skills development to VHS students' work readiness in industry is 67.8%, shown by the value of t-val (0.824) which is higher than t-table 1.96, which is significant. Therefore, the soft skills development model is capable of equipping VHS graduates with work readiness in industry.

**Keyword:** soft skills, work, VHS

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## 1. Introduction

Implementation of VHS that aims to prepare students for work yet to be realized in an optimal, it can be seen from the percentage of unemployment by level of education<sup>[1]</sup>, indicates the level of open unemployment vocational school graduates in 2011 is still relatively high. The absorption level of vocational graduates in the workforce is still low at only 60% of vocational school graduates who can absorb employment<sup>[2]</sup>, further explained that the vocational school graduates are not all work in accordance with the direction you occupied during the SMK.

One of the specific data that indicate the level of absorption graduates of vocational skills program fashion student survey data S3-UNY PPs PTK 2008 at VHS 6 graduate of Yogyakarta. Vocational school graduates absorption rate fashion expertise has decreased quite dramatically in 2009, when the demand of the purchaser (buyer) to the world of garment products continues to increase.

This is evident from the garment industry job opportunities in the province of Central Java that was published in the Daily JogloSemar (February 2, 2008) 30,000. These conditions indicate the existence of the gap between labor market demand with labor supply availability of vocational education institutions.

Survey data to the garment industry in the region Bawen Semarang, Solo Sukoharjo, and Sleman Yogyakarta, all (100%) stated that the quality of vocational program graduates expertise of fashion, less confident, less able to adapt to work environment, and not ready to face a variety of changes and challenges, so it can not compete with labor that is not from VHS but competitive, fighting spirit, and mental work better.

Vocational education and training in the charge still left the basic values and character development work attitude<sup>[3]</sup>, the explanation that, the world's schools do not recognize failure as a financial loss, the world's schools used to relax, do not know the delivery time, and the world of school less familiar with the sense of quality because the

work is not related to the market. Further explained that the habits and behavior of the above in turn shape the attitudes that undermine quality of vocational school graduates, like insecure, undisciplined, and irresponsible.

School world conditions different from the world of work, but work needs to be invested in the characters from the incoming vocational students. Industry competition and trade in general will always refer to the factor of price, quality, design, time of supply, marketing, and service. This is determined by the quality of human resources is considered a central point of the power of the organization's existence<sup>[5]</sup>.

Candidates' qualification required in addition to the working world of science and skill requirements (hard skills) is also a series of skills that are referred to as soft skills. Hard skills are the mastery of science, technology, and technical skills related to the field of science. Meanwhile, soft skills are the skills a person in their dealings with others (interpersonal-skills) and skills to manage themselves (intrapersonal-skills) that are able to develop to maximum performance<sup>[6]</sup>.

The importance of soft skills as a condition of success in the world of work can be seen from searching online recruitment company (<http://acecnews.blogspot.com/2008/03/ungaran-sari-garment.html>). The most frequent requirement is raised to potential workforce is: "...communicative, team work, working with the target, high motivation, willing under pressure, able to work overtime..." The terms are necessary considering the system work in the garment industry using lean manufacturing is a concept with a systematic approach to eliminate waste by increasing the activity provide added value to take remedial action continuously<sup>[5]</sup>.

Fundamental principles used in lean manufacturing system that is working "kaizen" slogan of the workings of the Japanese emphasis on Seiri, Seiton, Seiso, Seiketsu and Shitsuke (5S). In order to achieve quality, cost, and delivery to meet customer satisfaction, industry is also implementing the three main systems, namely: total quality control (TQC), total productive maintenance (TPM), and the system of just-in-time production (JIT)<sup>[7]</sup>. Vocational students who will enter the working world have carefully readiness aspects required to support the work smoothness.

Development of soft skills that vocational students is done to meet the urgent needs of the vocational school graduates in the world of user-oriented work on productivity, quality, and service. This is a major challenge for vocational education institutions to prepare students with the best before entering the workforce are not only skilled but can

work with confidence, responsible, disciplined, meticulous, careful, workmanlike, and neatly, so as to compete with the power foreign labor to freely enter the labor market of Indonesia. The purpose of this study was to: (1) find a model of the development of soft skills that can provide job readiness skills program vocational students of fashion in the garment industry, (2) determine the ability of the manifest reflects the development of soft skills in students' work readiness, and (3) know the contribution development of soft skills for work readiness skills program vocational students in the fashion garment industry.

## **2. Soft Skills for the Work Readiness in Industry**

Development of soft skills is one strategy to equip students with the job readiness of an emphasis on aspects of mental and emotional maturity that match, as well as the attitude in dealing with the situation in the world of work. The situation is very different from learning in school to work in industrial situations, then equip the readiness of the work in the process of vocational education in not only the aspects of hard skills, but needs to be given briefing on the soft skills aspects in a balanced way.

That, "labor as human resources are the unique elements of production compared with other production elements"<sup>[8]</sup>. Is almost unique because it has elements of an active personality, emotional, responsive, and critical of every phenomenon that it faces. Elements of this personality in the world of work is known as soft skills: the ability to distinguish non-technical person to another even though their technical capabilities (hard skills) together. Soft skills a person will appear at the time of his activity and interacts with its environment. Force production is not solely based on the presence of existing technology, but because of the encouragement of people to ability. Soft skills so as to position the human element that has a system supporting the production of psychological strength.

One feature of the work culture in the garment industry in the production are intimately associated with the target quality, cost, and delivery to meet customer satisfaction, so that the garment industry to implement the three main systems, namely: total quality control (TQC), total productive maintenance (TPM), and the system of just-in-time production (JIT)<sup>[7]</sup>. Characteristics of the production work on a specific garment industry is the Kaizen work culture that is fundamental to the success of competitive advantage of Japanese products in the world, which means continuous

improvement and doing development in total and by involving all elements of the existing potential.

Before doing an activity of work would require a readiness, both physically and psychologically. Job readiness for vocational students is important, because after graduating from the school will immediately face a higher level of life is work. Readiness is a willingness to provide responses or reactions arising from a person who is a point of maturity to accept and practice a particular behavior<sup>[9]</sup>,<sup>[10]</sup>. Readiness as the overall condition of a person who makes it ready to respond or answer a certain way includes three aspects, namely: (a) the physical, mental, and emotional; (b) the needs, motivations, and goals, and (c) the skills and knowledge studied<sup>[9]</sup>.

A sewing operator must have the technical and soft skills to smooth it works. Even Robert Jordan<sup>[11]</sup> states that "workers (sewing machine operator) have to be multi talented to be Able to work steadily," which means that the work on the sewing operator requires more capabilities than just sewing skills, but the other skills that are mentally unstable to be able to work with. Vocational students are prepared to work in the industry should be provided with soft skills that match the characteristics of his work because later will be in a different working environment with the school environment.

### 3. Research Framework

The development process is built by a variable soft skills: (1) work commitment, (2) work ethic, (3) appreciation of the work, (4) motivation, and (5) culture that supported the device worksheet that charged kaizen, JIT, and QC through the procedure and practice of learning scenarios. Soft skills are expected to equip the students obtained work readiness in this study represented by the variable self-confidence, responsibility, discipline, honesty, obedience, fighting spirit, communication, cooperation, competitiveness, and leadership.

The first phase, building a work commitment is the key to a successful, first and foremost, the commitment is a strong work ethic, an openness to learning and a strong drive to do the best job. Dimensional measurement of work commitment in the show by the readiness, willingness, confidence of students to carry out the tasks to be done in learning the practice of sewing the clothing industry to implement a working system, which includes kaizen (quick, clean, neat, patient, and diligent), quality control, and just-in-time.

Stages of building a work ethic through practical learning activities in the simulation as a teaching method to simulate an act or a role. Form of role-playing simulation (role playing) is done by creating a situation and working conditions in the

industry, the teacher plays a role as a supervisor and the student as a sewing operator.

The third phase, build appreciation of the work that students understand, enjoy and appreciate the work field as a meaningful activity for themselves and others. Dimensions of students' level of appreciation of the work of the field work is measured by: (1) understand the job, (2) appreciate the workings of an effective and efficient, (3) enjoys the field work, and (4) appreciate fashion products it produces.

The fourth stage, build motivation. Teacher motivation student work done through the application of the bonus value on quality work and on time, pay attention, guidance, and praise to students who do a good job and a reprimand to the student who does not work according to the procedure. So their motivation for working in the development of soft skills in the teaching practices implemented in five dimensions operationalized into a measurement that is: (1) attendance, (2) attention, (3) persistence, (4) hard work, (5) thoroughness, and (6) achievements.

The fifth stage of building a work culture through habituation (practising), the students get used to the way work is patterned kaizen system work in practice each of the learning process. Target to habituation in the implementation of kaizen, are: full participation in developing good habits and keep the rules, communication and feedback as a daily routine, do kaizen, communication and feedback, individual responsibility, and practice good habits. Behavior is repeated infinitely, more and more embedded in the custom later became a part of nature and personality.

Dimensions of behavior that is expected to emerge from the process of developing soft skills in the practice of learning is reflected by the variables: (1) confidence, (2) responsibility, (3) discipline, (4) mental toughness, (5) compliance, (6) power fighting, (7) honesty; (8) communications; (9) cooperation; (10) competitiveness; (11) adaptation, and (12) leadership.

### 4. Research Methods

This study classified the type of Research & Development. Method development scheme mix of David (2001) and Borg and Gall (1983).

Model of causality, exogenous development of soft skills is formed by the variables (x1, x2, x3, x4, and x5) then each variable will be explored with the inventory, while the endogenous variables to the development of soft skills will be established by 12 indicators (y1, y2, y3, ... Y12) which would then be extracted with 40 inventory.

## 5. Model Development

Instruments used in collecting the data or information from the model of the development of soft skills is to inventory, observation, and interviews. The evaluation of the ability to manifest in reflecting variabel tested by confirmatory factor latent analysis (CFA). In interpreting the results of the study, used standardized factor loading or the Lambada parameter ( $\lambda$ ). Assessment Criteria load factor (factor loading) are presented Rindon & Ferguson <sup>[10]</sup> that  $\lambda > 0.50$  very significant, but if you still  $> 0.30$  those items can still be considered for use. Ability shown by the coefficient lambda-owned, and significanceas manifest by the counted value of t of the test instrument with LISREL 8.71 path diagram obtained confidence models (Standardized Solution).

Insrumen validation results using the CFA show all manifest the latent variables are declared valid by a t-value signified  $> 1.96$  which means that all the manifest that is used to reflect the latent proven to function properly, so it is not made manifest in the removal or replacement of a questionnaire. Manifest latent variable has a coefficient of construct reliability  $\geq 0.7$ , indicating that unidimensi be declared reliable.

Model validation method used is a Focus Group Discussion (FGD) and the Delphi technique. The prototype model of the development of soft skills and the dimensions and indicators generated from the FGD is then used for the Delphi technique and understanding in order to get input from experts. Resume the execution of FGD is as follows:

Table 1. Dimensions and Indicators of Development of Soft Skills

No	Dimension development of soft skills	Indikator	Dimension work readiness	Indikator
1.	Commitment	a. Willingness to follow the work rules	work readiness	a. confident
		b. Working time agreement		b. Responsibility
		c. quality-oriented		c. Dicypline
		d. willingness to be honest		d. Mental
		e. The willingness of cooperation	e. Honesty	
2.	Ethos	a. to work sincerely		f. persinstant
		b. work completed		g. Kepatuhan
		c. working spirit		h. competition
		d. serious work		i. Adaptation
		e. Winning work (qualified)		j. Team work
		f. working optimistic		k. communication
3.	Appreciation	a. understand the job		l. leaderhip
		b. appreciate the workings of an effective and efficient		
		c. enjoys the field work		
		d. appreciate fashion products it produces.		
4.	Culture	a. Kaizen		
		b. <i>Quality Control</i>		
		c. <i>Just in-time</i>		
		d. honesty		
		e. Team work		

### a. Testing Model

Development of soft skills being applied in practice learning to be tested in advance through several stages as follows:

#### 1) Expanded trials

The effectiveness of the development of soft skills acquired with the following results: RPP highest score on this aspect of objectivity; worksheet the highest score on the aspect of intensity, soft skills development methods the highest score in the aspect of objectivity and systematic assessment of soft skills development model obtained the highest scores on aspects of

efficient, systematic, and intensity. The test results show that the effectiveness of the expanded phase of the model is effective in soft skills development practices in vocational learning.

#### 2) Exogenous Variables

Score results of measurement of work commitment variables between 2:32 - 3.80 with an average of 3282. 2:32 is the lowest score of all participants are measured on a scale of 1-4 respondents to interpret the motivation level of less than moderate. While the highest score of 3.80 is a result that shows the respondents with high motivation. Average of 3282 shows in general from

all respondents already have a high motivation to work.

The results of measurements on other exogenous also get an average score of more than three on all variables, indicating the respondents already have a commitment, achievement, appreciation, and high culture.

Scores are relatively high, the work ethic has the lowest score, followed the work culture, job

commitment, appreciation of the work, the highest score is the motivation to work. Departure from this sequence is sincerity, thoroughness, enthusiasm, seriousness, excellent spirit, and optimism in students' work as a priority aspect of the work ethic to be improved. The second priority is the cultural aspects of work: teamwork, just-in-time, quality control, honest and 5R (clean, neat, concise, patient, diligent).

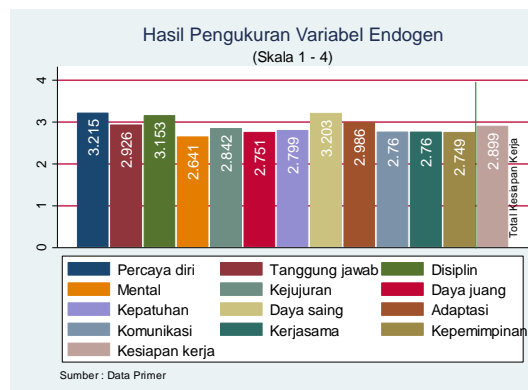


Figure 1. measurements of endogenous variables

### 3) Endogenous Variables (Work Readiness)

There are twelve aspects that reflect the work readiness. The highest scores (>3) occurred in the aspect of self-confidence, discipline, and competitiveness.

Scores below 3 occur in other aspects, with a range of scores 2.749-2.926. Two aspects of the scores of more than 3 indicate a high response from students, while other aspects with a score of less than 3 and more than 2.5 indicate a moderate response to the above.

All aspects of working as a unit readiness was a score of 2.889, could be said as approaching 3 strong enough to be accepted as an indication of the readiness of the work that has been pretty good. 122 individuals from the majority of participants are known to have a job readiness categorized simply by the number reached 68.03%, much less the next largest category is 16:39%, and high-low as much as 13.93% and 1.64%.

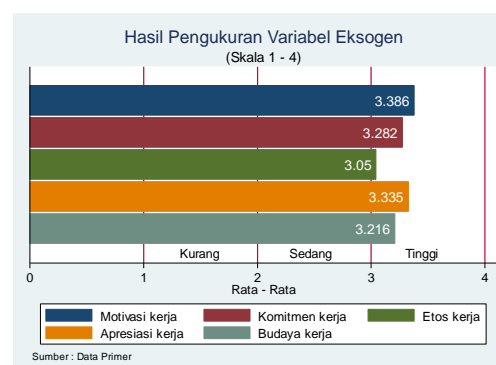


Figure 2. measurement result of the exogenous variables

### 4) Conformance Test Model

The test results obtained chi square coefficient of 224.60 with a probability (p) of 0000, the acquisition of  $p < 0.05$  indicates significant differences between the sample covariance with the model revealed that the population is less suitable.

Chi-Square is an absolute fit index, which is sufficient basis to modify the model, for Goodness of Fit Index parameter can be found in the following table:

Tabel 2. Goodness of Fit Index

No	Index	Cut of Value	Hasil	Keterangan
1	Chi Kuadrat (p)	Kecil ( $p > 0.05$ )	138.72 ( $p=0.074$ )	Significant
2	CFI	$\geq 0.90$ (max 1)	0.9862	Significant
3	GFI	$\geq 0.95$ (max 1)	0.8812	Moderat
4	AGFI	$\geq 0.95$ (max 1)	0.8432	Moderat
5	RMSEA	$\leq 0.08$ (Min 0)	0.0400	Significant

Chi square value becomes 138.72 after repair models with probability (p) of 0074, changes in the probability (p) to more than 0.05 indicates there is no longer significant differences between the

sample covariance with the covariance estimation, means that the model proposed has strong support from the sample to explain estimates or population.

Tabel 3. Functions in Soft Skills Development Model

Fungsi		Endogen	Eksogen	$\beta$	$\beta^2$	t-val	Ket*
Confirmatory Factor Analysis (CFA)	Soft Skills Development	<i>Soft Skills (x)</i>	Commitment	0.331	0.110	Reff	Sig
			Ethos	0.412	0.169	4.245	Sig
			Appreciation	0.302	0.091	3.680	Sig
			Culture	0.321	0.103	3.797	Sig
			Motivation	0.252	0.064	3.313	Sig
	Work Readiness	Work Readiness	Confidence	0.592	0.350	Reff	Sig
			Responsibilities	0.625	0.391	5.669	Sig
			Discipline	0.585	0.342	5.395	Sig
			Mentality	0.556	0.309	5.187	Sig
			Honesty	0.570	0.325	5.287	Sig
			Daya Juang	0.653	0.426	5.852	Sig
			Compliance	0.496	0.246	4.728	Sig
			Competitiveness	0.730	0.532	6.327	Sig
			Adaptation	0.711	0.505	6.214	Sig
			Communications	0.546	0.298	5.089	Sig
			Team work	0.757	0.573	6.470	Sig
			Leadership	0.572	0.327	5.278	Sig
			Struktural	Work Readiness (y)	<i>Soft Skills (x)</i>	0.824	0.678

**a. Confirmatory Factor Analysis Soft Skills Development**

Latent variable soft skills development built by the five manifest, all characterized by significant t-value of more than t-table (1.96). The first function to the fifth of each manifest can be written as follows:

- Commitment = 0331 Soft Skills .....  $R^2 = 0110$
- Ethos = 0412 Soft Skills .....  $R^2 = 0169$
- Appreciation = 0302 Soft Skills .....  $R^2 = 0091$
- Culture = 0321 Soft Skills .....  $R^2 = 0103$
- Motivation = 0252 Soft Skills ....  $R^2 = 0064$

Coefficient in the equation describes the ability to reflect on the development of soft skills. Manifest commitment reflects the soft skills can work for 0331, meaning that for every one unit

capable of reflecting the commitment of soft skills by 0331. This capability is in the form equivalent to 11.0%. Interpretation of the coefficient on the manifest commitment applies to the other manifest. So it can be explained further that, work ethic is the most powerful reflectors used for measuring the development of soft skills, ability to reach 16.9%, and then sequentially from the most is the commitment, culture, appreciation and motivation to work.

**b. Confirmatory Factor Analysis Work Readiness**

There are twelve manifest that build job readiness latent variables, all have t-value of the t-table indicates significant. First to the last function can be written as the following equation:

Confidence = 0592 Work Readiness ....  $R^2 = 0350$   
 Responsibilities= 0625 Work Readiness.  $R^2 = 0391$   
 Discipline = 0585 Work Readiness .....  $R^2 = 0342$   
 Mental = 0556 Work Readiness .....  $R^2 = 0309$   
 Honesty = 0570 Work Readiness .....  $R^2 = 0325$   
 Power = 0653 Work Readiness .....  $R^2 = 0426$   
 Compliance = 0496 Work Readiness .....  $R^2 = 0246$   
 Competitiveness=0730 Work Readiness  $R^2 = 0532$   
 Adaptation = 0711 Work Readiness.....  $R^2 = 0505$   
 Communications=0546 Work Readiness  $R^2 = 0298$   
 Partnership = 0757 Work Readiness.....  $R^2 = 0573$   
 Leadership = 0572 Work Readiness.....  $R^2 = 0327$

Manifest of competitiveness seems to have the lambda coefficient for 0730, interprets the competitive ability could reflect on the subject of work readiness for 0730, or 53.2%. This is seen most strongly manifest in reflecting. While the

weakest is manifest reflects compliance by 0496 or 24.6%.

### c. Characteristics of Soft Skills Development Model

The main characteristics of soft skills development model, namely:

- 1) The model is implemented in an integrated learning practices in any other time so it does not require out of hours learning.
- 2) The model is to develop students' soft skills for work readiness in the garment industry through the stages of building a work commitment, work ethic, an appreciation of work, work culture, and the readiness of the implementation work is supported by the worksheet

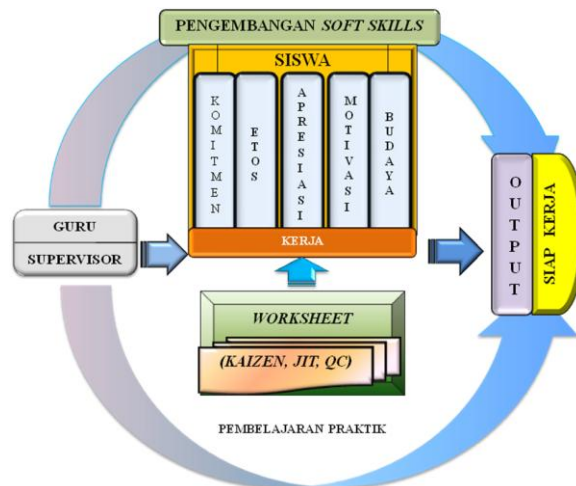


Figure 4. Model Development of Soft Skills for Job Readiness

Based on the empirical results of the trials, the model of the development of soft skills in the practice of learning has advantages, as follow:

- 1) This model can jointly develop soft skills and hard skills of students in a balanced and sustainable;
- 2) To encourage teachers and students to make improvements and increase the quality of work through continuous quality control;
- 3) This model builds confidence, responsibility, motivation, discipline, in preparation foray into the world of work;
- 4) To establish good working communication between teachers and students;
- 5) Can build commitment and responsibility in a professional teacher in providing student work readiness supplies in the industry;
- 6) It can provide insight and experience working in the garment industry through simulation work

by implementing a working system of kaizen, JIT, and QC.

### 6. Analysis of Soft Skills Development Model Results

Model development of soft skills is a process that uses step procedure that includes: work motivation, job commitment, work ethic, work appreciation, work culture, and reflections, which are integrated in the learning practices.

- a. Phase building work motivation, work effectively to develop students' motivation. Student motivation obtained from a questionnaire developed shows the results: attendance, attention, perseverance, hard work, and thoroughness and achievements. These results indicate that the procedure can build the motivation work motivation work vocational students.

- b. Phase building work commitments, effectively develops students' work commitments. Building stage of the work experience gained commitment from the student questionnaire was developed showing the results: the willingness to follow work rules, working time agreements, quality oriented, honest willingness, and willingness to cooperate. These results indicate that the procedure can work to build commitment to foster students' vocational work commitments.
- c. Phase building work ethics through work simulations, effectively develops students' work ethic. Simulation phase of work experience students gained from the questionnaire responses of students who show the results: Work sincerely, work completed, work morale, serious work, work superior (quality), and works optimistic. These results indicate that the procedure to simulate the work can foster students' vocational work ethic.
- d. Phase meaning of work, effectively develop students' appreciation of the work. Interpretation phase of work experience students gained from the questionnaire responses of students who developed shows the results: students understand the tailoring must be accompanied tenacity, thoroughness, and accuracy, appreciate sewing tasks, like tailoring, so do not be a burden sewing job requires good mental condition, and appreciate the work of sewing as an important work in the manufacture of clothing. These results indicate that the meaning of work procedures can develop students' appreciation of vocational work.
- e. Phase of habituation, effectively developing a culture of student work. Habituation phase of the learning experience in practice obtained from questionnaire responses of students who developed shows the results: the students have a better work habits by implementing kaizen culture (clean, neat, concise, patient, diligent), culture of quality control, just-in-time culture, honest culture, and cultural cooperation. These results suggest that the habituation phase to develop a culture of vocational students.
- f. Development of soft skills in teaching practice can provide work readiness of students who are viewed from the level: students are more confident, disciplined, honest, responsible for the completion of tasks, working, struggling helplessly, to compete, and have better leadership. These results indicate that the development of soft skills in teaching practice can provide soft skills aspects of vocational students of fashion expertise to the program of work readiness in the garment industry.

## 7. Conclusion

The conclusion is the answer to the objectives and research questions have been formulated in research and development.

- a. The development of soft skills found in effective teaching practices that provide job readiness skills program vocational students of fashion in the garment industry, based on: the level of agreement among experts that high, the legibility of the instruments by the students is high, very well and learning scenario in fulfilling the development dimension of soft skills: (1) commitment to work, (2) work ethic, (3) motivation, (4) appreciation of the work, and (5) working culture. In this case the teacher acts as a supervisor who is supported by the device worksheet charged Kaizen, Quality Control (QC), and Just in Time (JIT).
- b. The results of measurements on the exogenous variables have a mean score of more than 3 to indicate the respondents already have a commitment, achievement, appreciation, and high culture. Work motivation is high (81.15%), work commitments (65.57%) and appreciation of work (62.30%) also has a characteristic distribution with a majority of the high category. While the work ethic (67.21%) and culture (52.46%) majority categorization enough. Of the 12 aspects of work that reflects readiness. The highest score (> 3) occurred in the aspect of self-confidence, discipline, and competitiveness. Scores below it occurs in other aspects, the scores range 2.75 - 2.93 (range from a maximum score of 5). All of these aspects as a whole was the work readiness score of 2.89 could be said was approaching 3 strong enough to be accepted as an indication of the readiness of the work that has been good.
- c. Contribute to the development of soft skills for work readiness of vocational students in the garments industrialization of 67.8% shown by the relationship between variables soft skills and job readiness to form the following equation

$$\text{Job readiness} = 0.824 \text{ Soft Skill} \dots R^2 = 0.678$$

Interpret the above equation for each increase of one unit of soft skills to improve job readiness for 0.824 equivalent to 67.8%. Contributions can be quite large because it is more than moderate (50%). significance trustworthy also be seen from the t-val (0.824) that more than t-table at 1.96.



## 8. Implications of Research

Based on the findings noted above, some of the implications that can be input and concerns:

Judging from the high demand of labor in the garment industry vocational program graduates expertise of fashion will have an impact on the preparation of candidates for employment in accordance with the needs of industry. For that responsibility, and the foresight of the manager should really be able to answer this challenge into an opportunity. The findings have implications for the curriculum in vocational skills program of fashion in 2004 should be reviewed because it only directs students to the competence "custom mode". Curriculum development should be able to equip students with competence in accordance with the needs of the labor market that is likely more widespread in the development of his career.

## 9. Utilization and development advice More Products

- a. For Schools (VHS) can take advantage of this model for the development of soft skills of students so that graduates have the soft skills that fit the needs of the working world.
- b. Suggested model of the development of work-based soft skills can be utilized not only in vocational education (formal), but can also be applied to non-formal education such as the Institute for Educational Skills, Training Center.
- c. Teachers are advised to practice in vocational learning, to be a pioneer in the application of soft skills development model of practice in learning and socialize advantages and benefits of the application of soft skills development MGKMP program expertise in fashion.
- d. Policy-makers to the Ministry of Education and Culture is associated with secondary vocational education (PSMK), would be able to follow up the results of this study in order to realize the paradigm of demand-driven, so it can be found right key indicator to be developed in the process of learning in vocational education-based because demand driven and flexible to change with the times.

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# THE IMPACT OF TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING PROGRAMS OFFERED BY POLYTECHNICS ON MALAYSIA ECONOMIC DEVELOPMENT BASED ON THE GRADUATE'S JOB PERFORMANCE

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## Abstract

Technical Vocational Education and Training (TVET) is the corner stone of Malaysia's technological advancement, in providing skilled and semi skilled workforce for various sectors, having a direct impact on the development of economy and the eradication of poverty in the country. The objectives of this study is to: learn of the caliber of graduates who are capable of carrying out the jobs they are trained and hired for; learn more about the quality of polytechnics TVET programs in light of its historical developmental processes and meeting the challenges of time; study the impact of programs in economic development; learn of the best practices of the similar programs of the same caliber in other technologically advanced countries of the region; partnerships between skills development service providers and employers, assessment of the initiatives that can be taken into consideration to improve the employability among people of various skills; suggest measures of improvement based on findings while comparisons are made with the selected technologically advanced countries of Asia; and recommend improved training programs based on Assessment Research where competent graduates who can meet the challenges of the 21st century becomes the target of the programs. The findings of the study and the comparison of the similar programs in technologically advanced countries of Asia will provide suggestions for the authorities and policy makers to incorporate changes and strategies for the improvement of the TVET programs in Malaysia. The immediate contributions of this study will provide Polytechnics the reasons to revise and improve the existing programs while reviewing the best practices of the countries of the region. The research method for the purpose of this study is Assessment Research indicating the process of collecting, synthesizing and interpreting information to aid in decision making of the future academic programs of Polytechnics that can be also used for planning academic programs and setting up goals, selecting more relevant instructional strategies and monitoring students' progress toward the attainment of the goals.

## 1. Introduction

The Malaysian technological and economic development has brought about changes in the standards of the living of its people. Malaysia's development in a relatively short period of history signifies its commitment to eradication of poverty.

The statistical data from the Ministry of Information, Communication Centre shows that the poverty rate in 1957 averaged 29.7% has reduced to 1.9% in year 2002<sup>[1]</sup>. However today, the Third Long Term Plan Framework (RRJP3) reports that the living standard of Malaysians is expected to continue to improve in the coming decade. Actual per capita income is expected to increase by more than 5% per year following a period of rapid economic growth. Due to low poverty levels, the government will focus its attention of becoming high income nations by year 2020<sup>[2]</sup>.

## 2. The Economic Transformation Program (ETP) is a comprehensive effort that will transform Malaysia into a high-income nation by 2020.

The ETP is one of the governmental strategies to make the vision 2020 become a reality. Through the transformation plans, a 6% annual growth in the Gross National Income (GNI) is expected that will allow Malaysia to become a high-income nation causing the creation of about 3.3 million new jobs. The **12 NKEAs** are: Oil, Gas and Energy; Palm Oil & Rubber; Financial Services; Tourism; Business Services; Electronics and Electrical; Wholesale and Retail; Education; Healthcare; Communications Content and Infrastructure; Agriculture; and Greater Kuala Lumpur/Klang Valley<sup>[3]</sup>. With projection of NKEAs and the creation of 3.3 million new jobs, necessitate the need for human capital with skills for each of the NKEAs to be developed. Thus technical and vocational

<sup>1</sup> I would like to thank Professor A. M. Rahmanzai from Univ. of Nebraska, USA for many useful comments, suggestions and full guidance. I have benefited from comments from Professor NoraishahBuang and discussion with Dr. MohdRashahidiMohamood from Department of Polytechnic Education, Ministry of Higher Education of Malaysia. Thank you also to Hikmatullah H.A. Khan, Noor Faznyhuda and Aida Syariza who have provided assistance to help me find the relevant data and information used as sources for this paper.

education and training of the polytechnics becomes even more significant in ensuring the successes of ETP and the Malaysia 2020 Vision of becoming a high-income nation. The programs of studies offered by Polytechnics are aligned with the need of economic development in Malaysia.

### 3. The History and Evolution of Polytechnics Development in Malaysia

#### Early development stage

The first Polytechnic (Ungku Omar in 1969) was established under the United Nations Development Plan (UNDP) and The First Malaysian Plan of (1966-1970)[4]. The main purpose of establishing Polytechnic Ungku Omar (PUO), to provide training to high school drop outs with Sijil Pelajaran Malaysia (SPM) and Sijil Pelajaran Vocational Malaysia (SPVM) to train skilled technicians in engineering sectors, middle executive officer and semi-professionals to the private and public sectors of Malaysia<sup>[5]</sup>. A total of 233 students had enrolled into diploma and certificate programs in PUO. The 4 academic departments consist of Civil Engineering, Electricals Engineering, mechanical Engineering and Commerce. In year 1971, polytechnic managed to produce 202 graduates at the certificate levels<sup>[6]</sup>.

#### Education Reformation in Malaysia

In 1974, a Cabinet Committee of Education was formed to study and review the education system in Malaysia. A report produced in 1979, gave prominence to the role of polytechnics where more polytechnic campuses should be built and more programs should be offered so that technician and mid-level workforce can be produced<sup>[7]</sup>. At the same time, the National Industrial Plan (1985-1995) claiming that Malaysia is on its way to be an industrial country meant more factories and industries will be opened and more skilled workers of different fields will be needed<sup>[8]</sup>. Since its inception until 1995, polytechnics have undergone through drastic developmental changes, where 12 polytechnics campuses were built all over Malaysia from 1987 to 1998, were, with the maximum capacity enrolment of 5000 student per semester<sup>[9]</sup>. The programs offered breeding fast, more departments were created and more new programs were developed to fulfill the needs of various semi-professional workers in various industries. Since then, up to year 1999, a large number of students (31,844) were enrolled and 7,342 graduates of

various technical skills were produced by these polytechnics<sup>[10]</sup>.

### 4. Efforts relevant to Standards since 2000

Some of the efforts are as follows:

#### i. Competency Standards for Polytechnic's Graduates

Competency Standards for Polytechnic's Graduates was developed by the Division of Curriculum Development in year 2008 and published in 2010 for the uses of polytechnics especially in developing and reviewing the curricula of any of its programs. The Competency Standards for Polytechnic Graduates consist of performance specifications of attainment of knowledge, skills, attitudes and abilities that needed to be successful in the workplace. Therefore, this Competency Standards as a framework in the development of Polytechnic curricula at the diploma and advanced diploma levels, thus facilitating the production of highly competent and knowledgeable graduates<sup>[11]</sup>. Undoubtedly, the development of these standards assured the quality of programmes and graduates, boosting national and international standing, increase market access, enhance graduate mobility, and attain prestige, and distinction. In year 2010, there were 11 Competencies Standards for Polytechnic's Graduates published and also produced in CD form and used as guidance in reviewing the curriculum of the existing programs.

#### ii. Curriculum development and review

Fig. 1 below shows the curriculum development process which have be to follow through everytime any new curriculum need to developed.

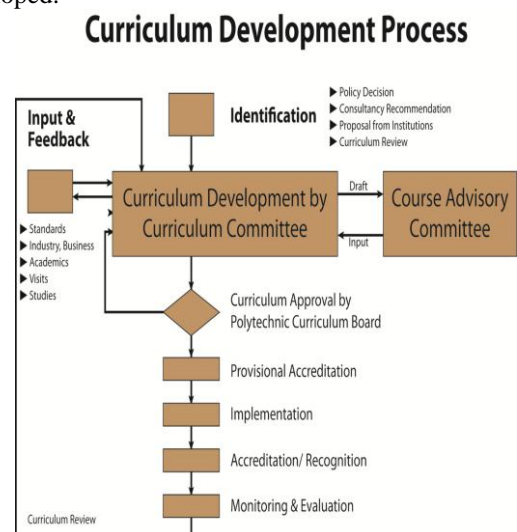


Figure 1. The Curriculum Development Process<sup>[12]</sup>

In April 2008, a Curriculum Advisory Committee was formed responding to the needs for strengthening the Department of Polytechnic Education ties in academics and collaborative activities with the industries. Curriculum Advisory Committee refers to a group of individuals appointed responsibilities to evaluate, monitor, and review a program of study. The committee was composed of experts from universities, government officials, industry representatives, and members of professional bodies and associations who have the experience, knowledge and expertise in related areas. It is further reviewed by the Board Curriculum Committee, established under the Education Act 1996 (Act 550).

Fig. 2 below shows the standard procedure that guide the curriculum developer in writing the syllabus for a certain program. As for the content, it must fit with the eight (8) domains of learning outcomes stipulated in the Malaysian Qualification Framework as follows:

- a. knowledge;
- b. practical skills;
- c. social skills and responsibilities;
- d. values, attitudes and professionalism;
- e. communication, leadership and team skills;
- f. problem solving and scientific skills;
- g. information management and lifelong learning skills; and
- h. managerial and entrepreneur skills.

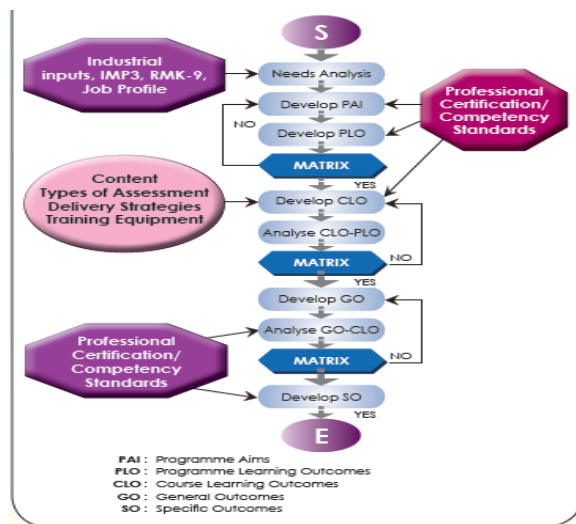


Figure 2. The curriculum writing process<sup>[13]</sup>

### iii. Programs accreditation -Malaysia Quality Assurance and Malaysia Qualification Framework (MQA & MQF)

The Malaysian Quality Agency is responsible for the accreditation on any education programs offered by higher education institution including polytechnics in Malaysia. MQA is making certain that each program followed by a student must

obtain an official certificate to ensure that graduates meet quality standards and criteria set in accordance with the requirements of the Malaysian Qualifications Framework (MQF). Thus, polytechnic's programs will undergo the accreditation process with MQA once it is offered by polytechnics and these programs must have the full accreditation before the first cohort student graduated. All the existing programs offered by all polytechnics are already in the MQA recognition list whereas three new programs including 2 advance diploma programs have received their full accreditation from MQA<sup>[14]</sup>.

### iv. Outcomes Based Learning (OBE)

In line with the MQF's needs, in year 2008, the Department of Polytechnic Education has adapted Outcomes Based Education (OBE) approaches in their education system. Programs Education Outcomes, Program Learning Outcomes and Course Learning Outcomes are created for all polytechnic programs. It is a student centered and active learning where teachers are becoming facilitators. It anticipated that the students will master the core courses knowledge. Skills, independent, and soft skills are practically applied during their studies in polytechnics.

### iv. Soft skills

A Soft skills module has been added into each program structures besides fulfilling the MQF requirement, it is also meant for students' preparation for the Industrial Training. Student are groomed with soft skills knowledge and skills needed by industries before they undergo industrial training. The soft skills include team works, communication, business etc.

### v. Entrepreneurship

New edition of curricula reviewed was distributed and implemented in year 2009, has accommodated a common course of Entrepreneurship which is compulsory to all students across all academic departments in Polytechnics. Entrepreneurship is a form of discipline is the cornerstone to the development and growth of the economy and society<sup>[15]</sup>.

### vi. Industrial Training

The polytechnics' industrial training has been improvised where Industrial Training is a compulsory to all polytechnics' students. They have to undergo for one full semester or at least 5 month of attachment with the industries. The objectives of industrial training are to expose students to the working environments, and enforce their academics knowledge in work environment. The Industrial Training Handbook contains

procedures and responsibilities of the industries and also information about the polytechnics and suggested skills and knowledge that can be acquired by the students in relation to their course of studies.

### **Polytechnics Transformational Plan (2010-2015)**

Polytechnic Transformation Plan was launched by the Hon. Deputy Prime Minister on February 25, 2010. Transformation direction Polytechnic aims to build capacity for developing new polytechnic human resources to meet the needs of the New Economic Model (NEM), which emphasized the potential of innovation and creativity. The transformation of polytechnics is to produce human capital with first class mentality and meet market needs.

Malaysia needs to increase the percentage of high-skilled workers from 23% to 37% by 2015<sup>[16]</sup>. Therefore, the TVET in Polytechnics has a special role to deal with the changing higher education ecosystem that not only requires a high knowledge of human capital but also has high-level skills.

Some of the achievements highlighted as follows:

#### **i. Premier Polytechnics**

On February 25, 2010, three of the institutions were upgraded by the Government to premier polytechnic status and there are plans to upgrade others further to university level by 2015. The premier polytechnics are Politeknik Ungku Omar, Politeknik Salahuddin Abdul Aziz Shah and Politeknik Johor Baru<sup>[17]</sup>. The upgrade sets the momentum for polytechnics nationwide to undergo a major revamp under the Higher Education Ministry's Polytechnic Transformation Plan

#### **ii. Work-based Learning Advanced Diploma**

Since 2010, five advanced diploma programs were offered by Polytechnics. Majority of them are work-based learning (WBL). WBL is a form of pedagogy that blends classroom instruction with structured real life working experiences and preparing the students towards a competitive edge in today's workplace<sup>[18]</sup>. These programs give the student a lot of opportunities to acquire the needed knowledge as well as to undergo industrial training during their fourth and fifth semester in order to be exposed to the real working world of the related field. This will give the students added value and ensure they the knowledge and skills are acquired from this programs relevant to the needs of the industries

#### **iii. Professional Certification**

METrO Polytechnic is new polytechnic education concept which were launched on 21<sup>st</sup> July 2011 with the objective of maximizing education and training opportunities<sup>[19]</sup>. Strong cooperation with professional bodies and industries are ties as professional certification are offered and some professional bodies agree to implement short courses at these polytechnics, for example Halal Development Centre (HDC) and Islamic Banking & Finance Institute of Malaysia (IBFIM)<sup>[20]</sup>.

### **Today**

Quick Facts of the Department of Polytechnic Education shows that in 2011 there are 30 polytechnics all over Malaysia with total capacity of 77,000 students per semester, 89,292 students enrolled and 33,310 graduates are produced<sup>[21]</sup>. There are 4 advanced diploma programs, 55 diploma programs and 28 certificates programs of various skills and fields are offered by polytechnics<sup>[22]</sup>. After 42 years of service (1969-2011), about 366,434 graduates are produced<sup>[23]</sup>. These figures show the importance of polytechnics to the nation and its contributions in providing semi-professional workers seems to be the main provider of semi-professional workers in Malaysia.

However, behind all these achievements there are still some loopholes in the system. Polytechnics graduates employability rate in average is still below the Key Performance Indicators of the Department of Polytechnics Education i.e. 85% of the graduates will be offered a field related job within 6 months after they have completed their study [24]. The rate of employability often depends on the quality of polytechnics graduates. An assumption could be made that the higher the employed number, the more quality the graduates have and therefore more graduates are employed in related industries.

### **The Significance of the Study**

TVET is the corner stone of Malaysia technological advancement, in providing skilled and semi-skilled workforce for various sectors impacting the development of economy and the eradication of poverty in the country.

### **Contribution of the Study**

It is anticipated that the findings of the study and the comparison of same caliber of training programs in the selected technologically advanced countries of Asia, will contribute to the quality of TVET programs in Malaysia.

Objectives:

1. To learn of the caliber of graduates who are capable of carrying out the tasks and responsibility for the job they are hired;

2. To know the quality of polytechnics TVET program, in light of its development process;
3. To investigate the impact of programs in the area of economic development;
4. To show the impact of the TVET in the political stability of the country;
5. To demonstrate the significance of the program in the area of health and social welfare;
6. To find and report the impact on the eradication in poverty reduction and employment opportunities in Malaysia;
7. To learn of the performance factors of the similar programs of the same caliber in other countries;
8. To suggest measures of improvement based on finding and comparisons made with the selected technologically advanced countries of Asia;
9. To suggest area for improvement in light of the findings for the future program developments; and
10. To recommend the training of competent graduates to meet the challenges of the 21<sup>st</sup> century.

To ensure both the human and professional aspects of vocational education, 2 major dimensions should always guide the design of the relevant schemes and systems; EDUCATION AND WORK. The education dimension caters more for the individual needs and human aspect, while work or economic dimension caters for more societal needs and labor markets requirement.

**Employment:** Technical and Vocational Education and Training (TVET) or Vocation Education in brief, should be dealt with the more comprehensive concern of Human Resources Development, a concept that comprises the supply side or sources of human power, as well as the linkages and channels between the supply and demand sides of human power. The supply side covers, formal and non-formal education and training systems, including vocational education. The linkages between the supply and demand sides of human power, on the other hand, occupational classifications and standards, employment requires performance and job satisfaction.

**Job Performance** Job performance is the way employees perform their work. An employee's performance is determined during job performance reviews, with an employer taking into account factors such as leadership skills, time management, organizational skills and productivity to analyze each employee on an individual basis. Job performance reviews are often done yearly and can determine raise eligibility, whether an employee is

right for promotion or even if an employee should be fired<sup>[25]</sup>. Thus, job performance deals with the workplace. It's also part of Human Resources Management which is most commonly refers to whether a person performs his/her job well. Another key feature of job performance is that it has to be goal relevant. Performance must be directed toward organizational goals that are relevant to the job or task a person is assigned to.

### **Different types of performance**

Another way to divide up performance is in terms of task and contextual (citizenship and counterproductive) behavior. Whereas task performance describes obligatory behaviors, contextual behaviors are behaviors that do not fulfill specific aspects of job's required role. Citizenship behaviors are defined as behaviors which contribute to the goals of the organization through their effect on the social and psychological conditions. Counterproductive behaviors, on the other hand, are intentional actions by employees which circumvent the aims of the organization<sup>[26]</sup>.

## **5. METHODOLOGY**

It is a combination of quantitative and qualitative research. The TVET system and programs implemented by polytechnics provided the quantitative aspect of the research, while the comparison similar program of the caliber in selected technologically advanced countries of Asia contributed the qualitative part of the research.

### **Programs of the same caliber offered in technologically advanced countries of the Region:**

'Hyundai', 'Samsung', 'LG', 'Daewoo' are among the most famous products consumed in South East Asia, Middle East, China, South America and India. These electronics products and cars are all made in Korea<sup>[27]</sup>. Begin as a tropical country with the GDP per capita of USD2500 in 1970 but in 2008 Republic of Korea has vastly developed into a technologically developed country of with the GDP per capita of almost USD20000<sup>[28]</sup>. The higher the products and services produced indicates that the quality of production in Korea is also high and efficient. This also implies that TVET in Republic of Korea has reached a higher level of standards and quality.

There are many factors contribute to the success of TVET in Republic of Korea. Few major factors include the government strategies and commitment, factories and industries involvement and cooperation, *jeonmundaehack*, and literacy level of the community.

TVET in Republic of Korea is meant for employment and competition. The government of

the Republic of Korea has placed great emphasis on its promotion and development. Enactment of the Basic Law of vocational training in 1976 and enacted the Act of Promoting Workers' Vocational 1997 has very impressive impact on the in-plant training provided by large industries. Basic Law of vocational training in 1976 indicates that companies are obliged to pay a training levy if they did not provide in-plant training, or if their training did not meet the government regulation. In 1976, the Republic of Korea GDP was USD843 but due to government action the GDP has increased to USD11767 in 1997 <sup>[29]</sup>. As a result, the rapid growth of economic is sustained. The Act of Promoting Workers' Vocational 1997 indicate that the Minister of Labor provides financial support to employers who implement vocational competency development programs <sup>[30]</sup>. High commitment of Republic of Korea government enforcing employer involvement in VET policy development and implementations is illustrated by recent creation of sector councils and Meister schools <sup>[31]</sup>.

In sustaining productivity and ensuring its quality, workforce competency and skills are very important. The best practice is by giving the students a realistic experience by applying their knowledge in the factories or industries. Korean *jeonmundaehackor* 'junior college' in English, develop and operate practical site training through 'school-industry cooperative' programs and 'vocational specialty' training plans and job sheets. The impact of this practices, the employment rate of jeonmundaehack graduates in 2004 was 18.1-21.5 percent higher than of four year university graduates <sup>[32]</sup>. Large factories and industries run vocational schools. They enroll secondary schools graduates and in-service workers for 6 months to 2 years. Practices constitute about 60 to 80 percent of the curriculum line <sup>[33]</sup>. Site training programs between training institutions and factories give students the best preparatory experience for future employment. Through site training at a local factory where they will most likely work following graduation, students become familiar with the working conditions and fellow employees. In the programs, students are given firsthand experience with every stage of the complicated manufacturing process, resulting in students produced a marketable product <sup>[34]</sup>.

Literacy is one main factor contribute to economic growth. The higher is the literacy rate of a population giving a higher possibility of quality of human capital and a quality workforce too. The educating process will be much easier and effective and competency and skills are easily embedded and developed to students. OECD reviews in May 2009 also illustrates that the strengths of TVET in Republic of Korea is Korean youth of age 15 year

olds performs very well in numeracy, literacy and science <sup>[35]</sup>. In year 2009, OECD indicates that more than 95 percent of 18 year olds graduate from high schools, and 97 percent of age 25 to 34 year olds complete and upper secondary education which placed Republic of Korea at the top chart among OECD countries <sup>[36]</sup>.

## 6. Conclusion

Although Malaysia has overcome the poverty issue to some extent, it is no longer able to remain competitive with low-income countries as a high-volume, low-cost producer. Other countries are more competitive than Malaysia in both low-cost production and in high-value markets. This is not a sustainable position. Statistical data from the Conference Board and Groningen Growth and Development Centre (January 2009), shows that though Malaysia started at similar position as Republic of Korea but Malaysia has fallen behind over the past decade. Thus investigation by comparisons should be made in identifying the success factors of Republic Taiwan & Korea in TVET. Thus comparison is made among these two countries to track the success factors of their TVET programs.

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# IMPLEMENTATION OF INTERNATIONAL VOCATIONAL BEST PRACTICES FOR IMPROVED EMPLOYMENT OPPORTUNITIES TO YOUTH IN POST CONFLICT ENVIRONMENT IN NORTHERN UGANDA

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## Abstract

Vocational training programmes are frequently used as a means of securing economic opportunities for unemployed internally displaced youth, and ex-combatants in post-conflict affected areas. In most funded vocational training programmes in post-conflict areas, the vocational training programmes are intended for economic recovery rather than labour market linked workforce development. As a result, they often fail to deliver their intended economic outcomes. Many participants are unable to subsist or generate an income or increase skills productivity following their training because of mismatch of skills and competencies as demanded by the market.

Vocational education and skills development have been known to increase productivity of individuals, profitability of employers and expansion of economic opportunities in post conflict economy. A 'knowledgeable' workforce, one that is both highly skilled in a particular occupation that exhibits flexibility, creativity and innovativeness, is seen as the most important human capital required for the development of a conflict affected economy.

Among many policies and interventions in vocational training designed to integrate unemployed youths of post conflict areas into the labour market, the most popular interventions are skills training particularly vocational training. The inventory of such interventions needs consideration while analysing outcomes, impacts, cost and benefits of programmes and interventions. Vocational training with best practices intervention succeeds when they are innovative, make a difference, have a sustainable effect, have the potential for replication and serve as an inspiration to generate policies and initiative. These best practices have been considered effective for improved employment opportunities to youth in post-conflict environment.

**Key words:** vocational training, internally displaced, ex-combatants, post-conflict, mismatch of skills, intended economic outcomes, subsist, economic opportunities, workforce, interventions, best practices, sustainable effect, employment opportunities

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## 1. Introduction

Vocational training programmes are frequently used as a means of securing economic opportunities for unemployed youth, internally displaced youth and ex-combatants in post-conflict environment including in northern Uganda. In most cases, the vocational training programmes are intended for economic recovery rather than labour market linked workforce development. As a result, they often fail to deliver their intended economic outcomes. Many participants are unable to subsist or generate an income following their training because of mismatch of skills and competencies as demanded by the labour market. UNESCO-UNEVOC states that 'assuming that the success of a programme is not measured by completion rates

but rather by the number of graduates who use the skills learned to earn a living after programme end, there are not many successful training programmes in southern Sudan.' UNESCO-UNEVOC finds that 'at the moment, graduates are frequently frustrated.'

Moberg and Johnson-Demen (2009), in their evaluation of the Norwegian Refugee Council's Youth Education Pack (YEP) project in Liberia (2006-07), which afforded vocational training to war-affected youth, assessed that 'apart from youth who have gained short-term employment with an NGO project, only a handful of youth can sustain themselves on the income from the skill learnt at YEP' and that 'this is a frustration to many.' Hanlon (2005) observes that 'too many [ex-combatants in Sierra Leone] have been trained for tailoring, tie-dying, and soap-making, when there is not a sufficient local market [for these skills].'

The International Organization for Migration (IOM) reports a 'sharp disconnect between training programmes for youth and subsequent employment or income generation' throughout northern Uganda despite an 'abundance of NGO-led training schemes.' By way of example, IOM comments that 'hundreds, if not thousands, of female youth underwent NGO-led vocational training in the basics of sewing, but struggled to utilize these skills to generate a primary or secondary income.'

### **Vocational training and best practices**

Vocational education and skills development have been known to increase productivity of individuals, profitability of employers and expansion of economic opportunities in post conflict economy. A 'knowledgeable' workforce, one that is both highly skilled in a particular occupation and also exhibits flexibility, creativity and innovativeness, is seen as the most important human capital required for the development of a conflict affected economy.

Among many policies and interventions in vocational training designed to integrate unemployed youth or other targeted groups into the labour market, the most popular interventions are skills training particularly vocational training. The inventory of such interventions needs consideration while analysing outcomes, impacts, cost and benefits of programmes and interventions. Best practices on vocational training intervention succeed when they are innovative, make a difference, have a sustainable effect and have the potential for replication and serve as an inspiration to generate policies and initiative.

Findings from the Survey of War Affected Youth<sup>1</sup> (SWAY) show that skills training alone cannot create livelihoods, and must be aligned with labour market needs as well as with the realities of its participants. SWAY's findings suggest that "individuals themselves may be better judges of what skills and opportunities suit their own skill set, interests, and local demands" and that it might be more effective to provide vouchers which could be used towards NGO or private training programmes (Annan et. al., 2006).

Despite significant progress, many vocational programmes in post-conflict regions still lack effective vocational education and training (VET) strategies, and are struggling with costly and outdated training systems, and have no culture of evaluation and knowledge-based policymaking and programme administration. There are examples of best practices at different levels that are followed to manage such vocational training challenges such as

leadership of the institution/industry, on-going faculty development, updating of curriculum continuously based on industry requirements; under private initiative best practices and finally international best practices also helps in promoting close cooperation between vocational training programmes supported by international donors, government and enterprises, assisting in developing a legislative framework that requires firms to invest in training of newly hired workers; funding mechanism etc. These best practices have been considered effective for improved employment opportunities to youth in particular in post-conflict environment.

Vocational training's skills-centric and employer-facing approach is repeatedly viewed as a solid step towards those 'alternatives' in conflict-affected areas. Vocational training is often a more rapid route into the workplace as compared to formal education. UNESCO-UNEVOC explain that 'young men and women often do not have the time, due to current or future family obligations, to devote to completing a primary or secondary schooling cycle.' Able-bodied young people also represent an enormous potential pool of labour to assist in post-conflict reconstruction.

The intended economic outcome of a vocational training programme is usually based on the specific economic circumstances of the post-conflict region. For instance, paid employment is an option in northern Uganda where there is an emerging private sector, but not so much in southern Sudan where the private sector is by and large non-existent.

### **Post-conflict northern Uganda and vocational training**

The vocational training system is a major supplier of workforce in northern Uganda with three quarters of the total vocational graduates entering labour market each year. At present, vocational training is seen as a more certain route to employment than formal education, though preferred by most families and the youth, for non-school bound students in the post-conflict labour environment.

The standard of skills in northern Uganda is changing after the end of conflict; senior secondary education or beyond is rapidly becoming the minimum standard for formal sector employment while its contribution to productivity and growth is not satisfactory as per investment<sup>2</sup>. In this context, vocational training (VT) has become a necessary complement to achieve higher productivity, lower unemployment, and sustainable growth in a post conflict northern Uganda.

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<sup>1</sup> Survey of War Affected Youth by [Jeannie Annan](#), [Chris Blattman](#), [Kristopher Carlson](#), and [Dyan Mazurana](#).

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<sup>2</sup> MTAU investment plan 2012

A particular feature of the conflict in Northern Uganda is the wide-scale abduction and recruitment by the Lords Resistance Army (LRA) of male and female children and youth, who were forced into labour, sexual slavery and combat roles. The estimated number of young people abducted during the war is in excess of 25,000, and recent evidence suggests the number is more likely to be 60,000 or higher<sup>3</sup>. Northern Uganda holds a large proportion of the country's population which has been affected by violence and war over the last two decades. In turn, there are many latent conflicts which exist between individuals, families, ethnic groups, and between civilians and government authorities.

The 2002 Population and Housing Census revealed that 40 percent of the population in the North is less than 12 years. The condition of the education system is characterized by inadequate facilities, primary enrolment is relatively high with an average of 63.9% of the total population of school-going-age enrolled (i.e. 2,896,443 out of 3,303,257)<sup>4</sup>. At the next level only a small percentage (5.2 percent) of the population has completed secondary education and beyond. The pupil classroom ratio is high in all districts – over 100 pupils per classroom on average compared to the national target of 54/ classroom.

Nearly 21 percent of children dropped out of school, this being more prevalent among female (23.5 percent) than male children (17.3 percent). Drop-out rates increase with age, although the rates are higher in rural areas than urban areas and amongst the bottom 20 percent. It is estimated that only 26 percent of those who enrol for primary education graduate to secondary level. The high dropout rate in this region is attributed to the high cost of education, lack of interest, early pregnancies and early marriage among young girls, insecurity, displacement, and poor health.

The average distance from home to school is estimated at 3km for all of the sub-counties in the region. These general problems impact negatively on attendance, concentration and progression of the pupils.

Formally, technical and vocational education and training (TVET) is delivered by some 29 government Technical and Farm schools/institutes with a total intake of 3,340 by 2000. At the same level, following national curricula, there are 187 registered private institutions. Industrial training is delivered by 4 public Vocational Training Institutes and some 400 private training providers. Both of

these streams, in particular the former, have attracted criticism for being too academic<sup>5</sup>.

The challenges facing war-affected populations include the physical, psychological, social and economic factors. The holistic vocational training needs to be incorporated into a holistic recovery programme in post conflict northern Uganda. This approach to vocational training would actually consist of two dimensions. First, vocational training programming would be designed with what might be called “horizontal” structures, thus imbedding such important aspects as psychological counseling, occupational therapy, and programming geared towards the larger community to support reintegration. Secondly, TVET programming ought to incorporate “vertical” structures, related to long-term livelihood development. Thus TVET would be seen as one step in a progressive process that includes community-based labour market information systems and vocational counseling, upstream, and job placements, micro-credit projects and general economic integration, downstream.

On top of that, the vocational training system and practices have many challenges in northern Uganda.

Some of these are:

#### 1. Skill Development - Challenges

- Acute shortage of market oriented skill development infrastructure
- Poor bankability of the skills due to poor training, resulting in low employability of trainees.
- Disconnect between skills provided and skills required by the industry.
- Outdated training modules and inadequate courses, equipment, tools & technology.
- Skill demands of the emerging sectors remains largely unmet.
- Severe shortage of trained instructors; and
- Weak industry-institute interface

#### 2. Factor preventing in meeting the challenges

- Best practices in vocational training for substantial expansion of quality for raising employability and productivity

The majority of vocational training programmes in northern Uganda are not measured based on student achievement based on job placement rates. Vocational training programme must be based on “demand driven” training. As a result, the vocational training to youth in post-conflict area become more effective and result oriented. Some of the unaddressed elements in

<sup>3</sup> UN Office for the Coordination of Humanitarian Affairs (UN-OCHA), 2006.

<sup>4</sup> Education Desk-UBOS 2005

<sup>5</sup> Uganda's National Action Plan on Youth, which emphasizes apprenticeship schemes over formal state provision of training (Ministry of Gender, Labour and Social Development, 2002).

vocational training in northern Uganda have been identified as follows:

- Effective by offering meaningful, quality skills to avoid time-serving and irrelevant training.
- Efficient and competitive “to counter supply-driven training tendencies”.
- Flexible and responsive training programmes as required in post-conflict environments.
- Lack of priority management capability, standardized curriculum and resources and implementation in a cost-effective way.

In order to address the above issues, there are a number of best practices that can be followed and implemented in the post conflict environment for improved results. Some of the potential best practices in vocational training in post conflict northern Uganda are:

- Practice1: Programmes are successful that have a clear mission and goals
- Practice2: Vocational programmes are highly effective when organisation is purposeful, effective and sustainable
- Practice3: Programmes generate targeted outcomes if they have proper result based annual plans.
- Practice4: Programmes that are focused to labour market are more effective.
- Practice5: Skills development programmes that accommodate appropriate youth development principles have more positive results
- Practice6: Curriculum linked-to and updated periodically with labour market delivers effective results.
- Practice7: Instructors knowledgeable with curriculum delivery with labour market orientation are more effective in higher job placement.
- Practice8: Quality and programme oriented staff delivers more results
- Practice9: Structured learning programmes that integrate on-the-job & off-the-job training to industry requirements have high impact in all labour market environments
- Practice10: Placements are most successful when each party is aware of their responsibilities and requirements prior to commencement – and when there is ongoing open and honest communication between all parties for the duration of the placement.
- Practice11: Proper monitoring and evaluation in place is more effective for checks and balances in vocational education and training.
- Practice12: Targeted interventions have better

results

Practice13: Financial incentives to trainees is also effective

Practice14: A proactive . management within the training centre actively drives continuous improvement

Practice15: Documentation of competencies developed provide more opportunities for placements

Practice16: Continuous improvement strategies help to achieve centre of excellence of the institution

### **Northern Uganda Youth Development Centre and Vocational training programme**

The Northern Uganda Youth Development Centre (NUYDC) is an initiative by the government of Uganda to empower young people from Northern Uganda who have been greatly affected by the 20 year conflict in the region. Republic of Uganda requested the help of the Commonwealth to accommodate the needs of the youth, who have missed out on education and have no marketable skills to offer to the job market. The Commonwealth contributed a total of 500,000 sterling pounds (GBP) for three years. The Department for International Development of UK (DFID) approved funding support to the NUYDC for five years after the end of the Commonwealth assistance in 2010.

Department for International Development, United Kingdom (DFID, U. K) plans to invest £12.15 in Youth Development Programme (YDP) component in northern Uganda and has estimated to generate 500 jobs per annum, amounting to 2,500 jobs over the project’s five year period with an annual benefit of £1.1million from training of the youth. There are other areas that will generate benefits such as short term training programmes, post training programmes, and return from capital investment over the years that are directly related to poverty reduction. The project estimates that direct benefits of £24 million at present value (NPV) at the discounted rate of 12 per cent had been identified. Moreover, adjustment of internally displaced youth in employment may generate even higher indirect benefits in the form of peace dividend to the tune of almost 2.3 times of investment.

Table 1. The project has projected the following impact:

<b>Output Indicator 3.3</b>	<b>Baseline 2009</b>	<b>Milestone 2011</b>	<b>Milestone 2012</b>	<b>Target 2015</b>
Number of youth trained by DFID-funded	0	10,000 (>3,000F)	30,000 (>9,000F)	100,000 (>30,000F)

programmes targeted in vocational and micro-enterprise skills				
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Source: NUYDP Project document, 2010

### Impact of vocational training best practices on expected results

The outcomes of best practices have expected increased competitiveness and improved employment opportunities for vocational school graduates in northern Uganda. The outcome has improved quality and relevance, expanded access, and greater efficiency in vocational training. This outcome has been achieved through a turnaround in training management practices using a business approach; a better teaching and learning environment resulting from improved facilities, equipment, and teaching skills; more relevant and up-to-date teaching and learning methodologies; a strong focus on entrepreneurship; and more efficient use of resources. A broader role for vocational institutions has been upgraded, recertified graduates and other workers.

The implementation of best practices have increased productivity required to achieve 8% return on investment, a standard return on investment in vocational training, over 10 years. The economic costs are taken as the financial costs net of price increases and taxes. The quantifiable benefit of the investment is the marginal productivity increase expressed in terms of wages accruing from working graduates from the higher quality training obtained from the various training providers. The number of male and female working graduates is also taken into consideration. The number of working graduates is the estimated number of project graduates, their expected labour force participation rate and unemployment rate is taken from the past statistics, labour market surveys conducted by various organisations and the National Labour Market Survey. Therefore, the marginal increase in average earnings accruing to a vocational graduate over a non-skilled graduate is counted toward the vocational training benefits and the positive effect of best practices..

Under the general scenario described, the implementation of vocational best practices were able to increase the monthly wage to achieve a 8% economic rate of return of 14,400 Uganda Shilling (UGX) or \$5.87 per working graduate per day (the average vocational trainer's earning is less than \$5 per day in northern Uganda). This is equivalent to 6.9% of the current median wage or 15 minutes of additional effort (productivity) per workday resulted from the best practices. Three alternative

scenarios were used: (i) main scenario (ii) a 10% increase in capital and recurrent costs, and (iii) a 10% decrease in benefits. The increase in productivity was feasible due to enhanced skills developed among trainees and the certification of their skills earned. The implementation of best practices has enabled training providers to produce consistently higher quality graduates with greater capacity to learn new skills because of market linked curriculum, technology, occupational and workplace skills, market driven workshops etc. While labor force surveys do not track returns to quality, anecdotal evidence from training institutes in Northern Uganda, employers, and parents indicated that graduates from quality institutes have enjoyed the wage premiums of 25% the median wage. The 8% rate of return has been achieved, with a 25% wage premium equivalent to an 8% economic rate of return because of higher productivity of skills as a result of best practices implementation. In addition to sustainable jobs, all vocational trainees accessed to jobs due to the inputs of other skills such as literacy and numeracy allowed them to access higher quality employment with higher wages or earnings. The bulk of the quantifiable benefits accrue to working graduates from the training providers of the region.

### Impact of Vocational Training Best Practices: Marginal Increase in Monthly Wages and Earnings: With an 8% Economic Rate of Return under Various Scenarios

Item	Main Scenario	10% Capital Cost Increase	10% Benefit Decrease
Required increase UGX	18000.0	12000	14400
Percent of median wage			

Source: Author's estimates.

If one project outputs include 100,000 vocational trainees (it is assumed that all trainees participating in any level of programme will have an opportunity to get job) male and female working graduates generating one million work-years (100,000x10years) between year 5 and year 10 after the completion of their training. The net increase in productivity of these graduates at a conservative 8% economic rate of return is equivalent to 15 minutes of additional productivity per worker per day worked. The marginal productivity (15 minutes per worker per day) gain with 8% economic rate of return is equivalent to an additional one million work years.

### Distribution of benefits

There are other benefits from the implementation of best practices in gender, outreach because of practices on network of training providers, enrolment, etc. Firstly,

affordability and expected returns influenced choice of institute and distribution of benefits. Formal education is more expensive than vocational training in Uganda and almost beyond the capacity of majority of youth in northern Uganda. Because of this reason, greater access resulting from expansion of the training facility through training providers in the whole Northern Uganda have led to an increase in the proportion of youth from poor households of up-country districts to towns. Location plays a large role in determining participation in vocational training including vocational institutes. Town students have better access to vocational institutes and better institutes compared to rural students based on training provider analysis. Gender enrollment by vocational programmes reflected labor market gender segmentation due to the prioritisation of gender based vocational programmes. Male students were concentrated in industry-oriented programmes, while female students were concentrated in services-oriented programmes in Northern Uganda, hence, the training providers have focused to rationalise project benefits. On the other hand, training providers were skewed toward technical programmes; as a result, the participation of males was higher than for females in Northern Uganda.

**Key impact on northern Uganda future economy, employment and income from international best practices:**

- Capacity enhancement in best practices to training providers have created an upgrading and efficiency gains increased annual trainees intake from 100,000 to 125, 000 trainees. Forty percent of the students will be girls. Nearly half of the trainees will be from conflict affected poor and low-income families.
- Best practices on leadership, business planning, finance, and management training have resulted an increased efficiency and training quality.
- Over 5 years of project period, the best practices will equip graduates with relevant industry skills, greater capacity to adapt to changing technology, and higher productivity resulting in greater earning potential. The additional worker productivity generated by the Project is estimated to be 52083 person-years (15x365x100000x5), boosting northern Uganda's agricultural, industrial and market competitiveness and reducing poverty.
- Entrepreneur development and business training linking to Private Sector Foundation, a DFID funded job creation programme will help new graduates establish viable enterprises. Enhanced industry partnerships will yield more work-study placements, shorter job search time and reduced employment mismatch.

**Conclusion**

Empirical experiences show that vocational training with the implementation of best practices plays a large role in creating improved employment opportunities for local economic growth and social development in post conflict regions. In general, vocational training with (i) trained human resources to the labour market and (ii) skills to those looking for employment starting from literacy, core skills, vocational skills and post training programmes ; are more effective for improved results.

The implementation of best practices provides a strategic framework for the development of vocational training policies to address the unemployment challenges to support economic development and the creation of national wealth and contribute to poverty eradication. The best practices addresses the cross-cutting issues of employability, relevance, collaboration between training institutions and employers, accreditation of training providers, assessment, certification and quality assurance of training programmes.

The best practices presents vocational training providers a valid license to cater for trainees confirming that they are not only eligible but also capable in creating a well-paid job or self-employment opportunity fit only for youth who have been affected by conflict, school drop-out, early school leavers, people who missed school, etc. Moreover, the best practices are competency-based and employment led, with proficiency testing as proof of competence but on top of that with more productivity than regular vocational trainees.

Finally, the vocational training best practices acknowledge that it alone does not provide jobs or wage premium in the labour market. The best practices strategy therefore urges all vocational training practitioners to create an enabling training environment that promotes the growth of skills development and stimulates the link to the labour market. When businesses develop and expand, additional labour-market demands for vocational training emerge, new job opportunities are created, more people get employed, and the incidence of poverty reduces. For this to happen on a sustainable basis, the vocational training system is highly useful if vocational training are implemented based on vocational best practices that are labour-market relevant, equitable, efficient, and of high quality.

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# SCHOOL TO WORK TRANSITION IN ON-THE JOB TRAINING FACILITATED BY OJT MONITORING

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## Abstract

The transition from school life to work life of a person is a crucial adjustment period. To help in the transition, school to work transition programs are provided to students. An example of such program is the On the Job training (OJT) program. This is being implemented by majority of TVET schools in the Philippines and the same is true with MFI. Past experiences show that the students in OJT are exposed to difficulties, challenges, and conflicting situations. The students face predicaments that could make or break them. They need support and guidance as they apply the things they learned in this stage or level of their life.

The paper presents the best practice of MFI Technological Institute, which is a monitoring scheme for students devised to respond to the students' needs during the transition. The scheme is called OJT Monitoring. There are at least 5 activities under the program. The student reporting, OJT visit, and OJT get-together activities are highlighted in this paper. This describes each activity and how MFI implement it. The result of the evaluation of the monitoring specifically the student reporting is also presented. Majority of the students said that the monitoring helped them in dealing with different problems and in coping, adjusting and preparing them for work. The main problem encountered by the students was the schedule of the monitoring conflicting with their schedule at work. All of them recommended the monitoring to be implemented on succeeding batches. There were also suggestions for improvement in the schedule, the people involved, and the procedure of implementation.

**Keywords:** OJT, monitoring, WBL, best practice, school to work transition

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## 1. Introduction

School life and work life are the large portions of our life. Although these are not the only contents, these two are common to majority of persons. The connection of these two is shown in Figure 1, which is a framework on school to work transition (S2WT). In the framework, the S2WT program is like a bridge from school to work. It prepares students to enter and succeed in the world of work. It helps the student adjust and know what is needed for work so as to be effective. Still referring to Figure 1, it shows that S2WT make visible the link between the school and work. The visibility of the link makes the link meaningful. With the S2WT, students are not left by themselves to sort out the meaning of learning in school and its use whether directly or indirectly to the learning at work. Fig.1 also shows the overlap of school and work life, which leads to understanding the connectedness. This is described by Reference [1] that "there is a positive 'connectedness' between the schooling process and living productive lives." With S2WT, the students would look positively at school as a means to work and in working live productive lives. The school has a positive effect not only on the work life of the person but on the whole life of the person.

The student is a major stakeholder in S2WT. A student who greatly benefited from S2WT programs responds to the need to have well-rounded productive persons that the future society or our society needs.

In the Philippines, the most common S2WT program is On-the-Job Training (OJT). Majority of TVET courses have OJT as a requirement to finish the course and at the same time applying the functions discussed above. The OJT is a crucial moment in the life of the student. Theoretically it is easy to say that OJT is a means to adjustment, it is a meaningful link, and positive connectedness to work and life. But the actuality is that during OJT new experiences, difficulties, and challenges abound. The transition can be hindered by work culture and human differences, personal life, relationships, etc. Some student find it difficult to adjust that problems arise during OJT. Instead of having a smooth transition, there are cracks and breaks that make it rough or sometimes even make the transition fail. As a preventive means the OJT monitoring program was devised. The monitoring make the OJT effective, meaningful and connected.



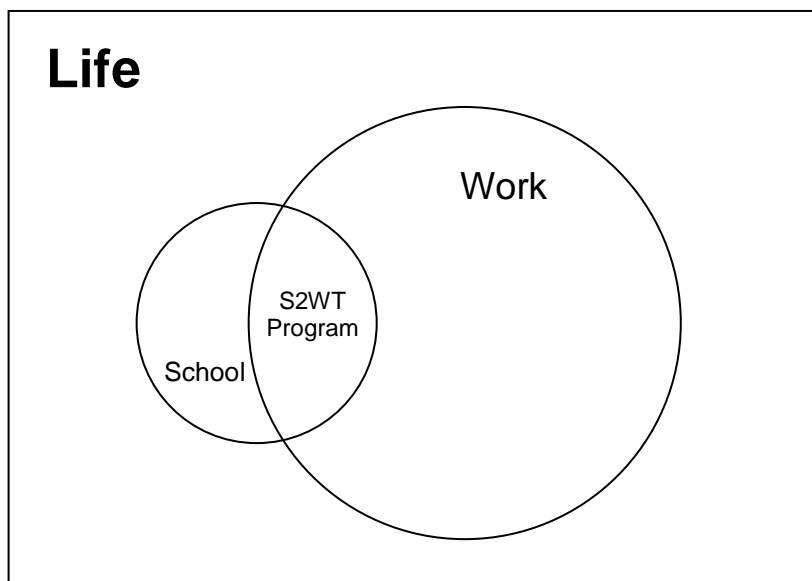


Figure 1. School to Work (S-W) Transition Framework

## 2. The MFI OJT Monitoring

The MFI OJT Monitoring was devised precisely to oversee the transition. The need was actually seen as urgent in a somewhat comical experience that was when an OJT student was reporting to the Placement office of MFI and he was mistaken to be an alumnus. The physical change in the 6 months he was out of the school for OJT was such that the student was not recognized anymore. During the trial period, the monitoring was done with the girls of 2004 graduates. Then succeeding batches had a full blown program which is of use until now.

MFI considered the S2WT as a learning period and consistent to its pedagogical bias, the monitoring program was planned applying a student-centered approach and with flexibility for the different learning styles of the students. The different activities of the program are summarized at Table 1 that currently comprises the monitoring program. Besides activities phone calls and field visits, the rest of the activities are obligatory for the student. These were made obligatory to put weight on the importance that each student should undergo this for the effective implementation of the OJT. The flexibility is not contradicted by being obligatory because ways and means are made to make compatible to the availability of the student.

The flexibility goes hand in hand with the advance planning and scheduling of the student reporting activity. At the start of the OJT schedules were already set and distributed among the students. Before they even receive their OJT companies assigned to them, they already know when they would be expected to report to the school. The schedule was done way ahead of time so that when they start they already can inform their

supervisors about their schedule. If there will be any conflict with the schedule, they can negotiate about it even a month before the schedule. The companies are well informed about the activities of the students especially during the company visits by the teachers and staff.

The student reporting facilitates the total development of the students as they would have consultation schedules not only with the placement office but with the guidance office for personal development and their respective technologies for the technical development. This can be seen in the “who” column of Table 1. The student reporting could be likened to mentoring with the teachers, placement staff, and guidance staff as the mentors. It is stressed here that learning in TVET is not only for technical competence, of the same importance is the learning of positive work values. With the technical competence their mentor is their teacher in their technologies and with the work values their mentor is their guidance counselors. But it was given as a feedback by technology teachers that during these student reporting activities, majority of the things they talk about are about their personal adjustment at work which are mainly on behavior and attitude. Among the OJT monitoring activities this is the most effective. Here the students are dealt with individually and as a group. This could also be held in school and outside school as would be needed by the student. Here the mentors have a first hand involvement with the transition of the students from school to work.

The OJT visit is a very helpful tool in monitoring. The monitoring objectives of the OJT visits are:

- a. To monitor the trainee/s’ exposure and immersion to the actual industry set-up.

- b. To monitor whether or not the workplace provides an avenue for the trainee/s to practice work values acquired both from the school and the industry

The visits are usually conducted by a team from MFI comprised by representatives from the placement office, guidance office, and the student's technology department. After setting an appointment with the company partner, they hold a meeting at the company in the following suggested procedure from the MFI OJT Visit Guidelines:

- a. Talk with the HR. It is but appropriate to channel HR questions to HR personnel. Supervisors might have no information concerning personnel matters. Besides, this chance is to strengthen the contact or linkage of the School with the Company.
- b. Talk with the supervisor. There might be some information that the supervisor cannot conceal in the presence of the student/s, thus the private time with the supervisor. The supervisor however, has to be oriented about the objectives of the visit.
- c. Talk both with the supervisor and the trainee/s. This chance is essential for the following reasons: 1) A good transition from the talk with the supervisor to the talk with the student/s; 2) Immediate address of the concerns of the student, the Company and/or the School; 3) Team from MFI could actually witness/observe how the student/s and the supervisor relate or deal with each other.
- d. Talk with the student/s. Talk with the student/s is a must for the following reasons: 1) If the OJT visit is to monitor the student/s' exposure, immersion, and their skills/values application, among of the main sources of such information are the student/s themselves. 2) Some sensitive information about the Company or personnel in the company just cannot be divulged especially in the presence of concerned persons/ Company representative. 3) The student might have personal issues that have to be followed up. 4) This chance is for the MFI Team, thus Company personnel might feel "out of place."
- e. After talking with the student/s and depending upon the situation, should there be need for clarifications, MFI Team could call in again the supervisor.

The visit is an appropriate tool to monitor the transition because again first hand information can be obtained on the actual transition from school to work. Here the major stakeholders are personally present to discuss deeper the how the transition is

happening. All of these feedback and information obtained are to be documented on a report after the visit.

The OJT get-together activity is another important part of the MFI monitoring. The whole batch of OJT students come together in one venue to evaluate their OJT. They discuss their OJT in small groups then present it to the batch and the teachers and staff. The process is as follows:

- a. Ask the students to answer the OJT Evaluation form (10mins).
- b. Group the students into 10 per group. They could be of the same section depending on the number of those who went for OJT.
- c. Ask each group to discuss their answers and come up with a summary of the significant answers per question of the evaluation (45mins)
- d. Give each group 5mins to report their discussion.
- e. Proceed to conduct the rest of the lined-up activities

The questions in the evaluation form are as follows:

- a. How did the OJT help you?
- b. What were the highlights of the OJT?
- c. What competencies have you acquired?
- d. What difficulties did you encounter prior and during your OJT?

Again this is a first hand feedback system on the school to work transition of the students. And they even get to discuss it among themselves and gather information and learning that could be applicable to their own situation. The learning is also easily acceptable coming from their contemporaries.

### 3. Evaluation of the OJT Monitoring Program

At the end of the OJT and also to end the monitoring, the students did an evaluation of the program. The evaluation is specifically aimed for the student reporting activity as this is the main and extensive involvement of the students. The questions posed at the evaluation are:

- a. How did the OJT Monthly Monitoring help you?
- b. What were the difficulties you encountered in accomplishing the OJT monthly monitoring?
- c. Would you recommend the OJT monthly monitoring for succeeding batches of OJTs? Why or why not?
- d. Comments and suggestions for improvement on schedule, placement/guidance/teachers involved; procedure

Table 1. The MFI OJT Monitoring Activities

Activity Title	What	When	Where	Who
Student Reporting	<ul style="list-style-type: none"> <li>Individual or group consultation</li> <li>These are about reports on activities of the month; discuss problems encountered, discuss possible areas for improvement; review lessons related to job; etc.</li> </ul>	Once a month	MFI and/or where deemed necessary	Placement Office, Guidance Office, or their respective Technology Departments
Phone calls and/or e-mails	<ul style="list-style-type: none"> <li>The student could consult through phone call or e-mail when the matter is urgent or there are situations that meeting personally is impossible.</li> </ul>	As needed		Placement Office, Guidance Office, or their respective Technology Departments
Field Visits or consultations	<ul style="list-style-type: none"> <li>Company visits or OJT visits</li> <li>To observe the student in the actual workplace and to interview the one in-charge of the student in the company</li> </ul>	At least once during the OJT	OJT Company	Placement Office, Guidance Office, or their respective Technology Departments
	<ul style="list-style-type: none"> <li>Home visit or visit to the boarding house of the student/s</li> <li>To know how the student is adjusting with especially if it was the first time to stay in a boarding house</li> <li>If there is a need to interview parents or guardian at home</li> </ul>	As needed	Home, boarding house	Placement Office or Guidance Office
	<ul style="list-style-type: none"> <li>Individual or group consultation</li> </ul>	As needed	Not in MFI	Placement Office or Guidance Office
Supplementary Seminars	<ul style="list-style-type: none"> <li>Seminars held in plenary (all the students of the same batch) on topics related to their adjustment.</li> </ul>	Every other monthly	MFI	Placement Office
Get-togethers	<ul style="list-style-type: none"> <li>A plenary gathering of all the students of the same batch</li> </ul>	March and September	MFI	Placement Office

Going back to the reasoning that the OJT monitoring makes the OJT (a school to work transition program) effective, meaningful, and connected, the answers to the evaluation questions can illustrate if indeed the monitoring was able to achieve that. Figure 2 shows the tally of the answers the students gave for the first question. Among the answers, the most number of students replied that the monitoring helped them to deal with different problems they encounter in OJT. These problems are of varied nature. It could be about their OJT companies, personal matters, etc., This is consistent to the fact that during the transition there would be a lot of difficulties that turn out to be problems.

Still referring to Figure 2, the second highest answer is to cope, adjust, prepare for work. With all the challenges the students encounter, the monitoring help them cope and adjust to these challenges and therefore preparing them to work. With these two answers, the monitoring made the OJT effective because the students were helped be prepared to work. The same can be said with the

answers of self-improvement and guide/advise. It should also be noted that the students see the monitoring as time to unwind/relax/de-stress.

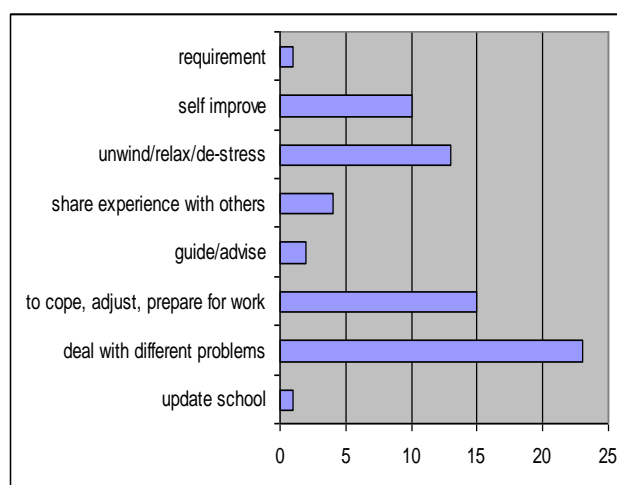


Figure 2. How OJT Monitoring Helped

The implementation of the monitoring has problems. On the side of the students, the problems they encountered in accomplishing the monitoring is shown in Figure 3. Majority of the students said that the problem they encountered was the schedule. Since during OJT they were treated the same with the regular working employees, there would be conflicts with the working hours and the monitoring. Sometime they were assigned in an out of town field work and they do not have the time to go back to MFI on their schedule.

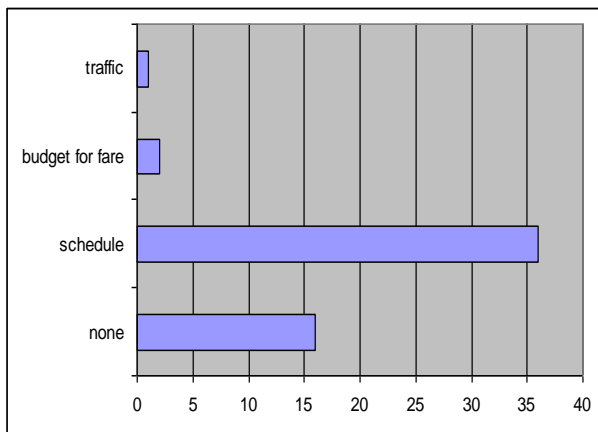


Figure 3. The Difficulties encountered

On the third question in the evaluation, all the students replied that they recommend the monitoring program to following batches who will undergo the OJT. Figure 4 is the tally of the reasons they gave for saying yes. Highest in the tally is help solve problem and next is talk to someone. And the third highest is guide/support/advise. All three reasons pertain to facing the challenges they have encountered and which they want the next batch to be aware of. Its is important for them that they have someone to help them solve problems encountered, someone to talk to, and someone to guide, support, and advise them as they go through the transition program.

The students also gave their suggestions for improvement. With the schedule they suggest that the monitoring be done on Fridays, during student's day-off, or on a weekend. It should be finished on time since some have to go back to work. And that re-schedule should be allowed 3-days before the appointment. The suggestions given for the placement/guidance/teachers involved were that they have to be on time, produce written report about common problems and remedies in OJT that students can refer to, and they be more available. There are a lot of suggestions also for the procedure or way of implementation and these are: there should be more interactive activities and chat, activities should be more relaxing and fun, and that there should be more variety.

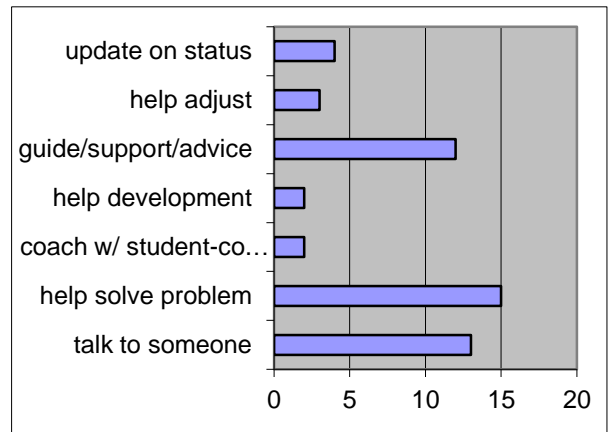


Figure 4. Reasons to Recommend

#### 4. Conclusion

Monitoring during the school to work transition program is important to make it effective, meaningful, and connected. From Reference [2] "By establishing relationships with caring and competent adults who can provide emotional support and facilitate skill development, less-experienced youth and adults are more likely to bridge the gap between school and work." This happens in the MFI monitoring as the placement/guidance/teachers acts as the mentors of the students. The ones in-charge at the company can also act as mentors but no specific program is laid out for them.

The OJT visit is a step towards the collaboration of the school and the company in the school to work transition. Again from Reference [2], "Workplace mentoring requires a partnership commitment that involves time, energy, and resources of qualified mentors, school personnel, and learners themselves." The monitoring is an investment for the success of S2WT. That is why if S2WT programs are important, time and effort are wasted if no monitoring is done. Short-term goals are accomplished but the transition has a lot of long term effects that the society might suffer if not effectively given handled.

#### ACKNOWLEDGMENT

Thank you very much to MFI Foundation Inc. for supporting me in the advocacy of promoting TVET.

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# MAKING APPRENTICESHIP PROGRAM MEANINGFUL TO POLYTECHNIC EDUCATION

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## Abstract

Apprenticeship program for Polytechnic students plays an important role and is an important event for polytechnic education in the short and long term missions. In the short mission, it is one strategic of vocational education delivery which can be used for improving technical competencies as well as others competencies needed in the workplace. This program can be used to eliminate the gap between education and work. In the long mission, it can be strengthened collaboration between polytechnic and industries to contribute in applied technology and economic development through the applied researches. Unfortunately most of polytechnics didn't yet delivered this program seriously. So that the result of this program couldn't be influent significantly for individual, as well as institution. The result of literature and documents analysis shows that there is an opportunity to make this program more meaningful than before by using appropriate strategic planning at micro, macro and mega levels. This paper provide other meaning and understanding of apprenticeship program that can be used to design strategic planning more effectively. The effectiveness of this program is measured by the contribution-based of the mission objectives achievement.

**Keywords:** apprenticeship, competencies, relevannce, strategic planning, effective

## 1. Introduction

Polytechnic is a higher vocational education and training that have an important role and function in the applied technology and economic development. It's activities are based on the three pillars that said *Tri Dharma Perguruan Tinggi*. These three main activities are education, research and society service activities<sup>[20]</sup>. It differentiate between polytechnic and vocational education in the secondary level (SMK).

In the other countries such as Germany, USA, Korea, China, Singapore, etc, the same kind of education give their contribution to the inovative technology productions and economic significantly<sup>[9];[1];[2]</sup>.Indonesia have more than 170 polytechnicswith more than 900 study could be drive the economic development.

Vice President, Boediono said, that the Indonesian economic growth was not caused from innovatives products but from natural resources. (Kompas, 9 Mei 2012: 1). It is very susceptible for long time, because it will generate dependence to the developed countries as we see since the last decade.

The lack of synergy between polytechnic and industries, provide the inovatif product of research that just terminated at the contest events.

## 2. Apprenticeship Training

Apprenticeship training is a system in which an employee is given instruction and experience,

both on and off the job, in of the practical and theoretical aspects of the work required in a skilled on occupation, craft, or trade<sup>[21]</sup>.

Apprenticeship is an education based in the workplace, using basic skills and competencies to do real work, solves real problems<sup>[24]</sup>.

These two definitions show that apprenticeship is an education or training for either employee or students, in order to improve their understanding of knowledge, skills and competencies needed in the real world of work and give a value-added for industry by advancing problem solving skills day to day.

### 2.1 High skills and work experiences

As a long history of vocational education development, it does always related with work force preparation. The industries and enterprises need the trained and an experienced workers. It does mean that completers of vocational education should have work experiences to get a job. Should all prepared by the education? In the condition of fast changing in technology, economic, and the limited facilities, it's impossible do so. Vocational education needs participation and collaboration of industries as a partner of work.

The learning outcomes are consist of three levels: knowledge as the lowest level, skills, and competence as the highest level of achievement [22]. Knowledge and skills can be trained and

achieved in the campus through the laboratorium and workshop activities. The competence level should be achieved through work experiences in the real situation of work. Work experiences itself can be achieved through two systems: (1) simulation system; and (2) apprenticeship [7]. Simulation system needs workshop that equipped by facilities that are the same as the industry's facilities. It's not effective and too expensive to be realized in the developing country like Indonesia and in the difficult economic situation. Therefore, the apprenticeship plays an important role in the skills improvement and competence achievement.

Simulation system and apprenticeship both need an initiated training in laboratorium scale. Therefore the laboratorium and workshop activities must be increased into a basic skills training are needed in the initial work. The initial work is an important vocational education outcome.

## 2.2 Weak-collaboration provide minimal contribution

The objective of apprenticeship program for polytechnic students were generally in order to open up them a view of work situation (data survey, 2009-2012). The result of this program didn't improve skills and educational process significantly neither value-added for an industry. In another word, the polytechnic as a higher education didn't yet delivered Tri Dharma in an optimal.

The observation in the fields identified, there were several problems why this program didn't yet in an optimal: (1) there wasn't strong collaboration between polytechnic and industries; (2) the apprenticeship program wasn't organized by institution but individual; (3) there wasn't competencies's assessment before and after doing the program; (4) there wasn't recognition and reinforcement; (5) the program delivered without strategic planning.

Apprenticeship trainings should be have a meaning in order to have a wide impact to the society. Every training program will have meaningful if: (1) the training result is recognized and praised; (2) setting standards and measuring student performance will encourage students to exceed the standards requirements; (3) use practice method for perfect result in the learning process [21]. This opinion is concerned with the process and outcomes of learning at the micro level. The different people have different rate of learning. Therefore the program must be planned as flexible as possible. At the makro level, the result of apprenticeship should provide **value-added** not just for individual or small group, but also for the organization (polytechnic and industry). It's possible to carry out a joint research to create an innovative product. At the mega level, both polytechnic and industry can

contribute in developing applied technology and economic.

## 2.3 Strategic planning for implementing Tri Dharma PT

Educators and education institutions want to do better, but how to define and to do it. Some of institution were developed their curriculum by adding subjects and or adding the time, so that the load of students and teacher more and more day to day, but it have not significant impact in society or community.

The strategic planning has attracted serious attention and have to be added with the focus on societal good at three levels: mega, macro and micro [11]. A system approach with proactive's strategic which is focused on the future will be used in planning this program. This mean, if any changing in one element of this system, it will influence the other elements. This model will be applied in order to be match with the Tri Dharma Perguruan Tinggi function.

The planning starts from the ideal vision at each levels with the new philosophy at the organization level, which provides the continuing and developing basis for results at the macro-and-micro levels, and provides substantiation to process and inputs. The vision is a clear perspective about who you are and what aim to be doing in the future. A clear vision is a strong driver [23]. It's a personal vision. This definition can be expanded to hinger levels (makro, mega). The three levels of planning is described in Figure 1.

Education change requires systematic, systemic, and formal planning approach [11]. It is an approach at a system scale. This scope can be narrowed to program scale.

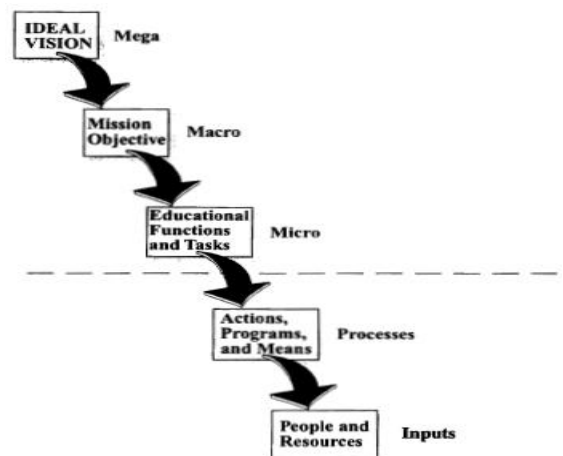


Figure 1. The Three Levels of Planning (Mega, Macro, Micro) and Their Relation to Inputs and Processes (copy Kaufman, Herman, & Watters, 2002 from Kaufman, 1995)

The planning is based-on new philosophy which provides new paradigm. The program planning reform is listed in Tabel 1. This tabel contain the critical element of progam that should be reformed and managed. Figure 2 describes the planning management of this reformation.

Table 1. The Program Planning Reform

Element	Before	Next
Philosophy	• Supply-driven	• Demand-driven
Vision	• Individual/sm all group achievement	• Individual/small group contribution • Organization contribution
Concept	• Closed, rigid	• Open, flexible
Objectives	• To give students' work outlook	• To give value-added at micro, macro, mega, level
Curriculum of apprenticeship	• unplanned	• strategic planning, outside-in
Result of training	• ???	• Recognized competence (micro level) • The strength of networking and collaboration between polytechnic and industry • Narrowing the gap between education-work • More contribution in applied technology and economic development
Evaluation	• No standard qualification	• Based-on National competence qualification framework (KKNI) • The achievement is based-on the agreement of competence's level could be achieved.

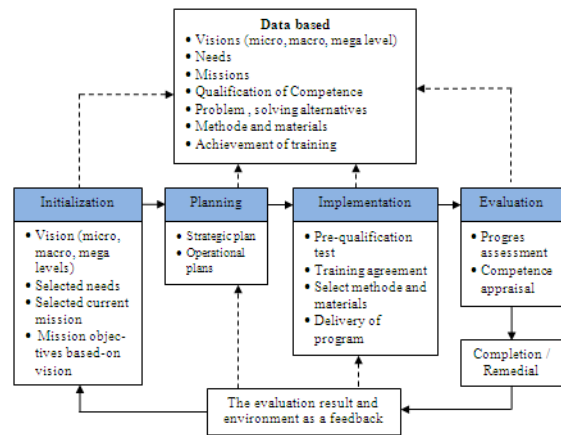


Figure 2. The Management of Strategic Planning of Apprenticeship Program

### 2.4 Organizational work

There are several reasons for organizing work: (1) to establish lines of authority; (2) to improves efficiency and quality by establishing synergy; (3) to improve communication. The organization structure can be established at the polytechnic's level (makro level) and or mega level that is invloved another organizations, such as other polytechnics and industries. At the micro level, the structure of organization can be established by each polytechnic or department level.

The internal organization structure is described in Figure 3. It's related to external organization which is influence the performance of internal organization. The dashes lines show the coordinate lines. Government controls the quality of educations and determines the education's policies. There is a National Board (BNSP) that has an authority to issue the competence certification.

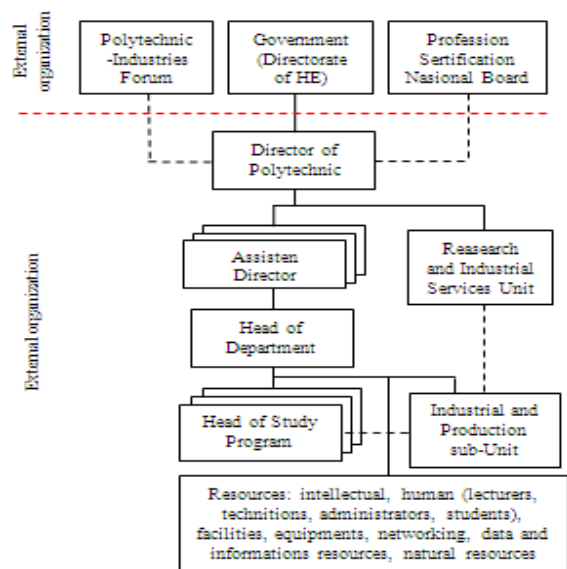


Figure 3. The Internal Organization (Organizational or Macro level)

The apprenticeship have to be managed by an unit at organization level which covers all activities

related to the delivery of apprenticeship program included industrial information services, research & development. This unit has sub-units at the lower level or operational level which covers activities in the field, for example prototype development, the production quality control, etc.

The contribution of apprenticeship to society have to be organized and managed in order to become more efficient and effective. This organization structure involve several polytechnics and industries which establish a consortium. This consortium may as an informal organization which coordinate by one of members, and it plays the role of “think tank”. Their synergy create an innovative product of applied technology that contribute to economic development. The informal structure of organization is described in Figure 4. Representatives of polytechnics and industries meet periodically to discussed about new idea, meet concept of product, solving the problems, etc.

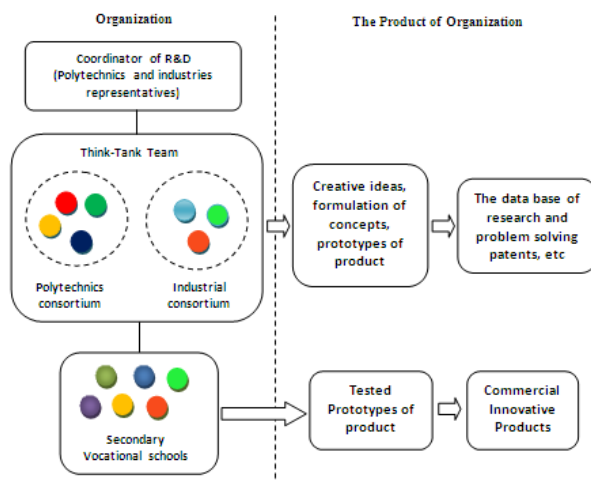


Figure 4. The Mega Organization of Apprenticeship

This organization is coordinated by one of organization’s member. All idea, concepts, problems and alternative solution, the result of research included patents are stored in the data base. The secondary vocational schools play as the partner of work in the production field. The propered research products can be developed as new products in the industry which sponsored this research.

## 2.5 Implementation

Strategic planning and quality management are two useful process when applied consistently and correctly [11]. Strategic planning identifies and defining criteria where to head. Quality management provides power for change and continuous improvement. They have to be

synergetic in order to become an efficient and effective program. The process management of apprenticeship of program at three levels is described in Figure 5.

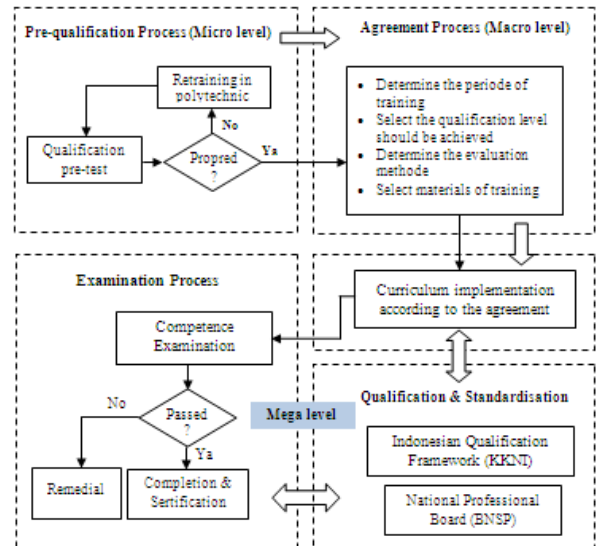


Figure 5. The Process Management of Apprenticeship Program

At mega level, implementation of apprenticeship program involve the other organization such as National Professional Certification Board (BNSP) and National Education Standar Board (BSNP). They are semiformal organization. Implementation at makro level (organizational level) involves internal organization or consortium polytechnic-industri. At micro level, the management process of program delivery involves individual or small group of students.

The training curriculum design must be integrated with the assessment task and learning methode [8]. It will be focused on student learning and therefore must be designed by considering three related components learning and teaching:

- What learning outcomes will they achieve?
- What teaching method we will use to support students to achieve these learning outcomes?
- What assessment task and criteria we will use to show that students have achieved these learning outcomes.

According to these assumptions, the curriculum of apprenticeship have to be planned by considering these components learning at each three levels of mission objectives.



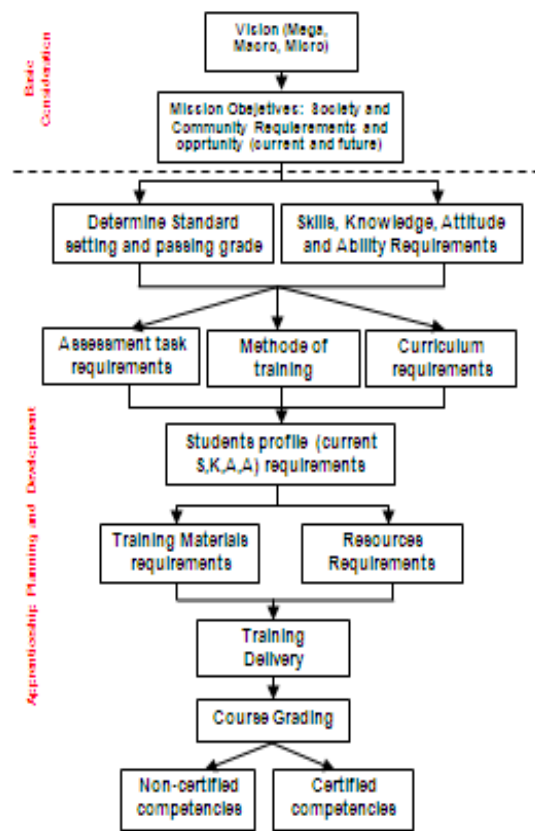


Figure 6. The Framework of Apprenticeship Curriculum Development

## 2.6 Assessment, Evaluation and Recognition

There are two elements of assessing student learning which are considered to assessment method: assessment design to influence student's learning and feedback to improve student's learning. Assessment design is assessment to influence learning. Assessment as feedback is focused on practices to improve student learning [8]. Based on these principals, the assessment in higher education is more focused on supporting the student learning than the rate of absorbtion the learning materials. This supooort is realized in the feedback form.

The assessment methodes that appropriate to appraise the progress of student's competences are: (1) easy test: it is to test the students abilities to construct coherent and reason arguments; (2) performance assessment or observation: to test the skills and competences of students; (3) certification test: to recognize the training result.

Recognition is one of values that make an apprenticeship has a meaning. Certification

purposes to enabling the public (including employers) and education providers to know that individual has attained an appropriate level of achievement that reflects the academic standard set by awarding institution and agreed the KKNi norm. This may include demonstrating fitness to practice or meeting other professional requirements. D3 completers should be fit to 5<sup>th</sup> level of KKNi, and D4 completers should be fit to 6<sup>th</sup> level of KKNi norm.

Assessment as feedback could be used to improve students performance. In the case of apprenticeship, it is unfair if the assessment only performed once at the end of the program. Students haven't opportunity to improve their performance. Step by step competence test will be used to assess the progress of competence achievement. The performance test will be used to assess the result of apprenticeship training. Performance test is based on a national qualification standard (KKNi). Standardization provide a mark or grade that enables a student's performance to be established. The key principle is to design assessment before designing the content to ensure that both students and lecturers are informed about how they are in progressing. It according to the suggestion of Ramsden (2003) and Birenbaum et.al (2005) [8]. This principle will be used to select and determine the content of training during apprenticeship. The progress of skills or competence achievement must be monitored and observed by advisers and lecturers who are responsible to this program.

At macro and mega levels, the fitness of program with the demands must be evaluated periodically by an external board.

## 3. Conclusion

According to the analysis as describe above, it can be concluded that:

- Apprenticeship program could be understood more than just open up the view of students.
- It have opportunities to develop a collaborative program with secondary vocational schools and other institutions that can give more contribution to the applied technology and economic development.
- Apprenticeship program should be strategically planned in order to more efficiently and effectively.
- The program is more effective and efficient if it met with the KKNi standard's level and can contribute more heavily on technology and economic development.
- At the operational level, the curriculum of apprenticeship should be developed by considering three related components: (1) learning outcomes which students have to be

achieved; (2) the appropriate teaching methods to support students to achieve their learning outcomes; (3) the task of assessment and criteria which will be used to show the achievement of students learning outcomes.

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# ISSUES AND CHALLENGES IN TOURISM AND HOSPITALITY EDUCATION: CASE OF INDONESIA

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## Abstract

Tourism and hospitality industry in Indonesia proves its significant growth year by year. To be competitive, the industry strives for qualified human resources who are not only knowledgeable and skillful but also to be creative in both functional and behavioral level as the labor will always engage in the consumer contact. This triggers the gap between industry's expectation and tourism and hospitality education providers since most of vocational education organizations in Indonesia deliver irrelevant curriculum which does not suit to the real world. A number of papers highlighted the issue of close collaboration between both parties in attempt to reduce this curriculum gap however, little has been reported successful. The study aims to reveal the importance of higher education to be more service-minded, flexible, adaptable, and relevant in the curriculum development to provide a qualified and creative industrial talent while at the same time preparing more professional and qualified educators. Recommendation and further studies are discussed as well.

**Keywords:** tourism and hospitality education, curriculum development, challenge, issues

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## 1. Introduction

The constant changing environment has affected most on tourism and hospitality industry, where the human resources element plays an important role. Consumers are more demanding, smarter, and more sensitive to value for money. Additionally, the competition is more intense and information technology is growing rapidly. All these factors call for quick and proper response from tourism and hospitality industry in order to take part in the market share. Consequently, more demanded labor force who are knowledgeable, skillful, and competencies is highly required by the industry. Therefore, tourism and hospitality educators need to facilitate their students with the curriculum program which suits to industry expectation. However, the tourism and hospitality institution failed to equip the students with the required knowledge, skills, and competencies as most of tourism-related programs are not relevant to the industry's requirements [8].

Quisumbing (2005) as cited in [7] states that if the education is the key to the economic and work field development over the changing environment, thus vocational education is the vital key to improve the quality of life. In other words, vocational education brings hope to overall nation's development, especially in Asia Pacific region where the most world population and the developing countries situated on. Therefore, high quality of vocational education is not simply an option but an obligation.

In Indonesia, education aims to achieve the national goals of economic development, ethnic, cultural, and linguistic diversity [5]. Firman & Tola

also argue that the main priorities of education in Indonesia are improving equity and access, enhancing quality and relevance, and strengthening management and accountability [4]. However, unsuitable curriculum content to cognitive development is one of the issues (Thomas, 1991 cited in [5]). To demonstrate, traditional lectures and question-and-answer methods are still dominant [5] rather than preparing the students to the real work world. This may help explain the gap between vocational educational institution and industry's perspective on labor force quality preparedness.

## 2. Discussion

Indonesia's official unemployment rate is low however, underemployed rate, that is the proportion of those who work less than 35 hours per week, are estimated of more than 30 percent of the work force [10]. As the fourth largest population country in the world [2], Indonesia has taken some population policy implementations since 1970s which affect gradually on increased larger population of young adults at the age of 15-29 years old [1]. These productive ages are expected could be effectively played a key role through the development of vocational education. Furthermore, the Indonesian government aims to expand the proportion of vocational education school into 70% and lessen the proportion general education into 30% in 2015, it is also expected to be a good opportunity to fulfill the industry's demand of labor force.

In terms of tourism and hospitality industry, Indonesia enjoyed the growing rate of tourist arrival in spite of the sharp fluctuation due to the numerous natural disasters i.e. earth quake and volcano

eruption years ago. To illustrate, the international arrivals in 2011 reached 9.24% growth over 2010 [12], while in the first quarter of 2012, the country experienced 11% arrival growth [11]. Trade, hotel, and restaurant sector tended to be the potential sectors in Bengkulu, Java (except Banten), Bali, West Kalimantan, Maluku, and North Maluku [1]. Obviously, more labor forces in this industry are needed. Nevertheless, the issue of lack of skills employability becomes an urgency rather than labor force quantity itself [13]. Therefore, the tourism and hospitality vocational education should keep up with those of industry's need.

## 2.1 Tourism and Hospitality Education Issues and Challenges

The tourism and hospitality industry nowadays faces several future trends that impact much in tourism in general and hospitality in particular [8]. These issues, which also brought the challenge for both industry and educators, derived from each industry' stakeholder especially consumers. The table below presents the future trends.

Table 1.

No	Future trends in tourism and hospitality industry
1.	Rapid change of information technology
2.	Increased competition and globalization
3.	More demanding customers
4.	Value for money sensitivity
5.	Increased demands for quality
6.	Lack of professional manpower
7.	Pressure from tour operators
8.	Increased responsibility for managers
9.	Cost pressures in hotel operation
10.	Increased demands for safety and security
11.	Increased sensitivity for environment responsibility

As can be seen on the table above, the changing environment as a whole calls for the quick respond and proper action in terms of industry policy, human resource development, and marketing strategy. Labor force is the fundamental element in the tourism and hospitality industry, thus it indeed relies on the human resources' capabilities to tackle the action. That is, to recognize the necessity to change and hence to act properly. Consequently, the need of knowledgeable, skillful, and employable human resources in the industry became much demanded. The tourism and hospitality education institution should take a different point of view of how to prepare their graduates to be ready dealing with the real world of work.

The objective of the study is to address the importance of higher education to be more service-minded, flexible, adaptable, and relevant in the curriculum development to provide a qualified and creative industrial talent while at the same time preparing more professional and qualified educators. In order to do so, closely collaboration between education institutions and industry is urgent.

Prinianaki listed several skills and abilities needed in graduates that match to industry's requirement [8]. The development of personality traits is considered as the most important competency required by the industry. That is, the human relations associated competencies or soft skills (Tas, 1988; Baum, 1991; and Eaton and Christou, 1997 cited in [8]). Further, Okeiyi, Finley, and Postel, 1994 cited in [8] also emphasize that human relations and managerial skills were the most crucial rather than technical skills.

On that list, the managerial skills as a reflection of soft skills is placed at the most required skill. It is then followed by experience, technical skills including communication, technological, and strategic planning skills, and knowledge application at last. However, as the employment standards have risen, the industry expects that the graduates could keep up with the current and future need.

Numerous researches have reported the effort from both tourism and hospitality institution and industry to engage in close partnership in order to fulfill the needs of the industry. Nevertheless, the gap between supply and demand is still unanswered. That is, the quality inadequacy is the most current issue which should be concerned by vocational education institution. The condition is worsening as the educational institution and the industry have different point of view of why the educational institution failed to prepare their students [8]. Industry views that the education institution does not prepare their graduates with the required knowledge, skills, and competencies. As the problem goes further rather than closer to the solution, the need to foster links with industry requirement [8] should be taken into reality and in a proper action. The investigation of the industry's current needs and the assessment of the tourism and hospitality programs might be the starting point of this issue.

Simply say, tourism and hospitality management education that resist to change over the time will come to an end unless it realizes the need for reassessment and adapt effectively with the change (Lewis, 1993; Powers and Riegel, 1993 cited in [8]). The outcome of program assessment and industry need's investigation is expected to facilitate in some ways. It provides the congruency between industry needs with the graduates'

knowledge, skills, and competencies, while at the same time encourage educators to redesigning the curriculum based on the industry requirements.

## **2.2 Vocational Education Issues in Indonesia**

Education system and curriculum in Indonesia as well as in other countries, is based social historical perspective [9], colonial and geographic size, cultural diversity, economic and political factors [5]. Permendiknas No. 22/2006 declares that the vocational education is aimed to enhance the intelligence, knowledge, skills, as well as students' moral in order to live independently and continue the study in accordance with the program. Vocational education is offered through secondary, post-secondary, and higher education levels [10]. The educators must be technically prepared to teach based on their special interest.

The vocational education in Indonesia has been changed radically many times in order to fit the political and other environment changes [5]. Indonesian government also did some programs to enhance teachers' knowledge, skill, and professionalism such as massive education trainings. The training program used the same training materials and methods year by year, which made the education institution concern only on supply-driven instead of demand-driven [7]. It impacts on teachers' quality improvement but not the learning process [4] including the curriculum development. In fact, educators did the same way of teaching in the old version curriculum after the training.

This phenomenon might be occurred due to the centralization of government policy which allows the government takes a dominant part in designing the curriculum as well as learning process [9] [7]. In the other hand, the industry which is supposed to give their significant contribution to the curriculum development could not show their roles. The condition is worsening when the tourism and hospitality education institutions are under the state or government authority when centralized top down method is employed, whereas the innovative educational system and curriculum need to be seriously taken into account. As a result, the curriculum planning and implementation indeed found several difficulties as the education institution tends to highly resistance to change [9].

This condition might help explain the gap occurrence between graduates' capabilities with industry's expectation. The curriculum development which involves industry's perspective is seen as an obstacle instead of motivation to move ahead. The education institution tends to stick on previous and traditional rule of game, as the changes will cost on the changes on education system, teaching materials, learning process,

infrastructure, etc. Unfortunately, if the industry's involvement in the curriculum development is neglected, the education institution is threatened to fail to educate the students with the required and relevant knowledge, skills, and competencies. In fact, the programs offered redundant and too broad theoretical substance but lack in theory and practice integration. Consequently, the graduates do not get the realistic expectation of the industry and irrelevant skills which lead to uncompetitive labor force.

## **2.3 The curriculum development: Some considerations**

As the environment changes rapidly and unexpectedly, the graduates, as the main player in the tourism and hospitality industry, should keep pace by improving their knowledge, skills, and competencies. The government indeed plays determinant role in designing the vocational education system as well as the curriculum however, the educators themselves are expected to enrich their professional teaching qualification and innovativeness to support the learning process. Open-minded and adaptable educators instead of a resistance to change will be a significant move towards a better curriculum development.

Accordingly, the educators must have a better perspective of preparing the graduates to be competitive in the real work field. Required and relevant skills such as managerial skills, technical skills, information technology skills, and up dated knowledge need to be well-mastered by the graduates. A well-integrated theory and its application are also should be taken into action to train the graduates with realistic and up to date work practice. Therefore, some old and irrelevant courses might be taken out while new and improved courses could be added in to stay ahead with the real work requirement.

To achieve this, close collaboration between educators and industry has to be well-maintained time to time. By allowing the industry to participate in the curriculum development, the educators could design the more relevant, effective and efficient curriculum that suits to industry's requirements [6]. More effective curriculum is expected to be dependent to stakeholders' interests in order to suit the proposed curriculum. Close cooperation between industry and education institution can be acquired by performing on the job training. This kind of program must benefit both parties. It should enable the industry to screen out the suitable candidates to be employed in the future and also to help the assessment of the students' while in the other hand, challenge the educators to prepare the graduates well and enhance the graduates' professional capability. In fact, the some industries do not allow the students to handle professional

responsibilities on the job training program. Rather, the industry gives unskilled job responsibilities as they underestimate on students' capabilities.

Curriculum effectiveness and efficiency's evaluation is the other important step to ensure the outcome quality improvement and to satisfy the stakeholders [3]. Focus group discussion involving the educators, industries, and government should bring an objective and more accurate evaluation measurement of the program. The graduates might take part as well to confirm and to share ideas to the program implementation.

### 3. Conclusion

The constant changing and demanding environment in the tourism and hospitality industry requires high adaptability and flexibility to respond in a proper and better action. It is founded that the graduates' knowledge, skills, and competencies do not match and cannot keep up with those of the industry's expectation. The industry claims that the education institutions do not equip their students with the up dated and relevant curriculum that suits to real work field. In the other hand, the education institutions are resistant to change their perspective on learning goals, the teaching method, and the curriculum design. In fact, Hence, several parties including tourism and hospitality education institutions, the industries, the government, as well the scholars need to work and cooperate together to achieve the competitiveness that benefit each of them.

### 4. Limitations of the study

The study proposes the urgency as well as the obstacles of curriculum development to stay ahead with the demanding requirements of the industry. Nevertheless, it focuses only on two parties including tourism and hospitality education institutions and the industries. In reality, several more parties including the government who set up the policy, the financial point of view which reveals the cost of operating vocational education in Indonesia. Above all, the study presents the literature reviews or secondary data instead of performs the research. Thus, the findings should need the primary data's clarification and confirmation.

### 5. Further researches

Further researches are expected to conduct the exploratory study regarding to the plan, implementation, and evaluation of the curriculum development that has to be more flexible, open, and adaptable might be helpful to investigate the issues. A quantitative and qualitative study to investigate a better and proper format of a close collaboration between industries and educators could also

facilitate the effectiveness and efficiency of the curriculum evaluation.

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# DEVELOPING "MINI OFFICE" AS A LEARNING MEDIA IN THE STATE COLLEGE OF ACCOUNTANCY: MANDATORY OR OPTIONAL?

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## Abstract

The competencies of graduates of STAN (*SekolahTinggiAkuntansi Negara*, State College of Accountancy) through its Official-Service Education (*PendidikanKedinasan*) program are expected to meet the qualifications to be employees for the Ministry of Finance as the equivalent to the civil servants as the executors. The cognitive competencies can successfully be achieved through the learning process, while the psychomotor competencies are still limited to be met only by means of computer laboratory. As a place for vocational education activities, STAN will need not only rooms for the classical learning processes, but more importantly it also needs a replica of work environment designed to be similar to the workplace where they will be working after completing education.

Program of education in STAN provides ready-to-work graduates equal to educational levels of Diploma I and Diploma III. Therefore, in order to provide ready-to-work graduates, the curriculum should be designed for the fulfillment of knowledge as well as the fulfillment of skills. The fulfillment of skills for the graduates as prospective employees can be set by working at an environment resembling a replica of servicing office in the form of "Mini Office". This Mini Office is developed in accordance with the educational specialization held in STAN, and in accordance with the latest condition of the users, i.e. the servicing office unit in the Ministry of Finance.

Mini Office is also a part of the media learning in shaping reliable workers in implementing the tasks and functions in the field of services to public. The comprehensive and solid competencies can be expected to be obtained faster by means of the Mini Office, before the graduates are to enter the workforce. It is because the students have already gained the experience through the replica of work environment during their learning process, not only when they conducted the field practice (PKL). The Mini Office becomes something obligatory when STAN is characteristically meant to have vocational education, but it can also be something "optional" if such characteristic is not entirely attached to the organization structure of STAN. Therefore, Mini Office is left to be a choice of "obligatory" or "optional" to STAN.

**Keywords:** mini office, State College of Accountancy, learning media.

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## Introduction

Any educational activity in general always needs space in conducting the learning process (delivering the theoretical matters) with certain methods such as discussions, exposure, lecturing, question-and-answer, etc. For vocational education, it is not only the space or rooms needed for classical learning processes; but more importantly it needs one replica of work-environment for students, a kind of laboratory designed to resemble the place to work after their graduation. Several reasons why it is necessary to have a training room or laboratory are as follows:

1. The principles of vocational and technology education imply that vocational education should **pay attention to market demand** and

- also constitutes an **efficient social service** if it suits the needs of someone who requires it.
2. Technology and Vocational Education should **emphasize** more on the **needs of learners in the community groups** in general and the **unit of users** (government agencies) in particular.
3. Vocational and Technology Education will be more effective if the learners are conditioned to have a **habit of thinking and working** as required in the future workplace itself.
4. Vocational and Technology Education will be more efficient if the environment in which the learners are trained constitutes a replica of work environment where the learners will work later.

According to article 29 of the National Education System Act No. 20 in 2003 [7],

education in the State College of Accountancy (STAN) is an Official-Service Education (*PendidikanKedinasan*), which serves to enhance the abilities and skills in performance of tasks limited to prospective employees and civil servants a Ministry or Government agency non-Ministerial Department. That means, in setting up a potential employees who have the competencies of knowledge and skill in accordance with their fields it needs to be supported by providing facilities not only for learning theory but also for practicing the work as a medium of instruction.

With respect to that, the provisioning of space for classroom and practice lab in the learning process is mandatory if we pay attention to the mandate of the Government Regulation No. 60 in 2009 article 4 paragraph 2, article 4 paragraph 4, and article 5 paragraph 3 [8]. The mandate of the regulation generally confirms that professional education is an education which is directed mainly on the readiness of certain application expertise either through the Diploma I or Diploma III programs. In other words, the design of learning patterns in official-service education should be in accordance with the principles of vocational education, namely providing a replica of the work environment in the place of education in order to achieve the objective of vocational education.

### State College of Accountancy (STAN)

State College of Accountancy (STAN) is an Echelon II at the Finance and Education Training Agency (BPPK), Ministry of Finance with its official-service education programs. The programs provide ready-to-work graduates equivalent to Diploma I and Diploma III levels; so STAN mentions its educational programs as Diploma Program (shortened as *PRODIP*, *Program Diploma*). The graduates of Prodip I and III Financial are equivalent to the executing civil servants (PNS) in the rank/group of II/a and II/c in the Ministry of Finance. Up to the academic year 2008/2009 STAN has some departments or the so-called specialization that suits the needs of Echelon I in the Ministry of Finance.

Table 1. Table 1 Specialization of STAN

NO	Specialization	Diploma Program	
		I	III
1	Government Accounting	-	OK
2	Taxation	OK	OK
3	Penilai	-	OK
4	Customs	OK	OK
5	Treasury	OK	OK

The Diploma Program (Prodip) of Finance is divided into two, i.e.:

1. Prodip I (2 semesters) is to provide graduates who are ready to work in the administrative level of the executing civil servant (PNS) with the rank/group of Young Manager (*PengaturMuda*) (II/a)
2. Prodip III (6 semesters) is to provide graduates who are ready to work in the administrative level of the executing civil servant (PNS) with the rank/group of Manager (*Pengatur*) (II/c)

The package of education program consists of 30% theory and 70% practice considering the objectives of preparing a ready-to-work clerical or administrative workforce in accordance with their respective Specialties. In the academic year 2011/2012 the programs administered by STAN consists of Prodip I Finance with Specialization in Taxation and Prodip I Finance with Specialization in Customs

### Learning Media

Learning media can be categorized as part of the educational technology. Heinich, et.al. (1993: 16) [2] states that applying the scientific knowledge about human learning process for the practical tasks in learning and teaching is through the learning media. Learning media as stated by Shambaugh and Magliaro (2006: 67) [5] function as follows: “*the use of media and technology is based on a need to give students experiences they could not have otherwise.*” In other words it can be said that actually instructional technology will generate a medium that can be used in the process of teaching and learning.

The applied learning strategies will affect on the determination of chosen learning media. If it is stressed more on a goal of verbal competency, the media selected is the one which is not interactive. More clearly, Dick, et.al. (2005: 210) [1] reveals as follows:

*if the instructional goal is in the domain verbal information, there is still the requirement of eliciting reponses from learners, but there is less need for intelligent, adaptive feedback. Students can easily compare their own responses to the correct answers, so there is less need for interactive media with verbal information goals.*

The learning process is supported by elements of teaching method and learning media. Both of these elements are intertwined with each other. It means that the selection of a specific teaching method will affect in the use appropriate type of learning media as well. However, the other aspects in the selection of the learning media--such as objectives, types of assignments, and the response



expected to be mastered by the participant and the context of learning--still must be taken into consideration. Thus, learning media is a tool that serves to convey the message of learning. Learning is a process of communication between learners and teachers concerning the learning materials. Such a communication will not run without the assistance of the means or media to deliver the message. Messages to be communicated is the content of learning in the curriculum which is conversed over by the teacher or facilitator or other resources into symbols of communication, either in verbal, non-verbal or visual symbols.

There are six basic types of learning media according to Heinich and Molenda (2005)[3], namely: 1) text, i.e. the basic element to convey any information that has a variety of types and forms of writing that attempts to give attraction in the delivery of information; 2) audio media, i.e. media that help convey information in a more interesting way, by helping increase the attractiveness to certain performances, such as background noise, music, or other sound recordings; 3) visual media, i.e. media that can provide visual stimulations such as pictures/photos, sketches, diagrams, charts, graphs, cartoons, posters, bulletin boards and so on; 4) motion projection media, i.e. motion films, television programs, video tapes (CD, DVD, or VCD); 5) mock objects or miniatures, i.e. three-dimensional objects that can be touched and hold by the students. These media are created to overcome the limitations of either objects or situations so that the learning process continues to run well; and 6) human beings, i.e. the teachers, students and experts.

### **Mini Office**

The official-service education is the kind of education which is required to always be dynamic in making changes and adapting to any developments in science and technology, as well as in the needs of the users. This education will be effective and efficient when the learning environment also constitutes a replica of the work environment that will be faced by the graduates as prospective employees. It may imply that the existing facilities in the learning environment do not only function as a contributing factor but rather as part of the curriculum of instruction. Why? Because these facilities should function as a means of learning media, as a major part of the learning process in the fulfillment of both knowledge competencies and skill competencies.

Room for practicing or workshop will generally be referred to as laboratory. The currently available laboratory in STAN is only the computer laboratory. The computer laboratory is used for administrative office computing and also for data-base management concerning the available

educational specializations. However, the laboratory which serves as a replica of the work environment is not yet available at present. A replica of the work environment is important in setting up the ability of graduates as the prospective employees both from the substance of services and from the techniques of services in the user-units.

The quality of rooms for learning theory in STAN has met the standard minimum requirements. Laird in Sugiyono (1998) [6] suggests that there are 4 (four) criteria that must be met to be a room for education and training, i.e. flexibility, ventilation, insulation and lighting. The flexibility of the classrooms are designed with a level of ease and speed to set the contents of rooms to suit the needs of learning (also in accordance with the development of the curriculum). Isolation here does not mean there should be no windows or ventilation; but that the room is isolated from disturbing sound effects (near crowded highway-traffic, near airport, near railroad, etc.) that may interfere with the process of teaching and learning. Lighting here means that it should be possible to control the darkness of lightness of the room. In other words, whenever necessary for drawing or writing activities which require sufficient lighting, it can be set to be light due to the process of observation. Whereas when doing activities such as playing a movie, using a projector, etc., it can be set to be a bit dark. In quantity, the number of rooms in STAN is already sufficient regarding the number of students being prepared to be the prospective employees.[4]

The rooms for workshop practice for students before taking the practice of Fieldwork (PKL) have not yet been provided by STAN. If such rooms are available then the process of the establishment of the knowledge competence can be in line with developing the skill competence using replica of the work environment referred to as "Mini Office". Mini Office can be provided in accordance with the educational specialization of the Diploma Program, in which there will be facilities and working tools as their future work environment.

The availability of Mini Office will facilitate the teachers in shaping the knowledge and skill competencies of the prospective employees, and the prospective employees (in this case the students) will get it faster and easier to adopt the knowledge and skills they have obtained to do the job simulation in the replica of the work environment. However, to achieve such advantages needs a well-managed learning curriculum. It means, the management should always follow the development of needs of the user-units so that the users of the mini office will always be in line and synergies with the work environment existing in user-units within the Ministry of Finance.

### Developing Mini Office for the Office of State Treasury Services (KPPN)

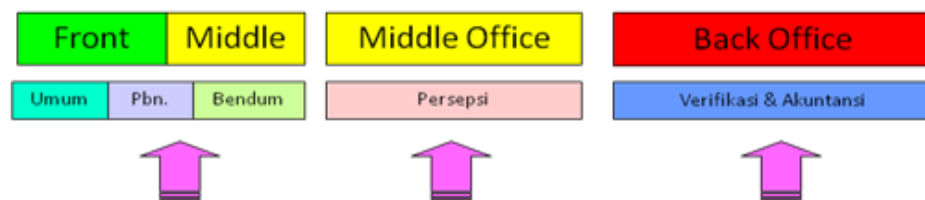
The Office of State Treasury Services (*Kantor Pelayanan Perbendaharaan Negara, KPPN*) is a vertical institution from the Directorate General of Treasury, the Ministry of Finance, throughout the territory of the Republic of Indonesia with the tasks to: 1) carry out part of the authority and power of the General Treasurer, 2) channel the expenditure for the allocated budget, and 3) conduct the administering acceptance and expenditure budgets through and from the State Treasury pursuant to

applicable regulation. In accordance with the Decree of Ministry of Finance (PMK) No. 100/PMK.01/2008 [10] about the organizational structure of the Ministry of Finance, the types of services provided by KPPN are: 1) One Stop Service, the stakeholders will only relate to the Front Officer, 2) Simple Business Process supported with the suitable and secure IT, 3) Real Time Information, 4) Minimizing paper work, and 5) More transparent and accountable.

Therefore, the organizational structure of KPPN has changed as follows:



### Future Planning



#### Future Planning of Organizational Structure

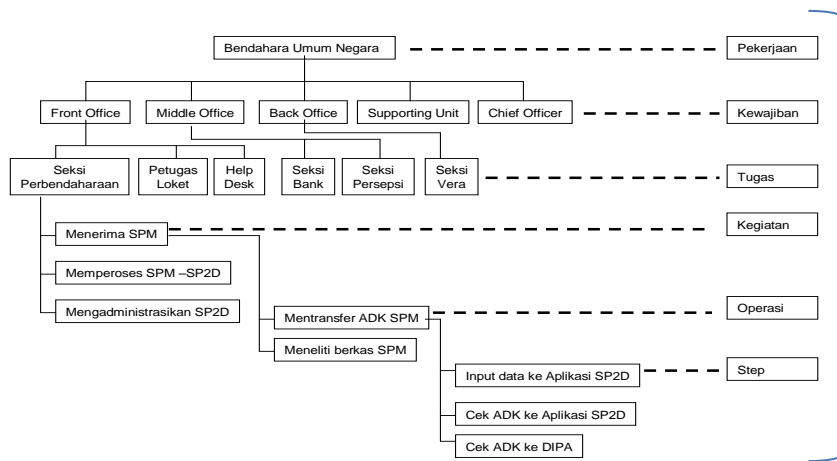
The differences between the tasks and functions of the Front Office, Middle Office and Back Office are as follows:

- 1) *Front Office*: budget disbursement by testing the SPM and ADK and examining that the bill will certainly be paid.
- 2) *Middle Office*: completing SP2D and testing/escorting, verifying and administering the State revenues, bookkeeping the state expenditures and revenues, and accepting confirmation for state deposit receipts
- 3) *Back office*: accounting and reporting (ADK and reconciliation), internal and external

reconciliations, preparing cash position report, preparation the LKPP, shipping documents, administering archive documents, and guidance and counseling services.

Therefore it requires the support of specific human resources with the following requirements: 1) the quantity of employees, 2) qualifications of employees (in terms competence and morality), 3) cooperation (vertical, horizontal, and functional)

From the description of tasks of KPPN above we can generate the concept of curriculum for Prodi P I/III Finance with Specialization in State Treasury based on the following figure:



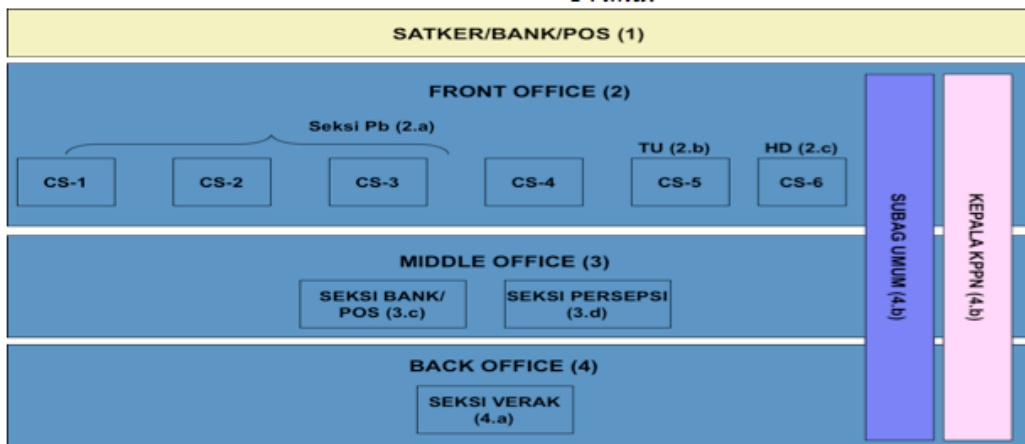
The result of survey:  
 The proportion of curriculum (30% for theory, 70% practice):  
 Receiving documents  
 Checking documents  
 Transferring the manual data  
 Transferring "ADK" to application  
 Processing the "SPM"

Figure 1 The Tasks of KPPN

From Figure 2 above it is inferred that the proposed curriculum will use instructional media of work environment replica in which learners will work later. Why is the work environment replica significantly emphasized? Because up to now, there is something missing in the education and training program for prospective civil servants run by the State College of Accountancy (STAN), i.e. the

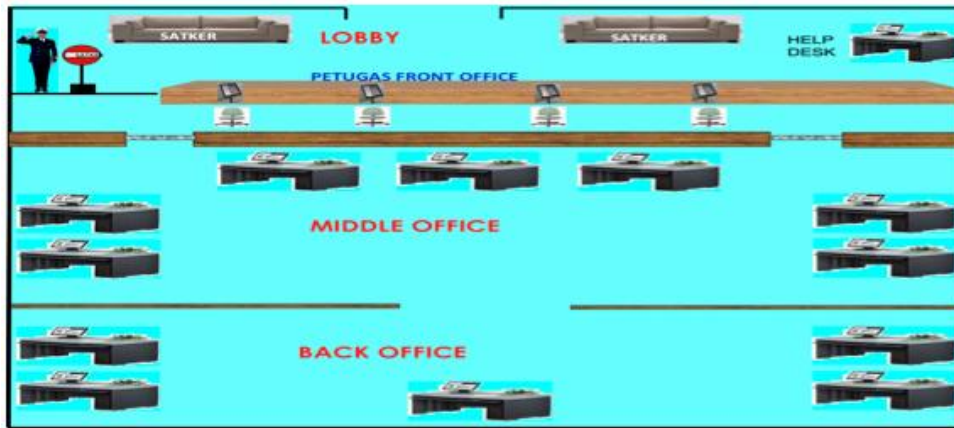
"practice" of working before being placed in user-units (institution).

In accordance with the business program of *KPPN Prima process*, the established curriculum should then provide a learning media of work environment replica that resembles the *KPPN Prima*.



Layout of Mini Office of KPPN

Note:  
 CS (1-4) = Treasury Service  
 CS (5) = Customer Service  
 CS (6) = Help Desk



Cross-View of Mini Office of KPPN

What are required in the establishment of "Mini Office" of *KPPN Prima* are as follows:

- 1) WORK UNIT area  
A waiting room for the "clients", so the supporting material must be provided to make them comfortable when queuing/waiting for service. Enough chairs with a good quality (should not be the hard wood bench), appropriate air conditioner, water dispenser facilitated with supplies of plastic cups, and the position of the room near the main entrance or lobby to make it easier for the "clients" to access.
- 2) HELP DESK area  
With officers who will provide consultation about the errors or mistakes made by "clients" concerning both the administrative and substantive mistakes on their SPM. The table should be equipped with a computer with its system network connected to the Verification and Accounting Section (Back Office).
- 3) FRONT OFFICE area  
The Treasury section serving the "clients" to receive their proposed SPM to be processed into SP2D. A network of computer systems connected from CS-1 until CS-4, i.e. the MPN (*Modul Penerimaan Negara*, State Revenue Module) and SP2D Applications as well as the web service.
- 4) MIDDLE OFFICE area  
The authorized official equivalent to the Echelon IV structural officials, i.e. Bank/Post Section and Perception Section (as the signer/endorser of SP2D document); still with a required staff to enter data. The main task is to verify and conduct bookkeeping on the receipts of SPM. Equipped with a computer system connected to the Front Officer.
- 5) BACK OFFICE area  
The authorized official equivalent to the Echelon IV structural officials, i.e. the Verification and Accounting Section (as the signer/endorser of reconciliation document); also with a staff required to enter

data. Equipped with a network computer system connected to the Front Officer.

### Closing

The Official-Service Education (*Pendidikan Kedinasan*) has the mandate to provide prospective civil servants as employees with knowledge competence and skill competence to be applied in user-units in the Ministry of Finance. Therefore, not only does it require classroom for learning the knowledge, but it also requires room to shape their skills. As an effort to meet this need it is necessary to develop "Mini Office" as a medium of instruction for prospective employees.

Mini Office serves as a learning medium for the students to practice the tasks they will face in their work environment later by learning through a replica of the work environment. Mini office is provided in accordance with the educational specialization of Diploma Program held by STAN to establish the skills of the prospective employees. The development Mini Office KPPN as a replica of the work place for students of Prodi P I/III Finance with Specialization in State Treasury can be an example of how Mini Office is developed. This development might be far from perfect, yet it is expected to meet the demand that the **Finance Diploma Program** held by STAN will generate competent human resources with high morals who will be able to answer the future challenges in administering governmental tasks later.

In the end, it all depends on the decision to produce the policy that the establishment a replica of work environment in the form of "Mini Office" will in turn depend on the understanding of fulfilling the mandate of regulation governing the official-service education (*Pendidikan Kedinasan*). Either in the Act No. 20 in 2003 on National Education System, in the Government Regulation no. 60 in 2009 on Higher Education, or in Government Regulation no. 14 in 2010 on Official-Service Education [9], there is no statement regulating the replica of work environment in the

form of Mini Office, but implicitly it is stated that Official-Service Education constitute a professional education to improve the knowledge competence and skill competence of the prospective employees.

Therefore, the unavailability of work environment replica as a part of the curriculum makes it to be “optional”. However, considering the demands on quality of knowledge and skills of the prospective employees who will work on the user-units later, the availability of work-environment replica becomes “obligatory”. It, after all, depends on the comprehensiveness of understanding to the governing laws as well as the demands for quality of graduates that will be produced from the official-service education itself. “Obligatory” or “Optional” is left to STAN; which one to choose? We’ll see.

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| Peraturan Pemerintah Nomor         | 60 | Tahun | 2009 |
| tentang Pendidikan Tinggi          |    |       |      |
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# ENGAGIERTE DEUTSCHE UNTERNEHMEN IN INDONESIEN

*Eine „Brücke“ für die fruchtbare Wirtschaft-Kooperation zwischen Indonesien und Deutschland*

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## Abstract

This year Indonesia and Germany will celebrate the 60 years of Indonesia-German diplomatic relations. One of the key points of this long successful relation is cooperation. This paper presents a short review of the engagement of German companies in Indonesia as an important part of Indonesia-German relations. Specifically, attention will be devoted to the history of the diplomatic relations between Indonesia-Germany and the role of German companies by establishing bilateral economic cooperation. This paper also puts forward some successful stories of the cooperation between German companies and Indonesian institutions. In addition, it presents the social activities of some German companies in Indonesia through program Corporate Social Responsibility (CSR). Finally, what can we learn from a long historical cooperation both two countries will be highlighted.

Keywords: Deutschen Unternehmen, Kooperation, Corporate Social Responsibility, Indonesien, Deutschland

## 1. Einleitung

Das Image „*Made in Germany*“ ist in der ganzen Welt bekannt und als ein erfolgreiches „Markenzeichen“ anerkannt. Mit dem Image „*Made in Germany*“ sind viele deutsche Produkte weltweit ein Verkaufsschlager. Deutsche „Hardware“, wie zum Beispiel Maschinen und Autos, werden in die ganze Welt verkauft <sup>[1]</sup>. Zur Stärkung dieses Images haben sich die deutschen Unternehmen weltweit sehr stark und massiv engagiert.

Die deutschen Unternehmen sind sich dessen bewusst, dass in der Globalisierung der Wirtschaft sowie der Dynamik der Innovationen die weltweite Standardisierung von Qualitätsverfahren und Qualitätsprodukteneine Ressource für Erfolg ist. Darüber hinaus ist festzustellen, dass nur durch kontinuierliche Investitionen in das vorhandene Humankapital diese Ressource ständig weiter entwickelt wird. Wohl eher wegen der geringeren Produktionskosten sind viele deutsche Unternehmen in verschiedenen Ländern vertreten.

Ein wichtiger Schwerpunkt des Auslandsengagements von deutschen Unternehmen im Ausland liegt vor allem in den asiatischen und pazifischen Regionen, wo ca. 4.400 deutsche Niederlassungen (zwischen Beijing und Melbourne) existieren <sup>[2]</sup>. Es ist zu erwarten, dass auch in diesen Niederlassungen besondere Aufmerksamkeit dem Humanpotential zukommt.

In Asien gilt Indonesien seit langer Zeit für deutsche Unternehmen als ein „beliebtes“ Land für

sein Investitionsengagement. Gegenwärtig sind mehr als 250 deutsche Unternehmen in Indonesien aktiv, viele davon mit eigenen Produktionsanlagen. Davon sind 22% in der Elektroindustrie, 13% im Pharmazeutischen und Chemischen Sektor, 8% im Bankensektor, 4% in der Logistik, 4% in der Holz- und Möbelindustrie und 3% im Kraftfahrzeugwesen tätig [3]. Die realisierten deutschen Investitionen in Indonesien belaufen sich seit 1967 auf rund 8,6 Mrd. USD. in über 200 Projekten. Im Jahr 2004 verminderten sich die genehmigten deutschen Investitionen auf 29,8 Mio. USD (2003: 172,2 Mio. USD). Schwerpunkte sind Telekommunikation, Chemie/Pharmazie, Energie und Maschinen sowie Anlagenbau <sup>[4]</sup>.

Als das viertgrößte Land der Erde und mit seine geostrategischen Lage und dynamischen industriellen Entwicklung gewinnt Indonesien besonders im asiatisch-pazifischen Raum zunehmend an wirtschaftlicher Bedeutung <sup>[5]</sup>. Aufgrund der Größe seines Marktes – ca. 234 Millionen Einwohner [6], des Ressourcenreichtums (*natural resources*) und der relativ gut ausgebauten Infrastruktur ist Indonesien seit langer Zeit ein interessantes Land für Investitionen internationaler Unternehmen, vor allem europäischer Unternehmen, inklusive der deutschen Unternehmen.

Ebenso als ein Billiglohnland mit geringen Produktionskosten ist Indonesien vor allem für die arbeitsintensiven Industriezweige sehr attraktiv für Investitionen. Unternehmen, die zur Produktion Rohstoffe, wie zum Beispiel Erdöl, Erdgas, Palmöl, Kohle, Öl, Zinn, Nickel, Kupfer, Bauxit, Gold, Erze, Holz, Rattan oder Wasser, benötigen, können

auf diesen Ressourcenreichtum in Indonesien zurückgreifen.

## 2. Zur Entwicklung deutscher Unternehmensaktivitäten in Indonesien

Indonesien und Deutschland pflegen seit langem gute und vertrauensvolle Beziehungen. Dieser wirtschaftliche Kontakt geht bis ins 16. Jahrhundert zurück als deutsche Kaufleute auf portugiesischen und holländischen Schiffen das damalige Ostindien bereisten<sup>[7]</sup>.

Während der holländischen Kolonialzeit kamen Tausende von Deutschen nach Indonesien, sei es als Angestellte der holländischen Kolonialverwaltung, als Ingenieure, Techniker und nicht zuletzt als Forscher und Wissenschaftler. Später engagierte sich die deutsche Industrie bereits Mitte des 19. Jahrhunderts in Indonesien. Nach der Unabhängigkeit von Indonesien im Jahr 1945 führten deutsche Geschäftsleute sowie deutsche Experten in den Bereichen Entwicklungszusammenarbeit, Bildung und Forschung einen intensiven akademischen Austausch zwischen Deutschland und Indonesien weiter<sup>[7]</sup>.

Zurzeit konzentrieren sich die Beziehungen zwischen Indonesien und Deutschland z.B. auf die politischen Beziehungen, Wirtschaftsbeziehungen, Industrie- und Handelsbeziehungen, entwicklungspolitische Zusammenarbeit und wissenschaftlich-technologische Zusammenarbeit<sup>[8]</sup>.

Im Bereich Industrie, Handel und Wirtschaft wird Deutschland von Indonesien als wichtiger bilateraler Partner gesehen. Derzeit ist Deutschland viergrößter bilateraler Partner Indonesiens nach Japan, Australien und den USA. Auf der anderen Seite wird Indonesien aus der Sicht von Deutschen als ein wichtiger und gewünschter Brückenschlag nach Asien angesehen. Auch bei der Entwicklung der europäisch-asiatischen Zusammenarbeit spielt Indonesien aufgrund seiner strategischen Lage und seines dynamischen Wirtschaftswachstums eine wichtige Rolle.

Als bilaterale Partner im Bereich Wirtschaft sind viele deutsche Unternehmen in Indonesien vertreten. Nach Angaben der Deutschen Indonesischen Handelskammern (EKONID) sind gegenwärtig ca. 250 deutsche Unternehmen in Indonesien tätig. Von diesen 250 Unternehmen gibt es sogar Firmen mit eigenen Produktionsanlagen.

Das Engagement der deutschen Unternehmen in Indonesien hat eine lange Tradition. Siemens, Bayer oder die Deutsche Bank gehören zu den Unternehmen, die schon lange Zeit in Indonesien ansässig sind. Siemens war zum Beispiel schon vor mehr als 150 Jahren in Indonesien tätig. Die Deutsche Bank feierte im Jahr 2009 ihr 40-jähriges Bestehen in Indonesien.

Die Rolle der deutschen Unternehmen in Indonesien im Sinne von Wirtschaftsunterstützungen, kann deutlich am Beispiel der Zeit der Asien-Wirtschaftskrise bzw. asiatischen Finanzkrise im Jahr 1997/1998 erkannt werden. Selbst diese Zeit berührte die Präsenz der deutschen Unternehmen in Indonesien nur unwesentlich. Trotz ungünstiger Wirtschaftsbeziehungen haben sich die deutschen Unternehmen – mit wenigen Ausnahmen – in dieser Zeit nicht vom indonesischen Markt zurückgezogen<sup>[8]</sup>.

Mit der Präsenz der deutschen Unternehmen während der tiefgreifenden Rezession der indonesischen Wirtschaft in den Jahren 1997/1998 haben diese zumindest zur Stabilisierung der Wirtschaftslage in Indonesien, insbesondere bei Problemen der massiven Kapitalflucht (*Capital Flight*) beigetragen. Es ist festzustellen, dass in der Zeit der Wirtschaftskrise in Indonesien nahezu alle Branchen, insbesondere der Anlagenbau und die Bauwirtschaft betroffen waren. Dies hatte zur Folge, dass viele internationale Firmen Umsatzrückgänge hinnehmen mussten, die meisten internationalen deutschen Firmen zogen sich jedoch nicht vom indonesischen Markt zurück.

Die Deutsche Bank war zum Beispiel eine von wenigen internationalen Banken in Indonesien, die während der asiatischen Finanzkrise ihr Engagement in Indonesien aufrechterhielt. Da während der asiatischen Finanzkrise viele der Banksektoren betroffen waren, hatte die Deutsche Bank eine bedeutende Rolle beim Wirtschaftsaufschwung (*economy recovery*) Indonesiens. Durch ihre Rekapitalisierungshilfen für den indonesischen Bankensektor und ihre Funktion als eine der größten Emissionsbanken für die Ausgabe von Staatsanleihen hat die Bank starke Beziehungen zu den lokalen Märkten, der Regierung und der breiteren Geschäftswelt aufgebaut<sup>[9]</sup>.

Noch in der Zeit der asiatischen Finanzkrise und trotz der schwierigen Bedingungen der Asienkrise, wurde im Jahr 1999 in Jakarta ein sogenanntes Deutsches Industrie- und Handelszentrum (*German Centre for Industry and Trade*) etabliert. Die Initiative zur Etablierung dieses Zentrums wurde von der Landes-Bank (Der Staatsbank Baden-Württembergs) unterstützt. Die Idee für die Etablierung des Zentrums war als Brücke und Hilfestellung vor allem für kleine und mittlere deutsche Unternehmen konzipiert, die auf dem indonesischen Markt Fuß fassen bzw. sich in Indonesien engagieren wollen<sup>[8]</sup>.

Mehr als zehn Jahre nach der Eröffnung des Zentrums gibt es derzeit etwa 55 deutsche Unternehmen und Organisationen, die an das Deutsche Industrie- und Handelszentrum angegliedert sind. Aus diesem Zentrum heraus

verbunden sie sich mit anderen deutschen Unternehmen in Indonesien und indonesischen Unternehmen für die alltäglichen Geschäftsaktivitäten.

Das Deutsche Industrie- und Handelszentrum (*German Centre for Industry and Trade*) in Indonesien ist eines von mehreren Deutschen Industrie- und Handelszentren in der ganzen Welt. Solche Zentren sind zum Beispiel auch in Singapur, Peking, Mexiko-Stadt, Shanghai, Neu-Delhi, Dubai und Moskau präsent. Alle diese Zentren sind in einem weltweiten German-Centre-Netzwerk verbunden.

Die deutschen Unternehmen, die durch das Deutsche Industrie- und Handelszentrum in Indonesien vertreten sind, spielen eine wichtige Rolle und zeigen großes Engagement in den Wirtschafts-, Industrie- und Handelsbeziehungen zwischen Deutschland und Indonesien. Neben dem Deutschen Industrie- und Handelszentrum spielt die sogenannten Deutsch-Indonesischen Industrie- und Handelskammer (DIHK), die im Jahr 1970 gegründet wurde, eine wichtige Rolle in den Wirtschafts- und Industriebeziehungen zwischen den beiden Ländern. Seit der Etablierung der DIHK als Teil eines Netzwerks 120 deutscher Auslandshandelskammern (AHKs) in der ganzen Welt, bleibt die DIHK fast 40 Jahre eine der wichtigsten Brücken für Handel und Investition zwischen Deutschland und Indonesien<sup>[10]</sup>.

Das Engagement der deutschen Unternehmen in Indonesien im Sinne von Direktinvestitionen, wird aus den Daten von *Indonesia Investment Coordinating Board (BKPM)* ersichtlich. Im Jahr 2008 erreichten die realisierten ausländischen Direktinvestitionen in Indonesien insgesamt 14,9 Mrd. US\$. Von den 100 Ländern, die in Indonesien während 2008 investierten, stand Deutschland unter den Herkunftsländern der Investitionen auf Platz 7 mit einem Volumen von 198,4 Mio. US\$, nach Mauritius, Singapur, Japan, England, Malaysia und Süd-Korea. Diese Direktinvestitionen von deutschen Unternehmen wurden mit 22 Projekten realisiert und schafften etwa 2.896 Arbeitskräfteübernahmen bzw. Arbeitsstellen für indonesische Mitarbeiter.

### **3. Das Corporate Social Responsibility (CSR) Programm der deutschen Unternehmen in Indonesien.**

Das Thema „*Corporate Social Responsibility*“ (CSR) oder „soziale Unternehmensverantwortung“ hat in der letzten Zeit in der Diskussion stark zugenommen. Im Zuge der Globalisierung steht dieses Thema auf der Tagesordnung von Unternehmen und internationalen Organisationen und gelangt auf eine wichtige internationale Agenda der Wirtschaftsethik.

Bereits seit dem 18. Jahrhundert wurde dieses Thema im wirtschaftswissenschaftlichen Bereich betrachtet<sup>[11]</sup>; in der letzten Dekade wurde „*Corporate Social Responsibility*“ (CSR) sehr intensiv und breit diskutiert. Ein Grund dafür wird zum Beispiel in der wachsenden öffentlichen Sensibilität und Wahrnehmung der Kunden bestimmter Produkte von Unternehmen gesehen (z.B. ökologische Auswirkung eines Produkts).

Nach Ulrich (2006)<sup>[12]</sup> steht „*Corporate Social Responsibility*“ (CSR) im Interesse der Unternehmen aufgrund der gesellschaftlichen Wertkonflikte und Wirtschaftsethik. Es ist deutlich zu sehen, dass in der Globalisierungszeit die kritische Öffentlichkeit das Tun und Lassen von Unternehmen scharf beobachtet. Das gilt sowohl für Geschäftsgebaren der Unternehmen bzw. Firmen am Markt (z.B. Produktqualität, Preispolitik, Kundenservice, Fairness gegenüber Konkurrenten im Wettbewerb) als auch für ihren Umgang mit gesellschaftlichen Anliegen und Erwartungen (z.B. Arbeitsplätze, Umweltschutz, Geschäftsbeziehungen zu Ländern mit Menschenrechtsverletzungen).

Die Konzeption von „*Corporate Social Responsibility*“ (CSR) ist selbst bis jetzt noch multi-interpretativ und vage. Nach der EU-Kommission wird CSR als ein Konzept wie folgt verstanden: „...ein Konzept, das den Unternehmen als Grundlage dient, auf freiwilliger Basis soziale Belange und Umweltbelange in ihre Unternehmens-tätigkeit und in die Wechselbeziehungen mit den Stakeholdern zu integrieren.“<sup>[13]</sup>

Als ein globales Thema wird CSR auch in Deutschland als wichtiges Thema betrachtet. Durch das Aktionsprogramm vom Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung (BMZ) gilt CSR als ein Bekenntnis der Privatwirtschaft zu sozial und ökologisch verantwortungsvoller Unternehmensführung. Die Unternehmen verpflichten sich selbst zur Beachtung sozialer, menschenrechts- und umweltrelevanter Grundsätze bei ihrer Geschäftstätigkeit und ihren Beziehungen zu Arbeitnehmern, Anteilseignern und Anteilseignerinnen, Konsumenten, Investoren oder Organisationen der Zivilgesellschaft. Die Selbstverpflichtung zu diesen Grundsätzen umfasst die gesamte Wertschöpfungskette<sup>[14]</sup>.

Bei der Umsetzung der Aktivitäten von „sozialer Unternehmensverantwortung“ in Deutschland sind zwei Ebenen zu unterscheiden. Diese Ebenen sind die politische Ebene und die Verbandsebene. Auf politischer Ebene geht es um die Regelung und die Förderung der CSR-Aktivitäten, während es sich bei der Verbandsebene um die Standardisierung und weitere Entwicklung der CSR-Regulierung handelt, bei der zahlreiche



freiwillige Aktivitäten der Unternehmen berücksichtigt werden. Auf der Ebene der Verbände wird auch über die Ansätze für innovative und effiziente CSR-Aktivitäten diskutiert.

Für deutsche Unternehmen und deutsche Organisationen, die in Indonesien tätig sind, ist *Corporate Social Responsibility* auch ein wichtiges Thema. Mit der CSR kann eine Strategie für verantwortungsvolle und nachhaltige Unternehmens- bzw. Firmenpolitik genutzt werden.

Um die *Corporate Social Responsibility* in Indonesien weiter zu verbessern, hat die indonesische Regierung im Jahr 2007 eine neue CSR-Regelung bzw. ein neues Firmengesetz verabschiedet. Bei diesem neuen Firmengesetz wird die Mehrzahl der Unternehmen außerhalb des Finanzsektors zu CSR-Aktivitäten verpflichtet. Nach Artikel 74 des Gesetzes sind nicht nur Rohstoff- und Plantagenbetriebe, sondern alle Unternehmen, deren Aktivitäten die Umwelt beeinflussen, zu CSR-Programmen verpflichtet.

Als Reaktion auf dieses neue Firmengesetz hat die Deutsch-Indonesische Industrie- und Handelskammer (DIHK-EKONID) ein eigenes CSR-Department gegründet, um die CSR-Aktivitäten der deutschen Unternehmen in Indonesien kräftig zu fördern. Durch die Förderungen der DIHK hat sich die Zahl der deutschen Unternehmen, die gesellschaftliche Verantwortung übernehmen und freiwilliges, gesellschaftliches Engagement in ihrer Unternehmensstrategie integrieren, stetig gesteigert.

Mit Unterstützung bzw. Förderung der DIHK von CSR-Aktivitäten findet alle zwei Jahre eine sogenannte *Charity Gala* statt. Nach der großen Tsunami-Katastrophe gründete die Kammer das „*The Indonesian-German Disaster Relief Committee*“ (INDOGERM-direct). Etwa 30 verschiedene CSR-Projekte hat das Komitee mit einem Volumen von 6.500.000 EUR gefördert und wurde darin von Unternehmen wie BASF, Bayer, Siemens, Mercedes Benz, der Deutschen Bank, Schering und Porsche unterstützt<sup>[10]</sup>.

In Bezug auf Arten der CSR-Maßnahmen der deutschen Unternehmen in Indonesien sind z.B. Stipendienprogramme für Kinder aus wirtschaftlich schwachen Familien, Unterstützung von Kleinunternehmen und Kooperationen durch Beratung, Weiterbildung und Kredite sowie diverse Umweltschutz-, Entwicklungs- und Sozialprogramme umgesetzt worden. Für die Durchführung der Maßnahmen haben die deutschen Unternehmen dabei häufig die Zusammenarbeit mit Nichtregierungsorganisationen und lokalen Regierungen genutzt.

In folgender Tabelle werden einige Beispiele von CSR-Aktivitäten der deutschen Unternehmen in Indonesien präsentiert.

Tabelle 1. CSR-Programm Deutscher Unternehmen in Indonesien<sup>[15]</sup>.

Unternehmen	CSR Programm
Bayer AG	Strategische Partnerschaft mit United Nations Environment Programme im Bereich Jugend und Umwelt
Allianz (PT Asuransi Allianz Indonesia)	Wiederaufbau einer Schule in Tibang, Banda Aceh
Merck Kg Aa (PT Merck Tbk)	Kämpfen für Anämie (Blutarmut), Programm für Steigerung der Lernleistung
Yayasan German Garment Training Center (GGTC)	Ausbildung von unterprivilegierten Schülern
Siemens Stiftung	Einsatz für Wasser und Gesundheit
Randstand Deutschland GmbH & Co.	KG-VSO = Voluntary Service Overseas
BWM Group	„BINTANG“ Lernmobile für Aceh
Schering AG	Tsunami Aufbauprojekte, Aceh
Daimler	Tsunami Aufbauprojekte, Aceh Pflanzen 1.000 Bäumen für Stadt Jakarta
PT. Holcim Indonesia	Strukturelle Wiederaufbauhilfe Aceh

(Quelle: CSR-weltweit 2009)

#### 4. Fazit

Die bilateralen Beziehungen zwischen Indonesien und Deutschland, die in diesem Jahr ihr 60jähriges Bestehen, ist eine denkwürdige Leistung von einer langen Beziehung und Zusammenarbeit<sup>[16]</sup>.

Es ist festzustellen, dass die deutschen Unternehmen in Indonesien eine große Rolle bei der bilateralen Kooperation zwischen Indonesien und Deutschland spielen. Außerdem gelten die deutschen Unternehmen in Indonesien als eine „Brücke“ zur Verbindung der Entwicklung der ökonomischen und wirtschaftlichen Beziehungen bzw. Zusammenarbeit beider Länder.

Daneben zeigt sich eine Tendenz, dass das Engagement von deutschen Unternehmen in Indonesien sich nicht auf Handelsaktivitäten bzw. wirtschaftliche Aktivitäten beschränkt, sondern sich auch auf andere Aktivitäten, z.B. in sozialen und Bildungsbereich erstreckt.

Die langen, guten und vertrauensvollen Beziehungen zwischen beiden Ländern sollen weiterhin in der Zukunft in verschiedenen Bereichen der Zusammenarbeit genutzt und ausgebaut werden. Dies soll nicht nur auf der Ebene der Regierung (*Government to Government*) erfolgen, sondern auch auf anderen Ebenen, wie z.B. Private Partnerschaft (*private to private*) oder individuelle Partnerschaft (*people to people contact*)<sup>[17]</sup>.

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# STRENGTHENING COLLABORATION PARTNERSHIP FOR VOCATIONAL SCHOOL QUALITY IMPROVEMENT

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## Abstract

Cooperation between vocational high schools and industries is built to improve the efficiency and effectiveness of education in providing qualified education by making use of all available resources and performing power-sharing with stakeholders within the framework of partnership. Partnership that has been established between industry and vocational schools provides considerable benefits for both parties, especially as improvement tools in developing competence-and-industrialneeds-oriented education, to produce students who have proper attitude and skills needed by industry and businesses.

Forms of cooperation between vocational school and industry in developing and aligning those goals are aligning and developing sustainable communication on the condition and development of industry and its competence needs and adjust them with the educational program in secondary vocational schools (SMK), that the students acquire proper and sufficient knowledge to compete on work market. On the other side, business sector obtains employee in accordance to its specifications and requirements.

Reliability of the development of cooperative partnerships between vocational high school (SMK) and business sector is pursued through a more professional collaboration management including planning, organizing, development, implementation and supervision, as a reference for the development of vocational education and skills training to improve the relevance and quality of vocational school graduates.

Key Word : partnership collaboration, vocational school

## 1. Introduction

Education is the most strategic sector in the national development since improvement in the quality of people who become the subjects of development can only be achieved through education. Education may provide sufficient knowledge, skills and attitudes as well as develop a variety of skills needed by every member of society. In global perspective, education plays roles in: 1) personal development, 2) employability or work skills development, 3) nationality development (citizenship), and 4) culture transmission and transformation.

The most appropriate education to face globalization challenges is vocational education which is oriented to the industry and put an emphasis on learning approach and is supported by an appropriate curriculum. Education in Indonesia, particularly vocational education is supposedly able to prepare skilled workforce that can fill the needs of development, changing the status of the student from load status into the nation's assets, create reliable and superior professional human resources to face global competition.

Currently, the development of vocational education organization of has shown encouraging results. However, it must be admitted that on its implementation there are still some problems faced, so the effectiveness is still questionable, even the

existence of vocational education as one of the pathways leading to improvement of competence and competitiveness of human resources is still questionable.

Sumarno (2008) said that currently vocational education still faces obstacles of qualitative and quantitative equivalence. Qualitative equivalence emerges because of quick technological developments in the industry resulting in gaps between the competency of vocational high school graduates with the competencies required by the industrial world, while quantitative equivalence occurs due to the imbalance of number of existing jobs with number of education outputs who are looking for a job. Table 1 below shown the condition of vocational high school in Yogyakarta.

Table 1. Number of schools, students and teachers of vocational school in City of Yogyakarta 2008-2010

Item	Status	Year		Growth (%)
		2008/2009	2009/2010	
Schools	State	7	7	1,02%
	Private	20	19	
	Number	27	26	
Students	State	9500	9915	2,41%
	Private	5732	5946	
	Number	15232	15861	

Teachers	State	887	868	0,5%
	Private	656	649	
	Number	1543	1517	

Source : Yogyakarta education office

Louis L Warren (2004) argues that some of the problems which often come to the surface, among others, is limited infrastructures and facilities owned by vocational education which is still far behind the condition in the industry.

Sulipan (2004) concluded that the gap between the available equipment owned by vocational schools and by the industry is still wide apart. In addition, Sulipan (2004) also stated that vocational schools have not been able to empower all of potential and resources existing in their environment. If students are only given the opportunity to develop themselves according to the capabilities of the school, their understanding quality will not be optimal. It happens because the ability of tools and resources owned by the school are very limited. Therefore, to achieve the expected competency, Sulipan recommends a cooperation with industry to empower all of available potentials and resources.

## 2. Cooperation on Vocational School

According to Thomson and Perry (2006), Cooperation have different degrees, ranging from coordination and cooperation to a higher degree of collaboration. The differences lie in the depth of interaction, integration, commitment and complexity in which cooperation lies in the slightest degree, while collaboration at the highest level. In this sense, it is shown that collective action is in a higher level of collaboration rather than cooperation and coordination. Collaboration is a collective process in the formation of a unity that is based on mutually beneficial relationships (mutualism) and a common purpose of organizations or individuals who have autonomous power, so conceptually collaboration is much more effective than cooperation which must be directed and harnessed for greater common interest.

For vocational education, the cooperation that is built with the industry is very proper, especially in developing resources (Lawrence C. Scharmann, 2007). According to Marilyn J. Amey, Pamela L. C. Casey Ozaki (2007), with the cooperation between vocational education and industry, it is expected that there will be a benefit to use various facilities. Meanwhile, according to Trace Allen (2007) and McLean (2004) a cooperation between vocational schools and the industry has considerable benefits for both parties, especially as tools of improvement.

Industrial world as a partner should be able to walk along and grow with vocational education. Therefore, both sides should be able to work together in achieving common goals. An approach

that can be used for vocational education and the industry world according to Ian Smith (2006) is a partnership approach. In line with that according to Henrietta Bernal (2004) and Susan Bodilly, et. al (2004) forms of cooperation between educational world and the industrial world can be developed through a community framework around the school environment in order to utilize and empower all potential and resources around the school. As a community, according to Suzanne R. Hawley (2007) and Jason, Leonard, (1997: 89), schools and businesses can establish mutually beneficial cooperation in solving any problems encountered together.

Departing from some of these problems, there is a need of efforts from educational institutions and businesses to jointly develop education, so that the purposes of business and educational institutions can be achieved and harmony. Form of cooperation between education and industry in developing and aligning the goals is aligning and developing sustainable communication toward industrial conditions and development as well as industrial competence needs with the educational program in secondary vocational schools (SMK) so that students can acquire adequate and sufficient knowledge to compete in work market. On the other side, business world will get proper employment in accordance to its the specifications and requirements.

Vocational education should be able to develop networks of cooperation in promoting the organization and achieving educational goals (Ori Eyal, 2008). Networking is very important for the sustainability and advancement of an organization and even a nation. Cooperation is a basic requirement for vocational schools as a follow up of productive learning aspects as the hallmark of vocational schools. Development of braided network of cooperation between vocational schools and industrial world is possible for schools to provide greater opportunities for the students to obtain productive skills that match with the needs of the community.

School is a systematically social institution which consists of interrelated and inter-influenced components. The main components of the school are students, educators and other education personnel, curriculum, and educational facilities. In addition, the community as a stakeholder also has a considerable influence on the process of organizing and improving the quality of education. In this case, the community is a stakeholder who should be able to work together in synergy with the schools

Educational activities undertaken at the school is essentially a continuous process of student learning, which led to the goal to produce qualified output. In the organization of educational activities, there is a functional relationship between other

educational resources with human resources as the driving force. As a process, the organization of educational activities requires a planned and systematic way so that a variety of educational resources can be used optimally to achieve efficiency and effectiveness. This process involves various resources through a cooperative effort to achieve goals effectively and efficiently.

In line with the growing magnitude of the problems and demands for education, especially in following the development of science and technology, education institutions, particularly vocational schools, are required to further develop their potential through collaboration with stakeholders. Cooperation is needed to grow and develop networks to improve utilization capacity of resources as well as mastery of science and technology.

Partnership, according to Webster's Dictionary, is a relationship that is built by one party against another who has specific characteristics required by the other party and usually involves close cooperation between and similar responsibilities. The most important idea in this definition is shared responsibilities and responsibility.

The two sides with different backgrounds share interests which allow them to work together for mutual benefit. Each step must be planned in harmony with each other and synchronized, so that each of party realize other's steps. The basic assumption of the mechanism of collaboration between community with the vocational education institution (SMK) is a partnership that is built to create benefits, that is increasing public active participation, especially the industrial world and successful vocational education programs. Partnership (collaboration partnership) according to Rosalind Foskett (2005) can be understood simply as a personal bond of cooperation between individuals or organizations to produce mutual benefits.

Furthermore, Saunders & Machellin Rosalind Foskett (2005) said that collaboration is a growing trend in educational institutions to give students experience in work world. Hence, it is a hidden curriculum in education even though in the end is explicitly listed in the curriculum as a form of field work experience to be followed by students. According to Greg Wise (1998) important components of successful partnership (collaboration partnership) with a community area responsible team, commitment of every stakeholder and common goals to be achieved.

In an effort to increase relevance to meet the workforce needs, the cooperation should be built in a model of partnership, that is developing a mutually beneficial cooperation between schools

and industry and share responsibility and potential resources owned by each party.

To create a highly competitive vocational education institutions, it should establish cooperation with other institutions or agencies, both local and multinational companies, or private. This effort aims to improve the quality of academic and professional education. According to Tracey Allen (2007) and Marilyn J. Amey (2007), the concrete result of the partnership is expected to give benefit particularly in supporting the implementation of academic and professional education programs. Along with various emerging demands, some forms of partnership between schools and business community has sprung up in different forms and nature in accordance to the agreement and demand on each side. According to Ian Smith (2006), Henrietta Bernal et. al. (2004) partnership is basically an implementation of activities carried out by two or more parties who have equal position or level and mutually beneficial. Partnership is being implemented in order to achieve mutually agreed goals.

Babacan and Gopalkrishnan (2001) explained that the application of the concept of sustainable development is an implementation of the human development approach which is characterized by the implementation of social services oriented development through the fulfillment of basic needs in the form of social services in health sector, improved nutrition, sanitation, education and income and improve the welfare of society. Therefore, according to Ian Smith (2006), stakeholders have to change the paradigm of development to human centered development (people centered development) and community empowerment-oriented (public empowerment) to create development actors as well as to foster community participation in the development, independence and working ethos. The focus of attention of human-centered development (people centered development paradigm) paradigm is the development of man (human growth), welfare (well being), justice (equity) and sustainability.

To create qualified empowerment, all related parties; that is the community, governmental officials and local administrations at all levels, as well as staff of private sector or third sector should be involved in all aspects of the development and implementation of the program (Greg Wise 1998). Included in the initial identification, preparation, analysis, and studies, planning the details of the program, as well as all aspects of the implementation of the program. The main benefit obtained by the use of this community empowerment approach, particularly in field or on-site service, is that the service recipient will be motivated to become more involved in developing and in some cases providing services.

As we have understood that education is growing along with human civilization, even in the process of community development, education took part in donating processes of supporting pillars of society. In a further development, education has become an instrument of social forces to develop a system of community development that are relevant to the demands of changing times. Basically, education is a social activity, with its all components such as facilities, programs, etc., that should be designed and tailored to the needs of the community, so that each product of the institution can meet the needs of the community. Hence, when education revoke its base from the community, it education will lose its relevance, and furthermore the plunge can be misleading to the interests of the society.

Therefore, education world should develop a learning device that produces human who are fit with the atmosphere and global demand, in form of a mastery of information technology, providing professional, skilled and efficient human resources for the community. Proficiency in applying science and technology and progressive toward modernization are absolute provisions that must be shared by all nations in the world who want to have a new social order to survive in the intangible globalization.

Community is basically a vehicle that is needed in the academic world including those related to the learning process. Through the community, ideas emerge from its members can progress through continuous assessment so that in the end original ideas that can solve a growing problem in the community born. Community development according to Greg Wise (1998) is a movement process or society changes from a state to better conditions. Community development model according to Jones and Silva in Greg Wise (1998) includes problem solving, community building, and system interaction.

The model of community development contains a meaning that all members of the community have a commitment in the process of developing mutual interests including advancement, betterment, capacity building, empowerment, enhancement and nurturing. In the development of mutual interests, each member of the community to develop and empower all of its potential in utilizing every owned resource to be developed to realize a common goal (Ann Connor, 2007).

According to Michael Baker et. All (1997: 3), Community base education is a concept of empowerment and partnership. The concept of empowerment can be interpreted simply as a process of power or thrust giving to form a transformative interaction to the community; among others: support, empowerment, the power of new ideas, and independent power to form new

knowledge. Meanwhile, according to Henrietta Bernal et.al, (2004: 33) a partnership is a relationship or a cooperation between two or more parties, based on equality, openness and mutual benefit, or provide benefits. Community participation is conceptualized as a self-improvement initiative to all activities that have benefits on self-development. Thus empowerment, partnership and participation have a strong inter-relationships and is fundamental in building a knowledgeable society.

Empowerment, partnership and participation have a strong and fundamental interrelation. Educational institutions, especially vocational, have to boost the community when establishing a partnership. The forged partnership has to be based on the principle of "working together" with the community instead of "working for" the community. Therefore, vocational schools need to provide encouragement or empowerment to the people to create active community participation. Building a qualified education can not be separated from efforts to increase capacity, leadership and community participation, however vocational schools also need to build and foster partnership networks with relevant parties (stakeholders), such as professional bodies, other industrial associations, business, industry, donors/sponsors, related sectors, community organizations, and community leaders.

Cooperative partnership between the vocational school and the industries in developing the quality and educational relevance is a paradigm that shows the relationship among several important concepts, objectives and processes in society organization activities that is focused on improving the quality and relevance of education to the needs of industry. The main concepts of the model is partnership, relevance of education, values and beliefs, knowledge, participation, capacity and leadership that is based on the implementation of trust and mutual benefit principles. Cooperative partnership among vocational schools and industry and related parties with the community is depicted as a linking line of existing components. This provides an understanding of the need for collaborative efforts in combining each potential required to develop a strategy to improve the quality and relevance of education. Tabel 2 below shown the achievement of stakeholder involvement due to the education national standard on vocational high school.

Table 2. Involvement of stakeholder on achievement vocational high school quality

No	Item	Resume
1.	preparation of the vision	Not involved

	and mission of the school	
2.	Curriculum development	40% involved
3.	Supporting on curriculum development	Information of technology and competency
4.	Syllabus development	30% involved
5.	Supporting in learning process	20% involved
6.	Supporting on human resources development	Training for teacher and technician
7.	Facility development	10% involved
8.	School management	Not involved
9.	Involvement on school development	20% involved
10.	Involvement on school financing	Not involved
11.	Supporting on school financing	10% involved
12.	Involvement on school evaluation	Not involved
13.	Supporting on school evaluation	10% involved

On its development, community education base has been widely implemented in various fields particularly in promoting community participation and empowerment to overcome various problems that occur in society. There are two crucial things in the development of community base education that is process and impact of the implementation. Process puts more emphasis on the empowerment, while impact (outcome) focuses more on its success in overcoming the problem.

Improving the quality of education is not as easy as turning the palm of the hand. It requires a strong commitment from all components of this nation since there are many related and interconnected factors which influence each other. Although there are many challenges to face, the policy of improving the quality of education needs to have support and commitment particularly from educational executive in the field. The support and commitment can be implemented in the form of a critical attitude towards innovation program that will be applied.

The concept of partnership approach is in line with community-based management approach (community base education), in order to improve the quality of education. In addition, it should be understood that in a series of educational policies, school is a forefront institution in educational activities which will determine the success or

failure of the policy. Therefore, schools should be given authority to manage itself independently.

The concept of community-based education offers a close cooperation among schools, community, governments and businesses with their respective responsibilities. The development of CBE concept is based on a desire of granting independence to schools to actively and dynamically, improve the quality of education through the management of existing school resources. Schools must be able to interpret and capture the essence of macro policies of education and understand its environmental conditions (strengths and weaknesses) and then through a planning process, schools must formulate it into micro policy in the form of -priority programs to be implemented and evaluated by the school in accordance to its vision and mission. Schools should set targets for the quality of next year. Thus, the school is independent but still in the frame of reference of national policy and is supported by an adequate supply of inputs, has a responsibility towards the development of its resources according to the learning needs of students and the community.

With the establishment of education decentralization in Indonesia since 2001, it is hoped that there will be an improvement in the quality of educational organizations up to school level. The impact of decentralization is important for creating effects on the capability of the organization which in turn is expected to affect the performance of the educational organization. One of the realizations of educational decentralization at school level is the implementation of school based management (SBM). In drawing up the implementation strategies of SBM, there is a very important factor with respect to the diversity of school conditions in Indonesia both in terms of quality and location as SBM requires reliable management capabilities and active community participation.

### 3. Conclusion

As a system, education consists of three components: input (input), process and output (outcome) components. Educational inputs can be classified into three groups, namely: (1) instrumental input, which consists of the Program (GBPP), materials and learning resources, methods and learning media, learning facilities, teachers / educators and instructional systems management, (2) raw input, i.e. students with all of their potential and basic abilities such as: learning ability, achievements that have been held, attitudes, interests and motivations, habits, personality and maturity, (3) environmental input, consisting of: nature (time and place) family socio-economic, socio-cultural of the community and others.

The second component in the education system is the process of education itself. This educational process relates with how the educational activities are processed / packaged, which in practice is carried out through activities and management of learning activities or commonly referred as the learning process (PBM). Through the management function, education is processed through minimum four phases, namely planning stage of education, organization of education, educational guidance and supervision of education (Hasibuan; 2007). The fourth function is often reduced to three only, namely planning, implementation and supervision. Meanwhile, in the process of learning, educational activities relates with the duties of teachers in the learning process, which consists of the planning, implementing and evaluating teaching and learning activities (Suryosubroto; 2004).

The second component of the educational system will ultimately lead to the third component, that is the result (output) that can be in the form of student learning outcomes. In this case, the outcomes can be the attitude, knowledge and skills obtained by the students after the completion of the educational programs. If related to the cost of education, the whole component can not be separated from the fee. To achieve highly qualified education, it depends strongly on the quality of the educational process taking place itself.

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# OPTIMIZING THE ROLE OF INDUSTRY IN THE DEVELOPMENT OF VOCATIONAL EDUCATION AND TRAINING IN INDONESIA

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## ABSTRACT

Objectives of vocational education is to prepare students to enter the workforce and to develop a professional attitude. To achieve these objectives, the concept had been born a Link and Match between education and the workplace. One of the real form of policy implementation on the link and match Vocational High School (VHS) is the implementation of the Dual System of Education (*PSG*). Implementation of the Dual System of Education (*PSG*) is not fully yield insight management reform of vocational education and training as expected. Although in some schools already have agreements with industry partners, but the implementation is not optimal because the components of *PSG* supporters, such as joint training and education programs, standardized materials, and guide the implementation of the *PSG* is prepared jointly by the school with the industry have not been realized to the optimum. Therefore, the implementation and development of *PSG* on the VHS should be optimized in accordance with the concept of Link and Match, namely: 1) Optimizing the Quality Improvement. This program is basically optimizing the conditions and available resources. Model implementation of *PSG* is expected to involve a lot more jobs, so more of the School and industrial based program, in which the design or implementation of educational programs is the design and agreement between VHS and the industry is concerned that a partner; 2) Optimizing the Development of Standardized Systems. In this program a number of efforts are optimal, so that the program has been designed to support standardized human resources, management, facilities and infrastructure are also standardized, and 3) Optimizing the Development of Vocational Skills Center. The program is intended to expand the implementation of the *PSG* through the establishment and development of skills development centers. Through this program, industries are encouraged to build training centers, so as to participate actively implement the *PSG* since the beginning of vocational programs. Optimization of industrial support for the development of vocational education and training in Indonesia is expected.

**Keywords:** Optimization; Link and Match; development; joint program

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## 1. INTRODUCTION

Vocational education as one part of the National Education system plays a very strategic for the realization of a skilled national workforce. Secondary vocational schools have an important role for the achievement of the objectives to prepare students with the skills and professional attitude until ready to enter the workforce. The American Vocational Association (Thompson, 1973: 111) states that:

*“Vocational education as education designed to develop skills, abilities, understandings, attitudes, work habits, and appreciation needed by works to enter and make progress in employment on useful and productive basis”.*

Vocational education is basically designed to develop the skills, abilities, understanding, attitudes, work habits, and knowledge workers to meet and develop and improve job skills of workers so that they can be genuinely useful and productive. Vocational education is education designed to

prepare a person in entering employment, and / or intended to help develop one's abilities related to the world of work. Vocational education seeks to produce graduates who are expected to adjust quickly to the world of work.

Law No.20 of 2003 on National Education System is defined as: "Vocational education is an education that prepares students to work in a particular field". Objectives of secondary vocational education is a priority to prepare students to enter the workforce and develop a professional attitude (PP No. 19 of 2005).

Vocational high school (VHS) to prepare human resources that are ready to enter the workforce and become a productive workforce. Vocational school graduates into the workforce ready to use, that could work directly in the business and industry. Problems faced by vocational schools now generally associated with limited equipment, the low cost of the practice, and learning environment that is similar to the world of work. This condition can lead to the unpreparedness of graduates entering the workforce. Therefore,

support the industry in the development of vocational education and training, especially Vocational high school (VHS) in Indonesia is still very necessary.

The concept of relevance and proportionality (Link and Match) between education and the workplace who coined the former Education Minister Wardiman Djojonegoro need to be optimized again. One of the real form of policy implementation on the link and match Vocational High School (VHS) is the implementation of the Dual System of Education (*PSG*).

Link and Match as a basis for vocational education reforms carried out by dual-based program, school management maturity, development production unit.

Restructuring and renewal occurs dimensions of vocational education: (1) "Supply Driven to Demand Driven, (2) school-based education into double-based education, (3) subject-based teaching (subject matter ) a competency-based instruction (based competencies), (4) program is a narrow base (narrow based) to the basic foundation program (broad based), (5) multi-entry multi exit;(6) recognition of prior learning, (7) distinct separation between education and training to integrate education and training; (8) education is terminal (dead end) to the continuing education (bridging program); and (9) centralized management (centralized) to be independent of management (decentralized).

Dimensions of vocational education will be achieved if supported by the industry. Implementation of the Dual System of Education (*PSG*) is not fully yield insights into the management of vocational education reform as expected. Although in some schools already have agreements with industry partners, but the implementation is not optimal because the components of *PSG* supporters, such as joint training and education programs, standardized materials, and guide the implementation of the *PSG* is prepared jointly by the school with the industry have not been realized to the optimum. In addition, the indicators of competence required in the industrialized world has not been studied in depth, because the development of vocational curriculum not involve user industry as a graduate. Therefore, in this review will discuss "Optimizing the Role of Industry in the Development of Vocational Education and Training in Indonesia".

## 2. DISCUSSION

### 2.1 The concept of Dual Education System

One form of real implementation of the policy link and match is the implementation of the Dual System of Education (*PSG*) at the Vocational High

School (VHS). According Wardiman (1998: 78), the Dual System of Education basically contains two main principles, namely:

**First:** the vocational education program at the vocational school is a joint program (joint program) between the VHS with industrial / corporate partner. These principles are the implications of the transition from supply driven to demand driven. Transition in the sense of authority and responsibility unilaterally by the Ministry of Education and Culture towards unity with the parties concerned with vocational education.

**Second:** The vocational education program conducted in two places, some program that is theory and practice carried out in basic vocational school (SMK), and others carried out in industry / company that is productive skills gained through work in the world of work. Pattern of education in these two places, will force VHS to adjust to the needs of the workplace, to facilitate the transfer of values and work behavior as apply in the workplace.

Dual System of Education is a form of education and vocational skills training that combines systematic and synchronous education programs in schools and program expertise gained mastery through working directly in the world of work, targeted to achieve a certain level of professional expertise (Wardiman, 1998 : 79).

In that sense, there are two sides implied that education and training, and employment (industry / enterprise or specific agencies) are jointly organizing a program of education and vocational training. Both sides are genuinely involved and responsible for the program from the planning phase, implementation phase, to the level of assessment and determination graduation of students, graduates and marketing efforts.

Based on the concept of Dual Education System (*PSG*), which has been described above, several questions arise, namely: 1) Has the industry and companies involved in the program planning process, starting from the curriculum, learning tools, to the evaluation stage?; 2) how big is the industry and the company's involvement in the administration of the program?; 3) how big is the role of industry and enterprise in the marketing efforts of its graduates?.

Based on the observations that have been conducted in several vocational school in Sulawesi, was third on the underlying problems have not been optimally performed by both parties, namely the institution of education and training (VHS) with industry and company.

## **2.2 Dual System of Education Organization purpose**

Providing education and training with *PSG* approach aims to: 1) Produce a workforce professional skills, the workforce has the knowledge, skills and work ethic according to the demands of employment, 2) Improve and strengthen linkages and equivalence (link and match) between educational institutions and vocational training (VHS) with the world of work; 3) Increase the efficiency of education and training of professional-quality workforce, by leveraging existing training resources in the world of work; 4) Give recognition and appreciation of the work experience as part of the educational process.

Objectives of *PSG* will be reached if both parties, namely the organizers of education and training (VHS) and the industries/companies collaborate optimally in the planning, implementation and evaluation of education which always refers to the achievement of competency standards in accordance with the demands of job title or profession applicable in certain jobs.

## **2.3 Dual System of Education component**

*PSG* characteristics as a form of education and vocational training, supported by several factors into its components:

### **2.3.1 Partner institutions:**

Dual System of Education (*PSG*) may only be implemented in the event of cooperation and commitment between vocational education institutions (VHS) and other institutions (industry / company) or other agencies concerned with labor, who have the resources to jointly develop and conduct educational and vocational training.

### **2.3.2 Education and training programs together.**

Because *PSG* is basically owned and shared responsibility between vocational education institutions and partner institutions, the programs designed and agreed by both parties include: 1) Standards of competence graduates. *PSG* is directed to produce graduates who have specific competence in standardized in accordance with employment needs, 2) The standard of education and training. To achieve mastery of skills standards of graduates who have been established, we need a process of education and training designed to standardized the size of the content, timing and specific method. For it should be determined and agreed upon: (1) Materials. The material is divided into three parts, namely the normative, adaptive and productive. Support industries / companies that is required is a productive component in the design, which contains

material relating to the establishment of a specific skill capability in accordance with their respective study programs for the provision to enter the workforce; (2) time. Based on the standards that must be mastered skills and materials to be studied, it was determined how long the education and training was implemented, then agreed how long it is implemented in schools and how long the couple held at the institution;(3) Implementation Patterns. Need to be agreed pattern or model of program implementation arrangements, particularly with regard to when implemented in vocational and when the partner institutions. Design or model release operation can be shaped hour, day-release and block release, or a combination of all three.

### **2.3.3 System Assessment and Certification.**

Measurement and assessment of the success of students achieve the ability in accordance with professional standards (standards of graduate skills) that have been established, should be done through the process and systems assessment and certification agreement. It is therefore necessary to set up a system of test material, test execution, results and certification determination. In order to function optimally, the system should be run by a team of assessors and certification involving school element, the element of institutional partners, professional associations, labor organizations and other elements related to employment.

### **2.3.4 Institutional Cooperation**

*PSG* implementation requires the support and security through cooperation agencies. This cooperation involves the institutions of government (Ministry of Education and Culture) and all interested parties with education and vocational training (stakeholders), among others, the industry (*KADIN*), the Organization of Workers, the Association of Professionals and Community Leaders.

### **2.3.5 Added Value and Incentives**

Cooperation between vocational and industry / enterprise, particularly in the implementation of the *PSG*, developed with the principle of mutual help, co-exist and complement each other for mutual benefit. Based on this principle the implementation of *PSG* will provide added value to those who cooperate.

### **2.3.6 Guarantee the implementation of the *PSG***

Due to the implementation of *PSG* involves many parties, it is necessary arrangement on cooperation procedure, which involves the function, structure, mechanism, and the rights and obligations of all parties involved in the implementation of the *PSG*.

## 2.4 Strategy Development / Optimization

Dual system of education is nothing new. Implementation of this program has been implemented in the VHS it's just that the implementation is not optimal because the concept of Dual System of Education which has been prepared by the vocational expert was not implemented properly. Therefore, the implementation and development of the Dual System Vocational Education must be optimized in accordance with the original concept by considering a few things:

### **First: Optimizing Quality Improvement.**

This program is basically a *PSG* in all correctional efforts to optimize the conditions and vocational resources available. Model implementation of *PSG* is expected that more field involving industry / company that is more School and industrial based program, in which the design or implementation of educational programs is the design and agreement between the relevant vocational and industry/company who becomes her partner.

**Second: Optimizing Development of Standardized Systems.** The program is intended to develop a standardized model of *PSG* (standardized System Development). In this program a number of efforts are optimal, so that the program has been designed in standardized supported by Human Resources, management, facilities and infrastructure are standardized.

**Third: Optimizing the Development of Vocational Skills Center.** The program is intended to expand the implementation of the *PSG* through the establishment and development of skills development centers (Skill Development Centers). Establishment of skills development centers will be able to customize and enhance the carrying capacity of the vocational school to accommodate and meet the demands of jobs, particularly urgent (Immediately) and or highly specialized skills (Specific), which may not be served by a regular program is available. Through this program, industry/enterprises are encouraged to build training centers, so as to participate actively implement the *PSG* since the beginning (first year) vocational program.

The three programs mentioned above are the steps that must be re-optimized in accordance with the policy link and match. Optimizing the role of industry in the development of vocational education and training in Indonesia should be properly addressed. May the Partnership between Education and Vocational Training and Industrial / company can be reinforced.

## 3. CONCLUSIONS AND RECOMMENDATIONS

### 3.1 CONCLUSIONS

- 1) Dual System of Education (*PSG*) may only be implemented in an optimal, if there is cooperation and commitment between vocational education institutions (VHS) and other institutions (industry/company) who have the resources to jointly develop and provide education vocational and training.
- 2) *PSG* Model is administration expected to involve more of the industries / companies that are more industrial and School-based program, in which the design or implementation of educational programs is the design and agreement between the relevant vocational and industry/company who becomes her partner.
- 3) Optimizing the development of standardized *PSG* models, which made optimal efforts, the program has been designed to be standardized, supported by human resources, management, facilities and infrastructure are also standardized.
- 4) Expand the implementation of the *PSG* through the establishment and development of skills development centers (Skill Development Centers). Optimization of the establishment of skills development centers will be able to increase the carrying capacity of the vocational school to accommodate and meet the demands of employment.
- 5) The involvement of industry/enterprise in the marketing efforts of vocational graduates are also highly desirable

### 3.2 RECOMMENDATIONS

Optimization of the support industry in the development of vocational education and training can work if they are supported by various parties including the government in this case the Ministry of Education and Culture, *KADIN*, Professional Association, the Organization of Workers and Community Leaders.

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# REVITALIZATION OF THE INDUSTRIAL COOPERATIVE BASED LEARNING IN THE EFFORT OF ENHANCING THE FOOD FIELD COMPETENCE

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## Abstract

The primary mission of vocational education is to prepare the workers, vocational education therefore requires a link between education and the workplace. In line with developments in the field of workforce needs catering and tourism, human resources need to get special priority, with the ability to prepare the local workforce so as to apply the best standards that apply nationally and internationally.

It is unfortunate that the current food industry has not been used optimally by the organizers of education to train human resources capable of implementing the best standards, whereas cooperative-based learning with an industry solution to improve the competence of graduates. Many kinds of cooperative-based learning can be developed from classroom lecture, tour, entry level, work experience, on the job training and apprenticeship.

Accordingly, the cooperative-based learning in vocational education industry should be revitalized to operate in either variety, frequency, and quality. This is important because through industrial cooperative based learning learners will acquire the knowledge, skills, and attitudes that are useful for future career interests.

Key word: Cooperative based-learning, work competence

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## 1. Introduction

The aim of the Educational activities mainly is to enhance human potential through the integrated learning processes. The matter is reflected on the *Undang-undang Sistem Pendidikan Nasional (USPN)* No. 20 of the year 2003 mentioning that education is an attentive effort to develop an individual in order to be able to establish their self-potency through the learning processes. With the learning processes it is expected that the students will possess the religious spiritual strength, self control, good personality, intelligence, good attitude, and the individual skill which will be valuable either for themselves, the society, or for the nation in general.

The statement reflects the development of human potency is greatly depends on the quality of the learning processes, which has been a special challenge for the theorist, the planner, and the executor in the educational field to be able to arrange and establish the national education system which is relevant with the society demand and the development of science.

The objective of the vocational education is to prepare an individual in order to have work capability in an occupation group or certain occupation. Thus, the vocational education in the food work field is responsible on preparing an individual to obtain the capability to work in the food work field. The jobs related to the food field

for example are; Bakers, Chef and Head Cooks, Food Service Managers, Cooks, Short Order, Cafeteria and Food Concession.

With the intention of making the education is able to achieve its objectives, the learning processes which is conducted has to have high relevance with the work field. One obvious way in actualizing the effort is by providing a stimulus for the students in the form of valuable learning experience which is expected would help the students to develop their self-potency and consequently will ease them to find a job in the work world.

The productivity enhancement will be positively influence the improvement of the society in general. Thus the learning processes in the vocational education has to be able to enhance the productivity. The learning has to focus its processes in developing the students comprehension in making a rational decision, developing interpersonal relationship and work capabilities with their fellows, and in developing the internalization of work-oriented values and attitude.

The general crisis in the vocational education is the unpreparedness of its graduates to face the competitive atmosphere in the work world because of the less competence that they had which mismatched with the demand of the work world. The existing fact shows that the qualification of 76 million Indonesian workers are included as unskilled workers, only 19 million workers have skills needed in their work field. The number of

workers who have special skills and expertise are only 4,5 million workers. (Depdiknas, 2009).

Recently, the development of the field workers has been increasingly dynamic and therefore need a right anticipation. One of the anticipation effort provide by the education institutes is the enforcement of the industrial cooperative based learning. The rationalization is in the preparation of the students to move toward and developed in the work world not only to prepare the work skills such as career and technical education which are similar to the one in 90's era, however, the aspects in present is higher than its predecessor those are problem solving and collaborative work skills (Doolittle & Camp, 1999).

Actually the learning processes in the Indonesian vocational education since 1997 has produced the policy to operate the cooperative based learning with the industrial partnership in the form of industrial practice activities or the industrial field practice, as the realization of the link and match policy. The policy has been a kind of reformation effort in vocational education by inviting the business and industrial field to make a commitment in the planning, execution, and the evaluation of the vocational education practices.

Unfortunately the industrial cooperative based learning processes has not been optimally utilized by the education conductor. The food industries such as restaurant, bakery, catering might be used as an actual laboratory for the students and the well trained human resources and the adequate facilities might be beneficial to help the students to apply the best standard, either in regional or international coverage.

## **2. Revitalization of the Industrial Cooperative Based Learning Activities in Enhancing Food Field Competence**

### **2.1 Food Field Competence**

The definition of the word competence is a high importance for the vocational school. Competence means capability or ability. Competence is a knowledge, skill with the basic values reflected in the individuals' thinking habits and conduct (Depdiknas: 2002). Competence is the ability to behave, think, and conduct in a consistent manner as the manifestation of the knowledge, attitude and skills possessed by the students. Etymologically, Moore, Cheng & Dainty (2002: 314 – 316) suggest the difference between competence and competency. Competence refers to individual work field such as teacher, doctor and so on, while competency refers to the aspects of the work attitudes in support to the job performance.

Substantially, Garavan & McGuire (2001 : 144 – 154) explain that competence might be seen

from two aspects namely the individual attribute and the learning outcome. As an individual attribute, competence could be called as an individual's knowledge, skill and ability to deliver a good performance in the related job. From the aspect of learning outcome, competence defined as the individual performance which has met the specified standards. Competence considered as the individual attribute which has a flexible nature, therefore it is considered to be more appropriate to apply in the highly complex industrial works.

Wenrich and Wenrich (1974: 6) suggest that the competence related to the vocational education is the total process of education aimed at developing the competencies needed to function effectively in an occupation or group of occupation. The consistent and constant thinking habit and attitude will enable an individual to be more competent. According to Ella Yulaelawati (2004), competence is a bunch of knowledge, skill, attitude, and the values as the features influencing the individuals' role, conduct, performance, and work.

Competence might be enhanced through a training activities, education, and field work experiences. The aspects which might be classified as competence are knowledge, skill, value and attitude. According to Gardor which is quoted by Mulyasa (2002: 38-39), the contained aspect in the concept of competence are: 1) knowledge; is the awareness in the cognitive field. 2) understanding; is the depth of the cognitive and affective aspects belonging to an individual. 3) skill; is an aspects possessed by an individual in performing the tasks or jobs assigned to them. 4) value; is a behavior standard which is made a psychological belief and has been an integrated part of an individual. 5) attitude; feelings (exciting, unexciting, like and dislike) or reaction toward an external stimulus. 6) interest; an individual tendency to do something.

The industrial world needs high competent human resources, because the high competence human resources is considered to be a warranty for success in the effort of achieving the objective, most of the industrial organization use the competence as the basic standard in their employees recruitment, developing the standard competence even for the compensation offer. Thus the competence is highly important in the recruitment, training, and development processes to ensure that the employees ability is adequately meet the industry needs, which is at the end will produce an optimal performance.

In the educational context the work competence includes three aspects those are knowledge, skill, and attitude (Wenrich, 1974: 38). In order to identify the students' achieved competence as the result of the learning processes,

the standard has to be equivalent with the desired focus of the vocational learning. It means that the knowledge, skill and attitude are appropriate in the vocational field.

The food business, as the restaurant industry, consists of the tangible products such as food and beverage and the intangible products such as the service product, safety service, hospitality, and comfort.

The data resources obtained from the careeronestop site, on the O Net On Line shows that the responsibility of a chef is:

- Check the quality of raw and cooked food products to ensure that standarts are met.
- Monitor sanitation practices to ensure that employees follow standars and regulation.
- Chek the quantity and quality of received products.
- Order or requisitionand order food supplies needed to ensure effisient operation.
- Supervise and coordinate activities of cook and wookers engaged in food preparation.

- Inspect supplies, equipment, and work areas to ensure conformance to established standards.ive food displays.
- Determine how food should be presented, and created decorative food display.
- Instruct cooks and order workers in the preparation, cooking, garnishing, and presentation of food.
- Estimate amount and cost of required supplies, such as food and ingredients.
- Collaborate with other personal to plan and develop recipes and menu, talking into account such seasonal availability of ingredients and the likely number of customers.  
(<http://online.onetcenter.org/link/summary>, up date 2008.)

Subsequently, the competence demand is explained in detail to make it clearly identified as follows:

Table 1. the Competence of Chef Cook According to the Industrial Demand.

No	Kompetensi	Sub Kompetensi
1	Tools & teknologi	<i>Commercial use cutlery, Commercial slicer, Commercial gratter, Commercial range Domesttc kitchen.</i> <i>Analytical soft were (food softwere, recipe &amp; menu softwere, nutrition analisis softwere), Data base user interface and query softwere. Matterials requirements planning logistic and supply chain ssoftwere (F&amp;B Control) and Office suite soft were.</i>
2	<i>Knowldge</i>	<i>Production dan Prosessing Administration and Management Customer and personal Service Food production Education and Training English language</i>
3.	Skills	<i>Time Management Negotiation Service Orientation Instructing Equipment Maintenance Monitoring Judgement and Decition Making Equipment Selection Management of Financial Resources Reading Comprehension</i>
4.	<i>Ability</i>	<i>Oral ekpression Oral Comprehenssion Problem sensitivity Information ordering Deduktive reasoning, Induktive reasoning Near vision</i>



		<i>Arm-hand Steadlines</i> <i>Orginality</i> <i>Spech Clarity</i>
5.	<i>Work Activity</i>	<i>Thinking Creativity</i> <i>Making Decision and Solving problem</i> <i>Coordinating the work and activities of other</i> <i>Establishing and maintaining Interpersonal relationship</i> <i>Getting Information</i> <i>Inspecting equipment, structure or Material</i> <i>Resolving Conflicts. and negotiating with Orders</i> <i>Communicating with supervisor, peers, or subordinates.</i> <i>Identifying objec, action and events</i> <i>Monitoring and Controlling Resources</i>
6.	<i>Work Context</i>	<i>Spend time standing</i> <i>Freedom to make desision</i> <i>Importance of Being Exact or Accurate</i> <i>Structured versus unstructured work</i> <i>Responsibility for outcomes and Results</i> <i>Response for others Health and safety</i> <i>Work with work group or team</i> <i>Spend time making repetitive motion</i> <i>Contact with others</i> <i>Impact of desission on co- workers r Company Result-</i>
7.	<i>Interest</i>	<i>Enterprizing</i> <i>Realistic</i> <i>Artistic</i>
8.	<i>Work Styles</i>	<i>Dependability</i> <i>Stress Tolerance</i> <i>Leadership</i> <i>Self Control</i> <i>Attention to details</i> <i>Adaptability/flexibility</i> <i>Achievement/Effort</i> <i>Integrity</i> <i>Persistence</i>
9	<i>Work Value</i>	<i>Independence</i> <i>Recognition</i> <i>Achiement</i>

(Source : (<http://online.onetcenter.org/link/summary.>)

Based on the competence list, it is obvious that work world demanding high complexity of competence, one which is very difficult to achieve for the inexperienced graduates. Moreover, for the graduates of the school whose learning process still conventionally conducted, those competence demands would be very difficult to achieve by the students.

The data in table 1 provide a clear description that the cooks job demand a complex competence, not a limited skill in operating the production machine, but the comprehension of the work values itself. The result of the research conducted by Prihastuti and Komariah (2009) shows that generally the restaurants in Yogyakarta will accept an employee with the following priority of competence 1) attitude, 2) appearance, 3)

knowledge, 4) skill, and 5) wisdom. Attitude needed to make the graduates acceptable either for the company or the work colleagues, and able to interact with the customer in a good manner. Appearance is needed because the employee has to be able to reflect the company image, while the aspect of knowledge and skill called the productive competence needed to perform certain job. While the aspect of wisdom will closely related to the managerial skill which will be very important when an individual has been a part of a work world and having a certain level of occupation.

## 2.2 Revitalization of the Industrial Cooperative Based Learning Types

The industrial cooperative based learning actually conducted by developing the Work-Based

Learning. The method and strategy in conducting the Work-Based Learning is highly vary. Cunningham, Dawes and Bennet (2004: 57 – 94) identify the strategy to conduct WBL and the development includes action learning, apprenticeship, career advice, continuing professional development, internship, mentoring, networks and communities, qualifications, self managed learning and team development.

The variation of WBL starts from inviting a guest lecturers, conducting interviews, industrial tour, on the job training, and the competitive employment are the level of commitment in the work world toward the education institutions. Those level are describe as follows:

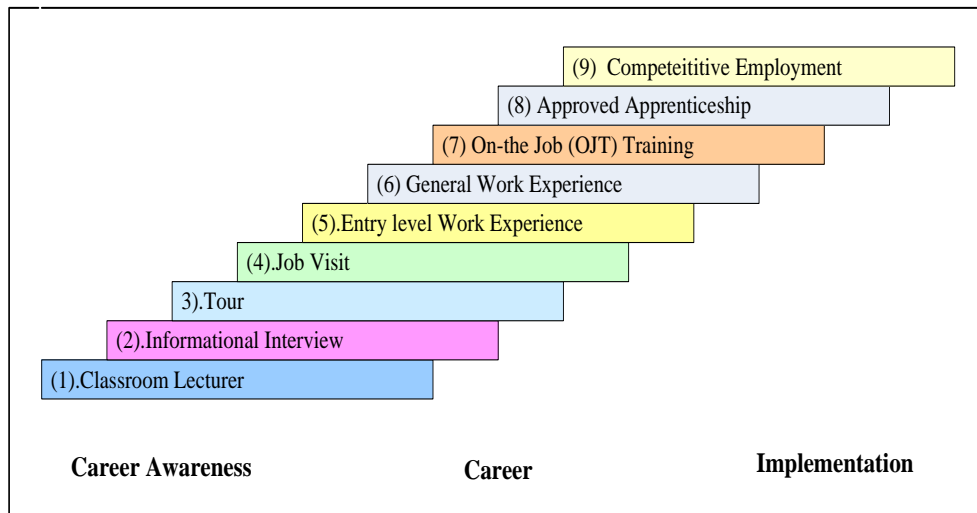


Figure 1. Continuum of Work Based Learning Experiences.(Resources : WBL Guide 2002:A-5)

The above stages shows the education level, and the achieving career level, those are from the stages: **1) career awareness; giving an awareness about career, 2) career exploration, 3) career implementation.** The higher the diagram, the higher the education level of the achiever.

The industrial cooperative learning processes develop the learning processes beyond the industrial learning standard. The form could be job shadowing, service learning, internship, and apprenticeship. The learning processes provide the structure of learning which meant a realization an participation in their learning experience.

**Apprenticeship** is also called freelance work program, that is the oldest education strategy, known as the “co-worker”. The freelancer is considered to be successful if they are able to acquire the expertise at the similar level with the instructor. Apprenticeship is a collaboration of academic program and learning objective trough a workplace learning. Apprenticeship designed with a longtime work. The apprenticeship program is directed to achieve some basic features which have to acquire those are the vocational qualification, the key skills according to the level of expertise, the certain elements in the specific jobs.

**Job Shadowing:** The Students observe the people in their job performance, thus would bring

them to the organizational culture. Job shadowing usually done in one day work time, half day, or several day work time (Gray and Albrecht 1999, Betina 2003: 2).

**Service Learning:** Collaborating the students in the academic organization and practice. The activity is designed to fulfill their community needs. Service Learning give the trust to the students as the agents of change in the society. Service Learning give a simultaneous opportunity to develop the technical aspects, interpretative, and critical skills (Wagner, Childs, and Houlbrook 2001, dalam Betina 2003: 2).

**Internship:** is a school program, where the students learn about the jobs to the company or the workers in certain period of time. Sometime, they are paid but not rarely they are unpaid. It depends on the place where they conduct their study. The work experience is structured to reflect the work with the program base, where they become the part of the program. To achieve the best outcome, the internship experience has to be structured and integrated in a good way in the school curriculum, and as the culmination is the products or services provided by the students in the learning process.

Many kind of models obviously shows that the development of the industrial cooperative based learning could be realized through the integration of

knowledge and experience with the objective is to expand the perspective of learning and the skill development, needed to achieve the best performance of the learning process in the workplace.

Depdiknas has adopted the form of Work-Based Learning through the application of the learning Strategies of Resource Based Learning (RBL), Contextual Based Learning, Inquiry Training and the Experience Based Learning. Those learning have some similarities, that all of the learning concepts help the teacher to connect the teaching material with the real life facts. The learning concepts have the similarity those are, constructivism, inquiry, questioning, learning community, modeling, reflection, and authentic assessment. The form of the industrial based learning is expected to be able to direct the learning process toward the competence enforcement and also establish the students character in the form of 1) Work Habit; 2) Interpersonal Skill; 3) Career Planning. Work Habit, is a work attitude which recurring all the time and at the end is able to make the individual to work properly and become the habit of the individual work. The work habit focus on the work preparation, work systematic, work performance, manual reading, the use of work instrument and component, workplace arrangement, the implementation of the work safety, maintenance, and the improvement of the work efficiency. Interpersonal Skill with the focus on the time discipline, work responsibility, work skill, work dedication, work creativity, communication and cooperation. While Career Planning is the preparation for the students for a certain job. This stage will be a guidance for the students to define the type of education they have to choose, because education in the narrow meaning is the preparation toward the career and job stages. In the context of work, the attitude established during the educational process in the school will construct the students character.

### 3. Conclusion

The industrial cooperative based learning actually contain a high philosophy meaning, that is the development of the human resources having the future oriented vision, superiority, professional, and efficient. The industrial cooperative based learning realized in the form of job shadowing, service learning, internship, and apprenticeship which well conducted not only to give the work experience to the students, but also the meta-cognitive process to train the students make a proper decision according to the situation in the real work world.

The revitalization of the industrial cooperative based learning in the food education or the other field not only produce the graduates with a high

qualification of expertise needed in the work world, but also possessing the most benefits, because the education institutions might use the industrial or the work place as the laboratory to train the students about the work standard needed.

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# DESIGN MOBILE GAME BASE LEARNING(mGBL) WITH SINGLE LOOP LEARNING METHOD

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## Abstract

Learning method is a significant point exerting an influence on the learning output parameter. Game activity stimulates the human think ability in order to making efficient use of the emotional, social, and physical aspects. Most of human are able to learn a lot of things through a game. Educative game is one of the teaching activity form which can be done using various educative manner or device. The technology development has created inovation progress in case of learning effectiveness escalation. Within the development, the learning subject which is already exploiting the mobile device communication technologies and internet technologies has conducted a new wave of tendency lead to mobile learning. The term of mobile learning is close to a learning model using mobile device and wireless technology. Java Micro Edition (Java ME) allows mobile application to be developed and executed in a mobile device. Java ME contains Application Programming Interface (API) packages which is needed to build a mobile game application. Mobile Game Base Learning (mGBL) offers an attractive and entertain learning model with a single loop learning method using mobile device and wireless technology, thus it will increase the subject comprehension which has been taught classical to the learner. Interaction among learner within mGBL is established in local network using wireless technology. Measurement of learning aspects of the method mGBL show that this method is acceptable learners and can be used as an alternative learning model because it contains elements of planning, construction, information resources, and evaluation.

**Keywords:** mGBL, JavaME, Mobile Game, Single Loop Learning

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## Introduction

The educational game is an interesting activity that can become a method or learning instrument which is very instructive. In other words, this game is a type of educated-activity which is done by using educative method or instrument. Therefore, educational game is useful to increase language capability, the way of thinking and also socialize with surrounding. Besides, it is also useful to strengthen and train parts of our body; develop our personality; close our relationship with others; and funnel our desire to do something.

Further, the development of technology has created the increasing of some alternative ways to enlighten the effectiveness of learning. In the middle of this situation, learners have a touch with instrument of communication technology and internet that have become a new tendency which allows the existence of mobile learning. M-learning is a learning method that uses mobile instrument and wireless technology.

The improvement capability of mobile instruments, such as: the expand of memory capacity, multimedia MMAPI, Bluetooth API, WIFI and high resolution screen have encouraged game mobile industry to develop rapidly. Today, this situation becomes a challenging for us to

optimize the facilities which exist in our hand phone. Furthermore, one of them is Java Micro Edition Virtual Machine (Java ME VM) facility which occurs in hand phone. In addition, this facility has a function to run an application which is made by utilizing Java Micro Edition (Java ME) architecture. The existence of Java ME allows us to develop the mobile applications that can be run at those hand phones. Moreover, the inside of Java ME has been inserted Application Programming Interface (API) packet which, possibly, lets us to make game mobile applications.

Mobile Game Base Learning (mGBL) offers a learning method by using mobile instrument and wireless technology which are attractive and joyful since by playing games automatically improve the material comprehension that has been delivered classically.

## 2.1 M-Learning

The using of communication and information technology in educational and practical world has some shift paradigm in the last decades. Nowadays, technology has born a Computer Based Training. It is supported by digital electronic instrument and media, e-Learning (which, prominently, use internet and LMS) to m-Learning that belong to learning

which is supported by mobile device and wireless network.

Mobile device has appeared as one of the potential technologies which support education. M-Learning is one of the package alternatives of the learning process as learning and tutor service that has function as the main communication tool

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Mobile device has appeared as one of the potential technologies which support education. M-Learning is one of the package alternatives of the learning process as learning and tutor service that has function as the main communication tool.

Further, the term of mobile learning (m-Learning) refers to the instrument using of information technology (TI) both mobile and handed, such as: PDA, hand phone, laptop and PC tablet, in learning and teaching process. M-Learning is a part of e-Learning. Therefore, automatically, it is also a part of distance learning (d-Learning) (Figure 1)

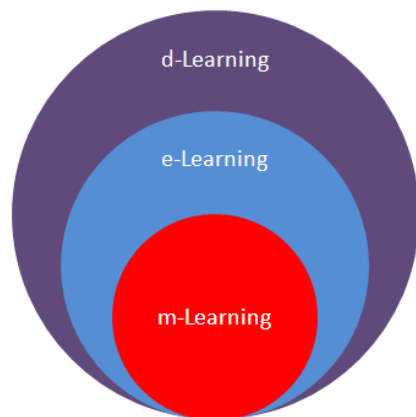


Figure 1. Scheme of learning proses

Some advantages of m-Learning compares with other learning method are:

- Can be used in anytime and anywhere,
- Most of mobile device, relatively, have a cheaper compares with PC desktop,
- The size is lighter than PC desktop,
- Is predicted can hold more learners since m-Learning using modern technology that commonly used in daily life.

In studying e-Learning, time and place independency become the important factor that often be stressed. However, in traditional e-Learning the minimum need of a PC which has

consequence that the time and place independency do not fulfill yet by using notebook (computer portable), because time and place independency that actually mean student can learn in anywhere, anytime he/she needs the learning material access. Three circles are indentified as the user of m-Learning potential that is student, worker and lifelong learner.

## 2.2 m-Learning Classification

M-Learning can be grouped into some classifications based on point of views. First, in the technology instrument which is used, so m-Learning can be classified based on the main indicator:

- Type of instrument which is supported by laptop, PC tablet, PDA and cellular phone or Smartphone.
- Type of wireless communication which is used the learning material and also the administrative information – GSM, GPRS, IEEE 802.11, Bluetooth, IrDA.

Second, in the teaching technology point of view, m-Learning can be classified into some indicators below:

- support the learning asynchronous or synchronous process
- support standardize of e-Learning
- the technology existence of internet permanent between system and user
- the user location
- access service to learning material or administration

Third, based on the time from the teacher to the learner to share information, m-Learning can be classified into:

- the support learning system of synchronous where teacher and student or among students can communicate in the real time, for example by using sound communication, chatting or video conference
- System which support both synchronous and asynchronous learning. There are can be seen the m-Learning diagram classification based on some point of views that are in the form of communication, supporting mobile device, information that has been told, access, communication technology which is utilized until e-Learning standard.

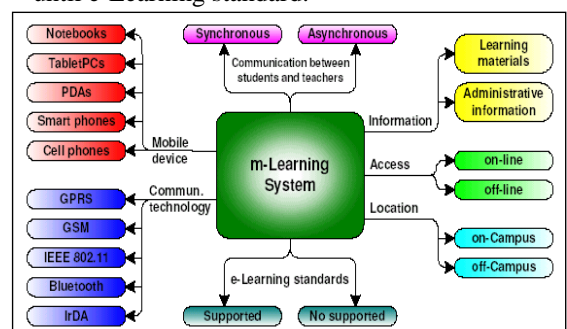


Figure 2. m-Learning classification

### 2.3 Single Loop Learning

For Argyris and Schön learning involves the detection and correction of error. Where something goes wrong, it is suggested, an initial port of call for many people is to look for another strategy that will address and work within the governing variables. In other words, given or chosen goals, values, plans and rules are operationalized rather than questioned. According to Argyris and Schön (1974), this is *single-loop learning*. An alternative response is to question to governing variables themselves, to subject them to critical scrutiny.

When the error detected and corrected permits the organization to carry on its present policies or achieve its presents objectives, then that error-and-correction process is *single-loop* learning. Single-loop learning is like a thermostat that learns when it is too hot or too cold and turns the heat on or off. The thermostat can perform this task because it can receive information (the temperature of the room) and take corrective action.

Single-loop learning seems to be present when goals, values, frameworks and, to a significant extent, strategies are taken for granted. The emphasis is on ‘techniques and making techniques more efficient’ reflection is directed toward making the strategy more effective. [5].

#### Single loop reflection detection-correction of error

The player enters the Scenario with an ‘espoused theory’, *i.e.* they have, outwardly at least, committed to act in accordance with *governing variables* such as *official procedures*. However in practice, and especially in a crisis situation, what the player *thinks* will govern their actions (their ‘espoused theory’) may be different from what they are *actually* led by (their ‘theory in use’).

In single loop mode, the player follows procedures and a pre-set plan, e.g. an official plan for dealing with emergencies. The goals and values of their “*espoused theory*” are largely *taken for granted*. The focus in the Feedback is on strategies procedures and techniques and making these more.[5].



Figure 3. Single loop learning

**Governing variables:** those dimensions that people are trying to keep within acceptable limits. Any action is likely to impact upon a number of such

variables – thus any situation can trigger a trade-off among governing variables.

**Action strategies:** the moves and plans used by people to keep their governing values within the acceptable range.

**Consequences:** what happens as a result of an action. These can be both intended - those actor believe will result - and unintended. In addition those consequences can be for the self, and/or for others.

### 2.4 Java ME

Java ME is a specification set and technology that focus on mobile instrument. This instrument has limited capacity memory; consume little energy from batteries, small monitor and poor bandwidth network.

By the mobile instrument growth from telephone, PDA, box game to house outfit, Java serves a portable environment to develop and run an application from this instrument.

Java ME program, like other Java programs is translated by Virtual Machine (VM). Those programs are compiled inside byte code and translated by Java Virtual Machine (JVM). It means that those programs do not directly connect with hardware. Java ME accommodates an interface which is fit with the hardware. Those applications are compiled enough and able to be run by using different machine.

The core of Java ME is placed at configuration and profiles. Configuration draws basic environment runtime from a Java ME system. It describes core library, virtual machine, security feature and network.

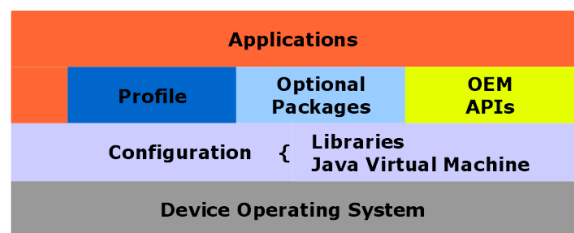


Figure 4. Java ME architecture

Profile gives an addition library to a particular class in the instrument. Profiles serve user interface (UI) API, persistence, messaging library, etc. an additional set library or extra package provides additional program ability. The entering of this package inside Java ME instrument can vary depend on the ability of an instrument, for instance: some MIDP instruments do not have

Bluetooth built in. As the result, Bluetooth API is unavailable in this instrument.

### 3. System analysis

#### 3.1 mGBL Infrastructure

mGBL which is developed by utilizing local network (LAN) that has been available through WIFI communication media and web server. An area in access point scope is expected to access mGBL. Therefore, learners can easily use this service without be worried about the mobile device communication cost.

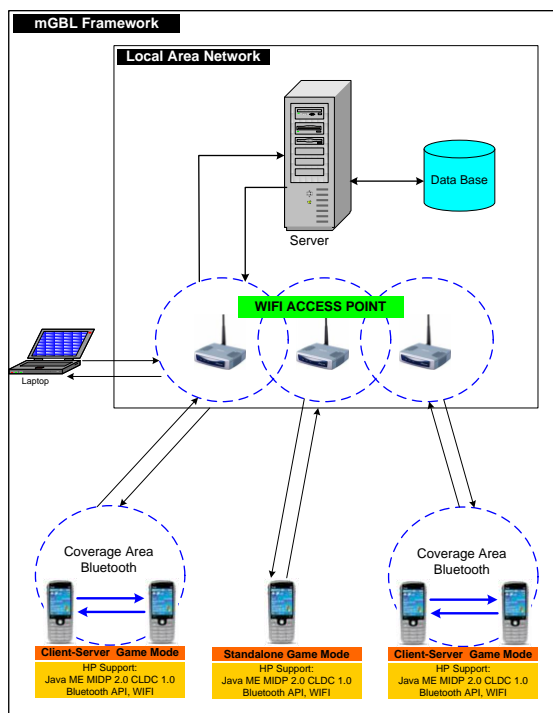


Figure 5. mGBL Infrastructure

Java ME has provided Application Programming Interface (API), such as: API Multimedia, API Game, API persistence (RMS), API HTTPC Connection and API Bluetooth. Game is built in a MIDlet. For multiplayer game synchronization, Bluetooth Client-server is used between handphone and handphone, while for the exercise downloading process from internet, the implementation of TCP/IP architecture between hand phone and exercise computer server. The main game is built with Canvas Game. The exercise storage in hand phone use Record Management System (RMS) and the addition of sound effect using Multimedia API (MMAP), while for exercise application server is built by Java Enterprise Edition (Java EE).

#### 3.2 mGBL Architecture

Mobile game server and client are communicated with WIFI or Bluetooth by using framework Java.comm (traditional framework and, mostly, implemented in J2SE) or JSR 179 (the new framework which, mostly, implemented in platform J2ME).

In global, mGBL architecture can be used, seen in the picture bellow.

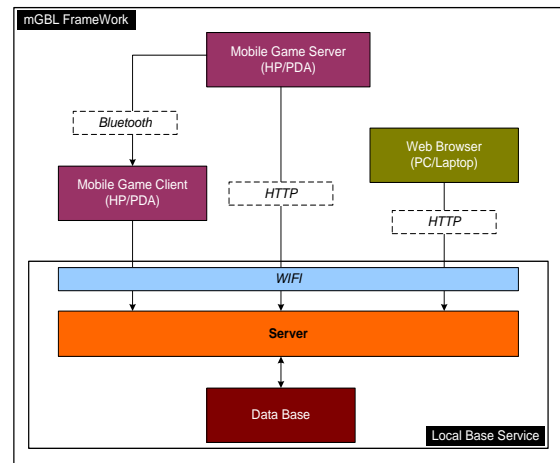


Figure 6. mGBL Architecture

The communication data of those games are sent to the server of RMI user or by using HTTP protocol, if the client using browser. Mobile game server process and continue to web server and data base.

PC/Laptop interacts with web server and data base to access or administer mGBL through HTTP protocol.

## 4. System Design

### 4.1. The learning method in mGBL

In single loop learning method, learners follow the procedure and the previous plan which is stated in scenario game. The plan of learning strategy has to be matched with the purpose and value of the supporting theory that always assume to be right. Feedback is the prominent factor in this method to able in finding the procedure and technique of how to make a strategy more efficient.

The core of every learning planning is a concept which occurs 4 main phases of learning/learners experience (Race, 1994) and appropriate with 4 stages learning (Kolbian, 1984) that are [7]:

- **Desire**  
Learners plan the learning objective, identification, search the procedure agreement and the appropriate score criteria.
- **Doing**  
Follow the scenario which is appropriate with the planning, identify the problem and try to find the solution.





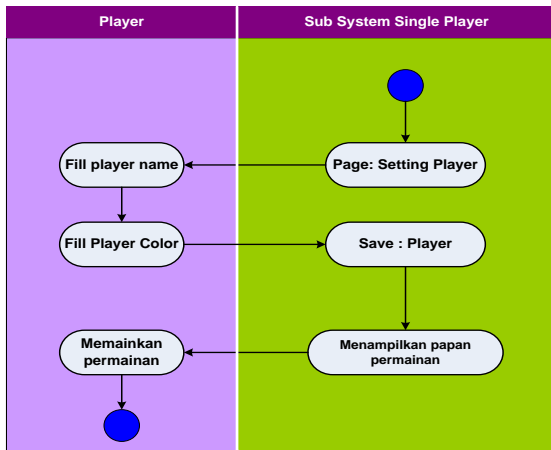


Figure 10. Diagram of single player activity

Multi player

- One of the players choose the exercise package
- Make a skill duel
- Create a competition

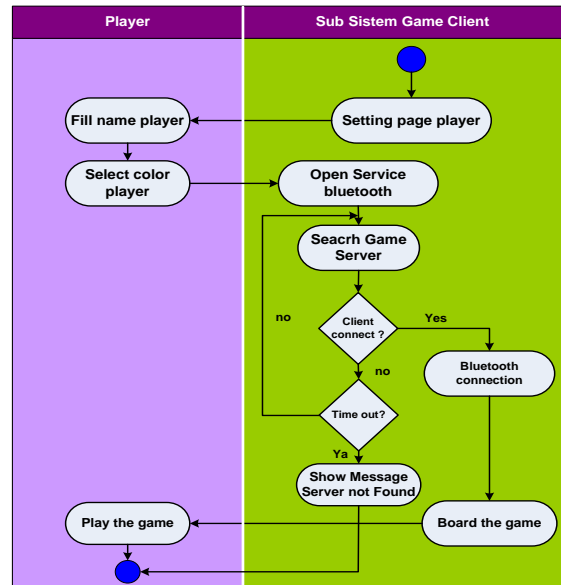


Figure 12. Activity diagram Game Client

#### 4.4. mGBL Integration Testing in the Learning

Integration testing is done by trying out a prototype mGBL mGBL to learners or students who previously had been studying the material or subject matter being taught by a teacher in the classical style in the classroom. In the method of single-loop learning, the learners follow the procedures and the initial plan as outlined in the gaming scenario. Learners get into game scenarios with a theory that is sufficient support, already know the destination and the stages of a learning theme.

Planning learning strategies must be adapted to the purpose and value of supporting the theory that always be true. Feedback is an important factor in this method to find the procedures and techniques of how to create a more efficient strategy. Sample data in this study were students at SMK 8 Malang first class average between 15-17 years old.

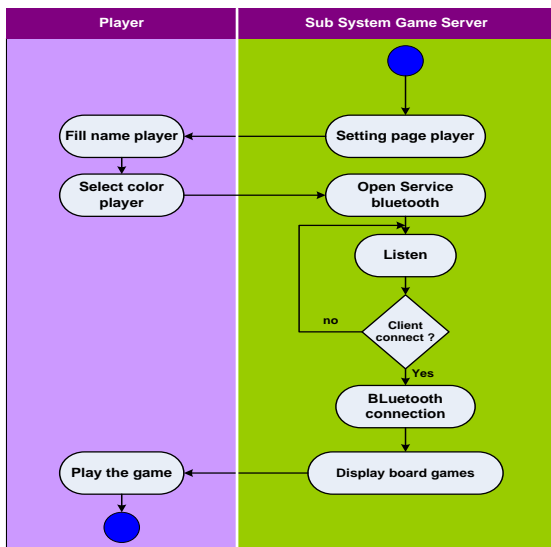


Figure 11. Activity diagram Mobile Game Server

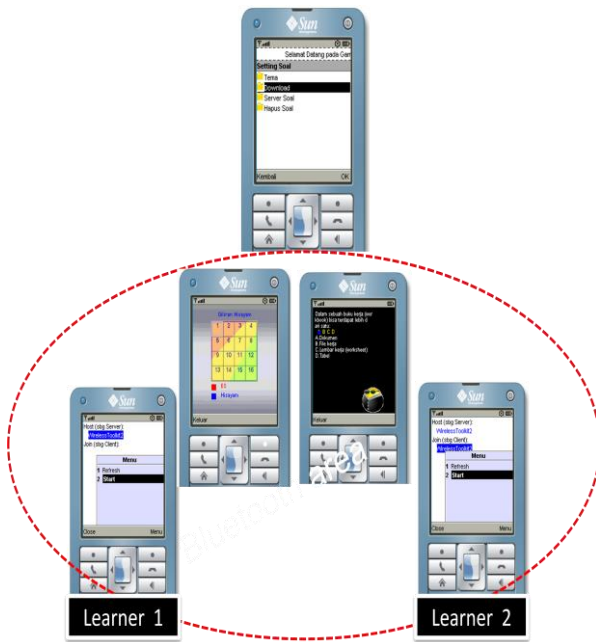


Figure 13. mGBL application screen shot

### Measurement Aspects of Learning

Measurement of these aspects of learning mGBL includes five aspects: a matter easy to understand, about the amount of memory, the number of analytical questions, about the material quality and suitability about the material that once accepted, the results are as shown in the graph below.

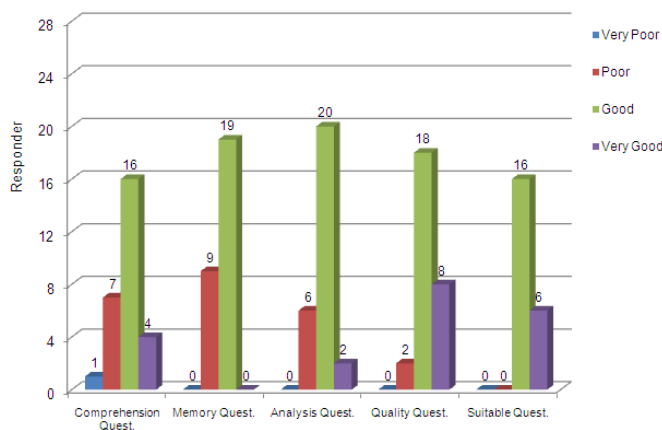


Figure 14 Graph measurement of learning in mGBL

### Measurement mGBL Fun Aspect.

Measurement of fun in the game were also measured to provide five additional questions to find out just how exciting this game, the data shown in the graph more below.

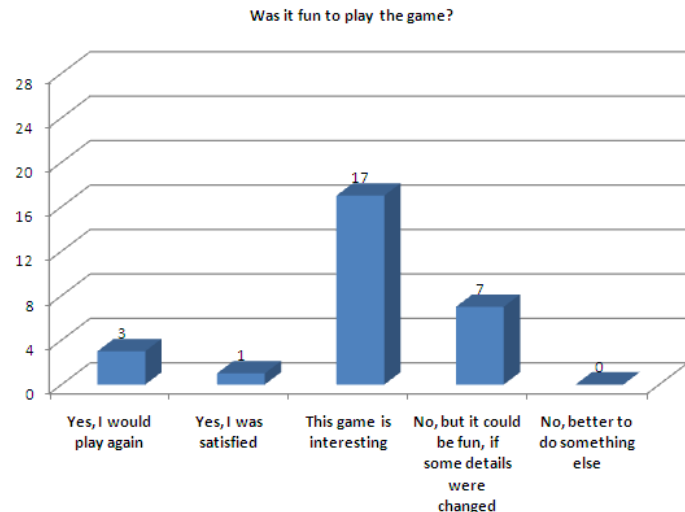


Figure 15. Graph measurement of Fun in mGBL

## 5. Conclusion

Subsystem interconnect architecture mGBL through wireless communication with the server using http protocol (WIFI-LAN) and the mobile game (WIFI-PDA) and Client-Server bluetooth mobile games can interact with both.

Measurement of learning aspects of the method mGBL show that this method is acceptable learners and can be used as an alternative learning model because it contains elements of planning, construction, information resources, and evaluation.

Utilization of the local network via wireless accesspoint mGBL facilitate learners to access because it is not burdened with the cost of communication

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# DEVELOPMENT OF VIRTUAL LABORATORY THROUGH HAND MOVEMENT DETECTORS IN ORDER TO IMPROVE A PSYCHOMOTOR SKILLS STUDENT OF VOCATIONAL HIGH SCHOOL

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## Abstract

The students interact directly in virtual laboratory with a simulator or remote equipment, and it is desirable that the experience will be similar to a real lab. There are many ways by which a student could attain this experience -through real experimental activities or through computer human interactions. These computer based multimedia environment and cohesive with hardware. These environments offer students a means to explore, experience, express themselves, and train psychomotoric. In a Digital Electronics virtual environment, the students can posit hypotheses about a engineering concept, conduct as many experiments as they want. In this paper the virtual laboratory design based on macromedia flash (software) and hand movement detection (hardware). Have implemented a virtual lab for the user especially vocational students (SMK), making practices more interesting and interactive through user interaction with computer using a periferal with hand movement detection that provides flexibility in operating. Combination of real and virtual lab which is integrated into the course material, can enrich the learning process, increase student's interest and curiosity, enhance the ability of psychomotor with hands-on.

**Keywords:** virtual laboratory, hand movement detection, psychomotor

## 1. Introduction

Information Technology (IT) one of the branch of science in the field of contemporary give many alternative solution to development management process and otomation of data traffic in the various field of work. One of the implementation on information technology needs by students, teachers, laboratory, and employess of educational institution use virtual laboratory for manage the vocational students labs and practicum.

Research in virtual laboratory is more than virtual learning approach. Virtual practicum environment used the animation and simulation in the form of 2D and 3D. Student can explore the virtual Engineering laboratory, do their experiment and get the output from that experiment. Students also need to keep their experiment information such as inference and observation in the electronic experiment report and worksheet as soon as the information recorded, student are allowed to edit and print the report.

Operation Research Virtual Laboratory (V-Lab) is a virtual laboratory specially designed for supporting the practice of operations research labororory for the student that take the course of operations research. The aims of this virtual laboratory is to provide an assistance for the

students to improve their skill in laboratory practice without direct help from assistants and can be carried out without concerning time and place contrainants. Virtual Lab has following feautres: tutotial, simulation and practice materials with realtime aplication using hand movement detectors.

## 2. Virtual Laboratories As Tools For Supporting Teaching, Learning, and Practicum Activities

Virtual Laboratories to Support teaching, Learning, and practicum Activities The virtual environments, named virtual laboratories, vary from static Web pages with didatic videos and texts, to dynamic pages with sophisticated environments, collaborative authoring [1], videos on demand, virtual meetings, and many other features. These virtual laboratories may also allow remote access to measurement instruments, video cameras.

Virtual laboratory need an interesting grafik design to keep the student stay consistent to use the electronic learning, the diversity of models and structures for virtual laboratories is large and varies according to the nature of the project under investigation, the goals, and the technologies involved. The motivations for the implementation of virtual laboratories include, but are not restricted

to [2]: a) The limitation on the resources and space in the real-world laboratories. This type of limitation may cause delay in the learning activities of the students, who may face the situation in which they have to compete or wait for the availability of a given resource, in addition to the fact that one's experiment may be interrupted before it is concluded, due to the need of sharing resources; b) The possibility of sharing usually expensive equipment; c) The stimulus for the collaboration of research or work in groups independently of their physical distance; d) The existence of a learning environment outside the school, allowing the students to participate or develop their own projects together with other students in their spare time; e) The possibility of developing different parts of an experiment at different locations; f) The remote supervision and intervention in potentially dangerous experiments, thus helping to prevent accidents; g) The remote access and control of precision equipment; h) Facilitate the learning of a subject by allowing the distance experimentation with Engineering process, chemical reactions, biological mechanisms, physical simulations, or other subjects; h) Allow for the creation of virtual communities about a central subject, and thus result in the convergence of people with similar interests to the same virtual environment; i) Bring together resources and information related to a specific subject matter; j) Provide guidelines for the use, teaching, and learning of the subject, together with means for its assessment.

### 3. Hand Gesture Interaction

#### 3.1 Definition of Hand Gesture

“A gesture is a motion of the body that contains information. Waving goodbye is a gesture. Pressing a key on a keyboard is not a gesture because the motion of a finger on its way to hitting a key is neither observed nor significant. All that matters is which key was pressed” [3]. According to Kurtenbach & Hulteen, a bodily movement is considered a gesture if it contains information, it is observed and it is significant. Considering this definition, we define hand gestures in the context of human-computer interaction for the purpose of this thesis as follows: A hand gesture is a movement of the hand and fingers, performed by the user with the intention to interact with the computer. Hand and finger movements are significant and directly monitored, instead of monitoring the movement of an intermediary physical input device operated by the hand, such as a mouse or stylus. Each hand gesture conveys meaning to a computer. We thereby do not limit hand gestures to dynamic hand and finger movements, but also include shapes which can be adopted by the hand and its fingers. A shape is thereby referred to as a “hand posture”.

### 3.2 The Human Hand

“With approximately 30 dedicated muscles and approximately the same number of kinematic degrees of freedom, the hand can take on all variety of shapes and functions, serving as a hammer one moment and a powerful vice or a delicate pair of tweezers the next” [4]. The broad variety of shapes and functions the hand can take on and perform makes the hand a highly valuable tool for us to interact with our physical surroundings and to communicate with other people. We can use the hand as a powerful tool to move heavy objects or crash nutshells, to perform complex high precision tasks such as tying up shoelaces or shuffling cards, as well as soft and delicate tasks such as stroking a cat. For all those tasks hands are not only used to act but also to perceive. The highly discriminative sense of touch in the fingers [5] makes it possible, for example, to perceive information on details of the surface of objects which can then be used to adjust hand movements.

Human-Computer Interaction can use the hand for input but also for output. Movements of the hand and its finger for input from the human to the computer (=hand gesture input), where “[...] the hand, which can technically be considered as a complex input device with more than 20 DOF, can become an easy to use high DOF control device” [6] and the sense of touch as a feedback channel from the computer to the human.

### 3.3 Hand Movements

Limbs are in general moved with a coordinated activation of many muscles acting on skeletal joints [5]. Most of the muscles for hand movements are in the forearm [7]. Power from the muscles in the forearm is transmitted into the hand by means of long tendons. Therefore most of the muscle mass used for hand and finger movements lies outside of the hand. “*This arrangement allows the hand to be light and flexible without sacrificing strength*” [8]. Furthermore, some muscles, known as intrinsic hand muscles, are located inside of the hand. The intrinsic hand muscles are responsible for minimal yet precise finger movements [9]. We can distinguish hand movements in (1) palm movements which are performed mainly in moving the palm (which also moves the fingers) and (2) finger movements which can be performed by the fingers. The following movements (described in [10]) result in moving the palm, where the first four listed result from movements at the wrist, and the last two ones (supination, pronation) result from a movement of the forearm: a) Flexion: bending the hand at the wrist, toward the inside of the hand (Figure 1a). b) Extension: bending the hand at the wrist, away from the inside of the hand (Figure 1b). c) Ulnar Deviation: bending the hand at the wrist in the plane of the palm, away from the axis of the

forearm, towards the direction of the little finger (Figure 1c). d) Radial Deviation: bending the hand at the wrist in the plane of the palm, away from the axis of the forearm, towards the direction of the thumb (Figure 1d). e) Supination: lateral rotation of the hand, resulting from a rotation of the forearm (Figure 1e). f) Pronation: medial rotation of the hand, resulting from a rotation of the forearm (Figure 1f).

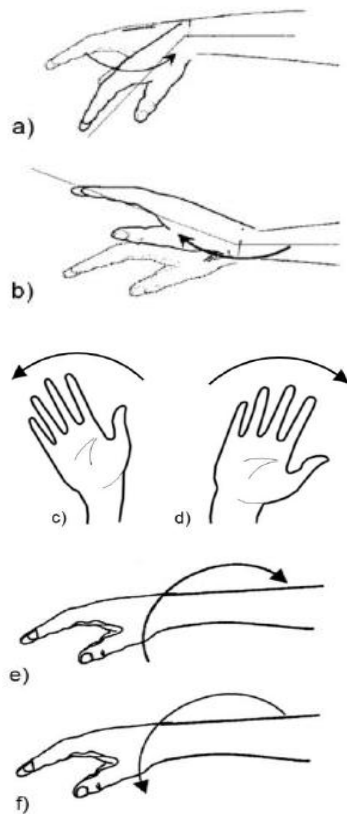


Figure 1: Palm movements, arrows indicate movement direction. (a): Flexion, (b): Extension, (c): Ulnar Deviation, (d): Radial Deviation, (e): Supination, (f): Pronation. Adapted from [10].

The fingers can perform the following movements (taken from [9],[11]: a) Flexion: moving the fingertip towards the inside of the hand (Figure 2a); b) Extension: moving the fingertip away from the inside of the hand (Figure 2a); c) Abduction: moving the finger away from an imaginary line drawn through the axis of the middle finger (Figure 2b); d) Adduction: moving the finger towards an imaginary line drawn through the axis of the middle finger (Figure 2c); e) Opposition: the opposition is a unique movement of the thumb, where the thumb is moved above the inside of the palm with the possibility to touch the tips of the remaining fingers (Figure 2d); f) Circumduction: a circular movement of a distal limb, such as the fingers, is referred to as circumduction. However, it

is not a unique movement but a sequence of flexion, abduction, adduction and extension.

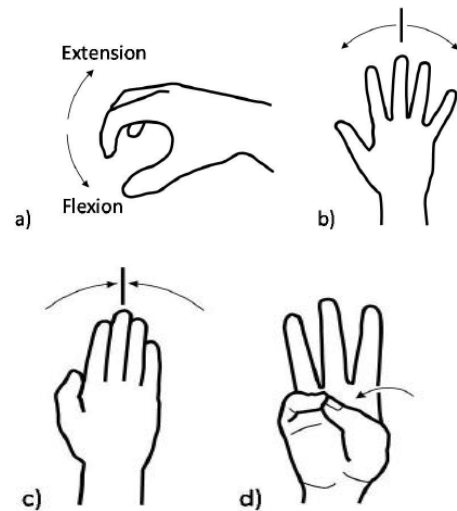


Figure 2: Finger movements, arrows indicate movement direction. a): Flexion and Extension, b): Abduction, c): Adduction, d): Opposition

Those hand movements are the biomechanical conditions given to perform hand gestures, and also describe constraints which movements are possible and which are not.

#### 4. Tracking Hand Movements

Different approaches have been introduced for tracking hand movements to provide hand-input for human-computer interaction. Those approaches can be distinguished, according to whether objects are attached to the user's hand or not, into (1) computer-vision-based, non-contact and (2) glove-based approaches. For computer-vision-based, non-contact approaches, movements of the user's bare hand are captured with one or multiple video cameras. The images are further analyzed and processed to detect the hand. No physical objects are attached to the hand to support the adjacent processing steps. With glove-based approaches, the user either wears a dedicated data glove with build-in sensors or other physical objects get attached to the user's hand, which can be viewed as a minimized glove, to ease the detection of hand movements by tracking systems located distant from the hand.

##### 4.1 Computer-Vision Based Non-Contact Tracking of Hand Movements

Computer-vision-based non-contact approaches capture hand movements with one or multiple video cameras neglecting the need to attach physical objects to the user's hand. Therefore users can immediately start to interact.

Those approaches have the potential to provide an unencumbered interaction [6] and users cannot get disturbed by potentially intrusive hardware placed at their hand.

Capturing hand motion in real time with computer-vision-based, non-contact approaches is an active area of research (see [6] for a comprehensive review on existing solutions). Applying computer-vision, non-contact approaches to capture the real 3D motion of the hand and recover the full degree of freedom (dof) hand motion from images, is a challenging problem in the context of HCI, and “[...] several challenges including accuracy, processing speed, and generality have to be overcome for a widespread use of this technology” [6]. The design of computer-vision, non-contact solutions encounters several difficulties. The hand is a flexible object which can take on a variety of shapes. This capacity of the hand gives rise to two difficulties. The first is self-occlusion, which describes the fact that the projection of the hand onto an image plane can contain many self-occlusions, where parts of the hand overlap other parts of the hand. The second one is the difficulty that a large number of parameters have to be estimated from the derived projections, such as position and orientation of the hand itself, location of the fingertips, bending of fingers, etc. Technical difficulties are 1) uncontrolled environments, which have to be taken into account when locating the hand in the image and 2) processing speed, as a huge amount of data has to be processed [6]. To alleviate some of the difficulties, restrictions on the user or the environment can be applied by ensuring, for instance, that the palm is parallel to the image plane, which avoids overlapping of fingers, or by controlling the background in order to make the system fast and robust [12] or using only a distinct aspect of hand movements for input (e.g. 2D position of the fingertip). However, those restrictions may not necessarily be of high inconvenience for the user. For instance, if the hand is typically parallel to the image plane in a given context of use, if background conditions can be easily controlled, or the derived aspects of hand movements are sufficient for the interaction they are used for. Following this, we will describe two sample solutions which do not track full 3D hand motion but still provide a highly usable basis for hand gesture interaction. [13] describe a system which applies computer-vision to facilitate non-contact hand gesture interaction. They detect the 2D position and 2D direction of user’s fingers and associate them with the corresponding finger. They use this information along with the number of outstretched fingers as variables for defining hand gestures. Those hand gestures are then used to interact with three sample applications projected

onto a wall, to control a presentation, move virtual items on the wall during a brainstorm session and virtually paint on the wall. In each sample scenario, users stand in front of the wall and interact with the projected application. Adaptive background models are used to ease the detection of fingertips in the images even with changing backgrounds originating from changes in the appearance of the graphical user interface and lighting conditions. They report a total latency of their finger finding algorithm of 26 – 34 ms (not including time needed for image acquisition).

Segen & Kumar [1998, 2000] describe a system designed to support tasks like 3D navigation, object manipulation and visualization. Their system detects the 3D position of the index finger- and thumb tip, and the azimuth and elevation angles of the finger’s axis. Based on this information they defined three hand gestures, a fourth gesture is included to serve as a default gesture for all other identified hand postures. The system is used in a desktop environment with two video cameras placed above a table. In order to make the system fast and robust, a high-contrast stationary background and a stable ambient illumination is required. A limitation of the

system, which is mentioned by them, is the limited range of hand rotation due to the use of two cameras and their placement. However this can be compensated in adding video cameras for image capturing. Their system recognises the gestures and tracks the hand at a rate of 60 Hz (imposed by the video cameras used). Those two sample systems provide valuable and excellent solutions for the setting they are aimed for. However, generalizing those approaches to other settings may be difficult, as a controlled background cannot always be guaranteed, holding the palm parallel to the image plane might not always be desired, or additional features of hand movements should be utilized for hand gesture interaction, e.g. using the rotation of the palm combined with a certain hand shape as an input parameter.

#### 4.2 Glove-Based Tracking of Hand Movements

Besides computer-vision based, non-contact approaches, there are glove-based approaches for tracking hand movements. Commonly used for tracking finger movements are commercially available data glove solutions, which build sensors into gloves to measure the bending of fingers capturing flexion, extension, adduction and abduction movements [14] [Immersion 2008] (see Figure 10, left & middle). Data gloves with build-in sensors reliably deliver data on all possible finger movements and have the advantage that the quality of the data cannot be influenced by occlusion of fingers, or changing backgrounds. However, the gloves of data glove solutions typically come in

only one size [14] [15] [16] and a good fit for each hand size cannot be guaranteed. A bad fit is not only able to disturb the user but can also influence the accuracy of the measured data if the build in sensors do not reflect the actual finger movements. Data glove solutions typically provide high sampling rates, for instance 90 Hz for the CyberGlove® II or 75 Hz for the 5DT Data Glove 14 Ultra. In order to track movement of the palm commercial data glove solutions can be combined with a tracking solution capable of detecting the orientation of an object. Therefore data glove solutions can be combined with an optical (e.g. [17] [18]) or electromagnetic (e.g. [19]) tracking system. An optical tracking system uses multiple cameras to detect objects and calculates their position and orientation in reference to a predefined coordinate system. Such an object (typically consisting of a fixed arrangement of markers) has to be attached to the glove to monitor movements of the palm (e.g. at the back of the glove). Due to the use of cameras the reliability of the data on the movement of the palm is sensitive to occlusion. If the tracked object is occluded by other objects from the view of the cameras it cannot be detected. The user's mobility range for accurate tracking depends on the amount of cameras used and their set-up. An electromagnetic tracking system detects a sensor which also has to be placed on the glove to monitor movements of the palm. The tracking system can provide information on the orientation and position of the sensor. Due to the fact that no cameras are used for tracking, occlusion of the sensor is not an issue. Electromagnetic systems can limit the range of the mobility range of the user in order to provide accurate tracking (a diameter of 2 meters in the case of the Polhemus system). The sampling rate depends on the tracking system used, for instance 50 Hz for the Polhemus system, 60 Hz for the optical tracking system developed by A.R.T. [20] and 120Hz for the Vicon tracking system [18].

Independent from the chosen combination of a data glove for tracking finger movements and an additional tracking solution for tracking palm movements, wearing a glove can encumber user interaction and give rise to hygienic problems if the same glove is worn over a longer period of time or by different users.



Figure 3: Left: the CyberGlove II (taken from [15]). Middle: the 5DT Data Glove 14 Ultra (taken from [14]). Right: The data glove of the A.R.T. finger tracking solution. Taken from [17]

A further glove-based solution has been developed by the company A.R.T. [17] [21]. It combines a minimized data glove (see Figure 3, right) with their optical tracking system. The data glove consists of a thimble set that can be attached similar to foxgloves onto the fingertips. The thimble set, available to either cover three or five fingertips, is connected to a target (an object consisting of a fixed arrangement of markers for which the tracking system can detect the position and orientation). This target is placed at the back of the hand. Markers, actively sending out infrared rays, are placed on the tip of the thimbles and onto the target. The optical cameras detect those rays and calculate the position of the thimbles (the position of the fingertips) and the position and orientation of the target (the position and orientation of the back of the hand). Therefore finger and palm movements can be tracked. From the tracked data the angles between the joints of the fingers and the orientation of the finger tips is derived. Fingers are identified via synchronized modulated flashes which synchronize the markers of the data glove with the optical tracking system. Due to the minimized data glove which minimizes contact of the glove with the hand, hygienic problems arising for the previously described data glove solutions can be reduced. The design of the thimble sets, which are available in three different sizes, allows accustoming the data glove to a wide range of hand sizes. The markers on the fingertips are therefore always close to the fingertip whose position they measure. However, due to the use of an optical tracking system occluded finger markers or target markers can impede tracking of hand movements which is not possible if the markers are not in the field of view of at least the number of cameras required for tracking. The sampling rate for the information on palm movements (derived from the target) is 60 Hz. The sampling rate for the information on finger movements (derived from the thimbles) depends on the version (three vs. five thimbles) used:  $\text{Sampling rate} = 60 \text{ Hz} / \text{Number of thimbles}$ . We are not aware that there currently is any other comparable system available.

## 5. System Design

This virtual laboratory detects fingertips in the real time from live video and calculate fingers bending angle. The process from the human gesture to virtual laboratory is explained in figure 4. First captured 2D image would be preprocessed and skin filter would be applied. Segmentation method is able to extract the hand gesture from the image



frame even if there are skin colors like objects in the gesture background. The processed image would be cropped to get only area of interest to make further processing faster. In the cropped image, fingertips and center of palm would be detected and then system would measures distance between centre of palm and fingertips. The calculated angle for each finger could be passed as input to virtual laboratory, so that virtual laboratory can bend its finger accordingly. System is able to detect fingertips, center of palm and angles continuously without any system error. In this paper fingertip detection based gesture recognition was done without using any training data or any learning based approach.

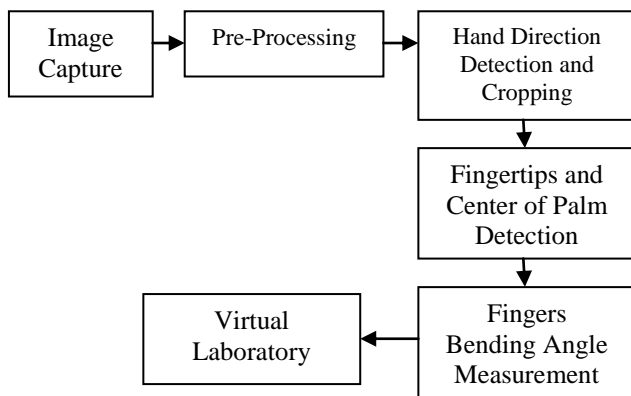


Figure 4. Block diagram flow of the system

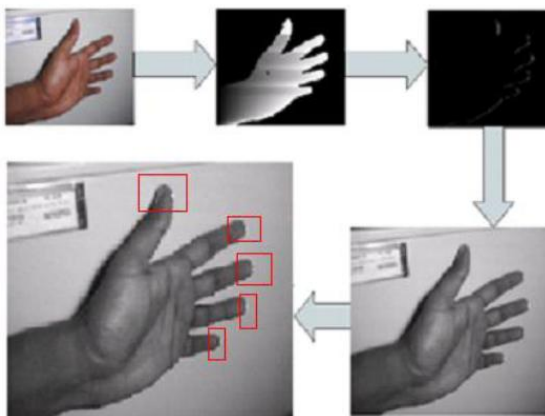


Figure 5. Fingertip detection process

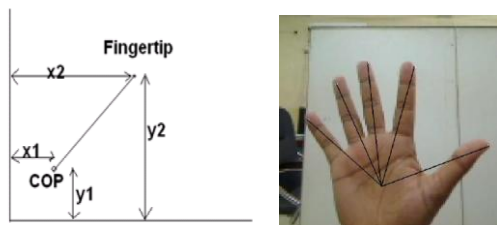


Figure 6. Distance calculation between centre of palm and Fingertips

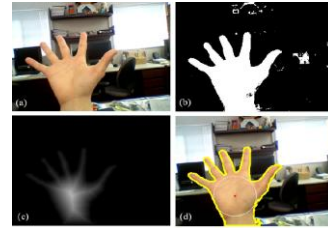


Figure 7. Hand segmentation procedure.

Given a captured image (a), skin color segmentation is performed (b). Then the distance transform (c) is used to extract a single connected component of the hand (d).

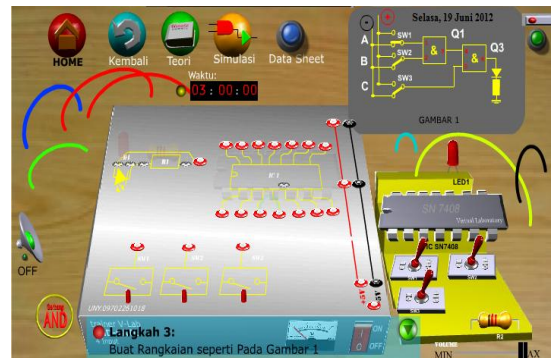
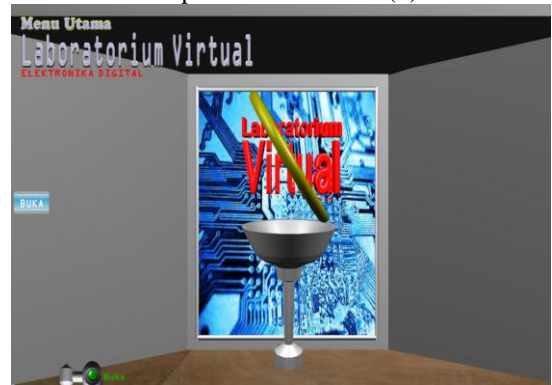


Figure 8. virtual laboratory Display using macromedia flash (software)

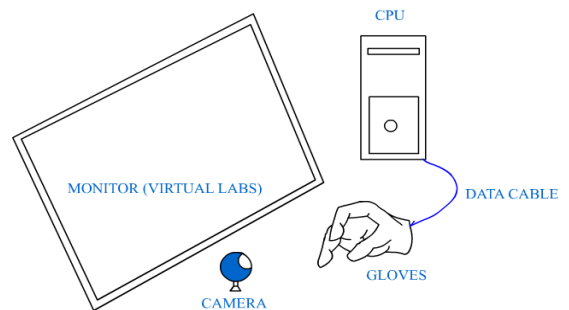


Figure 9. Human Computer Interaction with Virtual Laboratory



Figure 10. Virtual Laboratory Through Hand Motion Detectors (Hardware)

Virtual laboratory approach consist of software and hardware. This software are design by using macromedia flash, 3Ds Max for making a visualisation virtuality and swift 3D. This Hardware using sensor to detect hand movement, segmentation image by using webcam. To pick up the cable and component in the screen, user must move their hand like pick up the real component.

The Content of Virtual Lab Application such as: a) Characteristic : Applicative, communicative, interactive, compatible and develop critical thinking skill rather than just observational skill; b) Form of experiment : collaborative and interactive simulation; c) Simple navigation : User Friendly; d) Content : According to concept and syllabus, up to date, apercption, problem based learning, contextual learning; e) Completeness : user guide, trial and error, glossary, reference, help navigation.

Synergy between real and virtual lab [22] which supported by certain policies among them are about standardization of development procedure of virtual lab application and the proper usage of virtual lab for Vocational School can give the following benefits: Provide even distribution of access to science lab in Vocational School, Increase the quality and competitiveness of the science education especially in natural science, Upgrade the competence level of students and teachers, Increase the utilization of Jardiknas Reduce the gap of laboratory facilities between Vocational schools.

## CONCLUSSION

In this paper the virtual laboratory design based on macromedia flash (software) and hand movement detection (hardware). Have implemented a virtual lab for the user especially vocational students (SMK), making practices more interesting and interactive through user interaction with computer using a periferal with hand movement detection that provides flexibility in operating. Combination of real and virtual lab which is integrated into the course material, can enrich the learning process, increase student's interest and

curiosity, enhance the ability of psychomotor with hands-on.

Combination of real and virtual lab which is integrated into the syllabus, can enrich the learning process and increase student's interest and curiosity. Students are also benefitted from the synergies between real and virtual laboratory.

## ACKNOWLEDGMENT

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# Developing a Module and Instruction for the Vocational Competence in CNC Machining for Vocational High School

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## Abstract

This study aimed to: (1) analyze the implementation of vocational learning competencies in CNC machining in improving students' competencies, (2) produce a learning module and instruction for CNC machining subjects for vocational high schools (VHSs) in accordance with the standards of competence and basic competencies, and (3) analyze the feasibility and effectiveness of the module and instruction for the improvement of the vocational competence in CNC machining for VHS students.

This study employed the research and development approach. The research procedure was the design and development research by Richey and Klein consisting of two stages of development, i.e.: (1) a comprehensive product development, and (2) a process of developing product components. The validation process consisted of two stages, i.e. the internal validation and the external validation. The internal validation was carried out on the product components through peer reviews and a focus group discussion and the external validation was conducted through a pilot test. The validation process involved 24 participants consisting of: experts in the CNC machining subject, vocational education experts, a workshop management expert, VHS teachers, and VHS students. The research method employed in the pilot test was the qualitative and quantitative descriptive methods.

The results of the study are as follows. (1) Teaching and learning of CNC machining at four locations CNC machining providers showed that the applied learning model has not been able to establish the competence of students. (2) A module and instruction for CNC machining have been produced that have characteristics: being able to be used as individualized or group-based instruction, consisting of five materials that are arranged sequentially according to the operation of CNC machines, each material being followed by practice questions and tasks in accordance with the objectives of each material. (3) Modularized instruction is feasible and effective in improving students' competence in accordance with the demands of competency-based curriculum. Three standards of competence and minimum mastery criteria can be achieved by the students after applying the module and instruction.

**Keywords:** CNC, module, vocational.

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## 1. Introduction

Some new subjects in the vocational curriculum appears to follow the development of the era. Advances in computer technology and the industry has a lot to change the capabilities and skills in machining competency of job seekers especially for former students of VHS. Conventional machine tools which were originally used by most industries in the seventies, has now been replaced with a machine tool controlled by a computer because of high productivity and accuracy. The machine is the CNC (Computer Numerically Controlled ) machine tools, that are controlled by a computer program through a system of numerical control. In the current technology in manufacturing is growing very rapidly, so a lot of CNC machines used in the machining industry to produce parts with a high level of complexity and precision ( Subagio and Atmaja, 2011:105 ). According to Mike Lynch ( <http://www.cncci.com/resources/articles/CNCmanual.htm>) at this

time more than 80% of companies that make various kinds of products have at least one CNC machine. In response to these conditions, the VHS was challenged to prepare students to be competent enough to work, through learning to meet the needs of the workforce and industry.

Training to operators of CNC machine tools include the settings, operate, and monitor the process. Skills of planning, controlling, programming, and CNC machine settings should be taught to trainees (<http://www.siemens.com/cnc4you>). Thus the implementation of the learning process of CNC machining competence are more likely in of the procedure knowledge skills than the manual skills. Berner (2008:177) analyzes that have been ongoing changes of the learning process in terms of knowledge, social, and emotional to be a machine tool operator. Matter and how students learn will be part of their own self-understanding,

identity work in the future, and feelings about something he knows. Employment in manufacturing companies that use CNC machines are handled by the engineers, programmers, and operators (Bureau of Labor Statistics, 2010). Engineer in charge of the field of CNC machinery to plan and create software. CNC programmers tasked to create a CNC program is based on the working drawings designed by the designer. CNC machine operator to set the machine and its peripherals, include the program on the machine, the setting of cutting tool, workpiece set up, run the CNC program to create a product, and do the machining process measurement products. CNC machine operator is a person who needs to know how to run a CNC machine is not planning or designing a CNC program ( <http://www.amatrol.com/programs> ).

Based on field observations, a model of learning for subjects to most of CNC machining at vocational schools are refer to the CNC machine, teaching materials, teaching methods, learning strategies and learning approaches made by EMCO, companies from Austria, developed in the 90 's . This can be seen from the learning module and electronics books which is used in vocational schools published by the Directorate of SMK on the Internet (<http://www.ditpsmk.org>). Based on the above facts, it is necessary for effective and efficient learning models to establish a vocational student competency in accordance with the standards of competence and basic competence.

Many experts put forward a definition of a model of learning and developing learning models. Models of Teaching is in fact also be regarded as models of learning (Joyce et al, 2009: 7). Gunter in Santyasa (2007:7) defines learning model as follows: "an instructional models is a step- by- step procedure that leads to specific learning outcomes." Joyce, et al (2009:30) said: " A model of teaching is the idea of a learning environment that also includes our behavior as a teacher when the model is applied. "A more detailed description set forth in the other website (<http://www.edtech.vt.edu/edtech/id/models/> ), which is " teaching models prescribe tested steps and procedures to effectively generate desired outcomes. In general, models can be classified along a continuum from instructor - directed, instructor to student - negotiated, to student -directed. "

Joyce, et al (2009:31-45) classify learning model into four major groups, namely: (1) the information processing model of learning, (2) the social learning model, (3) the model of personal learning, and (4) group learning model of system behavior. Each group consists of many models of teaching or learning model. The models of information processing group consists of: inductive

thinking, concept discovery, inductive word-pictures, scientific research, research training, mnemonics, sinektik, and advance organizers. The group consists of models of social learning model: study partner - positive independence, organized research, investigation groups, role playing, and jurisprudential research. Group personal learning model consists of model: teaching without direction, and improve self-esteem. The group consists of models of learning behavior model: learning to master, direct instruction, simulation, social learning, and the planned schedule.

McIlrath and Huitt (1995) defined "A model is a visual aid or the picture which highlights the main ideas and variables in a process or system". Models in particular discusses the model as measured by standardized test scores for the basic science subjects (basic skills) are: reading, language arts, mathematics, science, and social studies. These models are: John Carroll, Proctor, Cruickshank, Gage and Berliner, Huitt, and Laosa models. The models are used in the United States for the benefit of an increase in basic skills.

Based on the above descriptions it is understood that the learning models (models of teaching ) has a broader meaning than the methods, strategies/approaches, and procedures. Learning model based on learning objectives to be achieved, the skills students will be obtained, and the learning environment is used. Thus to construct a model of learning for learning purposes (competency) must be specified in advance the philosophy underlying the competencies to be taught, learning theories that support, learning competencies to be achieved (cognitive, psychomotor, or affective), and the theory of the subjects or teaching materials concerned.

CNC machining competencies for vocational students is the student's ability to cover aspects of knowledge, skills and attitudes in the use of CNC machines to make things work according to the standards of competence and basic competences (*SKKD=Standar Kompetensi dan Kompetensi Dasar*). Competencies to be possessed by vocational students are setting, programming, and operating the CNC machine tool. Basic competency to be controlled in large part on the cognitive (ie operational work: describe and recognize) and psychomotor domains (with the verb operations: install, perform, instruct, change, write, implement, test, operate, and monitor). Attitude formation is not implied in the competency standards, but is written in Basic Vocational Competencies, namely to apply occupational safety and health, with descriptions of basic competencies and implement health and safety procedures.

According to Drake (2007: 2), the standard of competency -based learning approach, teachers are

expected to prepare students to meet the standards of accountability within the framework of the learning process. The curriculum is taught the same for the same level throughout the country. Students must follow the standardized competency exams to demonstrate that the student has achieved a certain level of success. The results of the competency test is used as an indication of the level of student learning. Further noted also that the competency -based teaching approaches adopted the following principles: (1) the planning process with the design -down curriculum, (2) focuses on what students will do, not what the teacher will teach, (3) standards of competence, teaching strategy and assessment of neatly arranged, (4) is very important to decide what should be known, worked and served the students, (5) standards of competence can be observed and measured, (6) assessment of competency standards to be used as a learning strategy; (7) understanding of complex ideas and serves as an umbrella of course content; (8) the performance of complex skills always comes up every year and on all subjects; (9) the content of lessons as a means to achieve competency standards, and (10) teachers -free teach with all kinds of styles of teaching for competency standards are met.

## 2. Methodology

Stages of research using the stages of design and development research by Richey and Klein. According to Richey and Klein (2007: 8) design and development of research consists of two main categories: (1) product and research tool, and (2) model research. Research on the category of product development stages are: analysis, planning (design), development, and evaluation. While basically the same development tools with product development but are also more emphasis on: (1) development tool , and (2) tool use. The research phase of the model include: (1) development, (2) validation, or (3) use.

The process used in this study is research model study by Richey and Klein (2007: 65). Step -by-step development of such models in detail include: (1) development, (2) validation, and or (3) try out. On the development of this model there are two kinds of development are: (1) the development of comprehensive models, and (2) the development of model components.

Before carrying out the development is preceded by a preliminary study to find a model that is currently applied by the study subjects as material to develop a learning model of CNC machining. Model validation process is carried out two kinds of internal validation and external validation. Internal validation performed on the components of the model, while the external validation studies the impact of the model.

External validation of the model is done by a pilot test or try out on the subject of the research. Try out conducted in small groups of students at one location. A try out was made to the number of students in accordance with the provisions of the model, which is eight students.

## 3. Try out Result

Try out the use of learning models implemented at one school site which already has a utilities of CNC machining course in accordance with the learning model developed. Try out is conducted in 10 meetings. Each class meeting held for 4 hours of lessons. The course process is in Figure 1. During pilot testing, the competencies achieved by students are observed by teachers and researchers. Achievement of competency standards were observed using performance indicators, amounting to 90 performance indicators. The increase of student competence can be seen in Figure 2.

All students stated that the Best CNC learning model is an interesting model of learning, the learning module can help the learning process, and students have been convinced to operate the CNC milling machine and virtual CNC milling machines. Best CNC learning models purpose are improving the competence of students, so that in the opinion of students on the above description it can be said that the purpose of these models has been achieved. Recap student opinion on the Best CNC learning model can be seen in Table 1.

Competencies that students can independently operate CNC machines are the demands of competency standards in accordance with SKKD. Competence is essentially a student's ability to include competencies in the domain of affective, cognitive and psychomotor skills. This model is in trials do not measure students' affective competencies, but from the implementation of the trial shows that students carry out the learning process seriously, maintaining workplace safety, maintain the safety of the machine, maintain the safety of other students, and always tried to follow the steps modules are written in earnest. Look in cognitive abilities of students have been able to do practice questions and tasks that can improve cognitive abilities. Skills of the students looked up, the ability to check the results of all students claimed not to operate a CNC machine and after learning to use the model to follow the Best CNC states are sure all students can operate the CNC machine. Thus it can be said that the Best learning model CNC has proven effective in shaping students' competency in CNC machining.

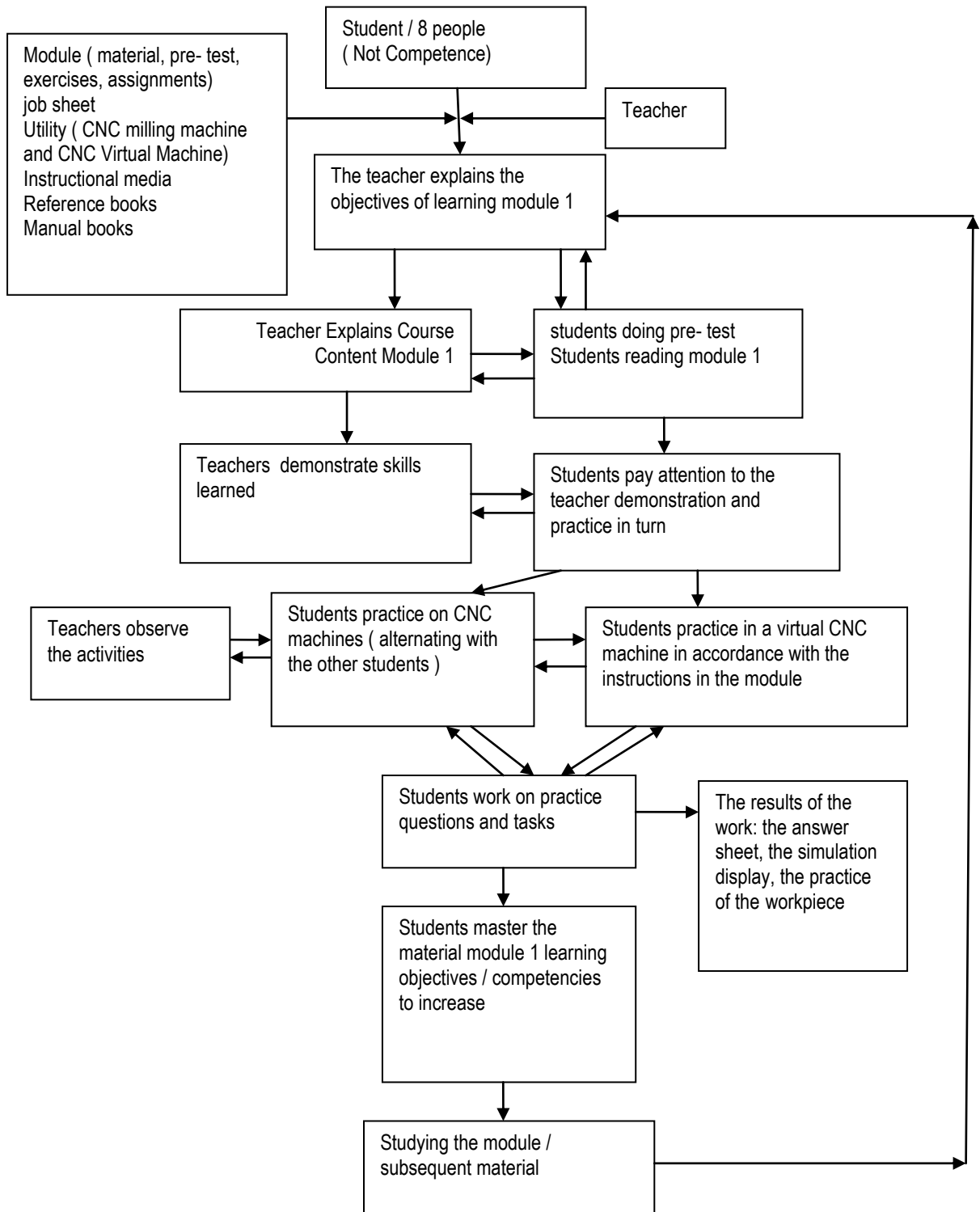


Figure 1. Course process of the try out

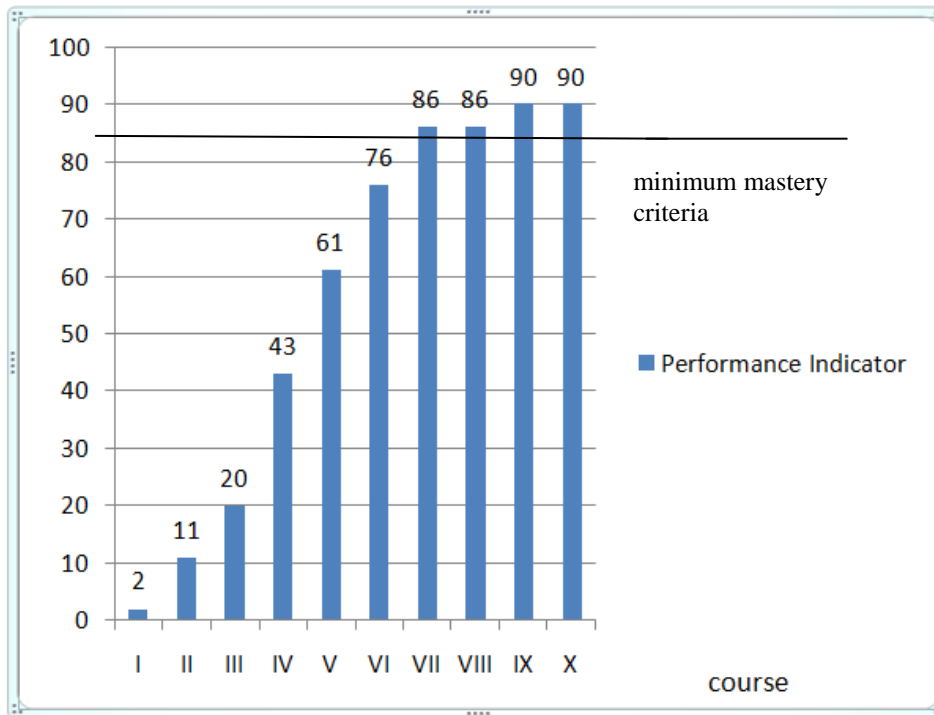


Figure 2. The improvement of students' competencies

Table 1. Opinions from The Students

Student opinion	Percentage of Answers
1. Interesting learning model	100%
2. Understanding of learning material	100%
3. Questions and tasks	
a. Very adequate to establish the competence	75%
b. Adequate to establish the competence	25%
4. Questions and tasks actually measure the knowledge and skills	100%
5. Get direct feedback	100%
6. Been able to operate a CNC milling machine	100%
7. Been able to operate the virtual CNC milling machine	100%

Competencies that students can independently operate CNC machines are the demands of competency standards in accordance with SKKD. Competence is essentially a student's ability to include competencies in the domain of affective, cognitive and psychomotor skills. This model is in trials do not measure students' affective competencies, but from the implementation of the trial shows that students carry out the learning process seriously, maintaining workplace safety, maintain the safety of the machine, maintain the

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Teachers who implement the Best learning model CNC feel that the modules, software, and learning steps suggested by CNC Best models was helpfully. In the implementation of learning for the next semester the teacher will use this learning model, it is because: a learning tool in the form of CNC machines and computers, learning modules, practice materials, and teaching schedule allows for the implementation.

Feedback from teachers is that teaching materials in the module coupled to the material with other control systems are a valuable input. These suggestions will be met by developing learning modules with GSK or Fanuc control system and still use the concept of learning models and frameworks of the Best CNC. Changes will be made on the content of the modules, especially regarding the description of the control panel, programming code, setting the zero point, and



operation of CNC machines. Solved exercises and assignments, and job sheet is still being used.

## Conclusions

Based on this research, the conclusions in this study are: (1) Teaching and learning of CNC machining at four locations CNC machining providers showed that the applied learning model has not been able to establish the competence of students. (2) A module and instruction for CNC machining have been produced that have characteristics: being able to be used as individualized or group-based instruction, consisting of five materials that are arranged sequentially according to the operation of CNC machines, each material being followed by practice questions and tasks in accordance with the objectives of each material. (3) Modularized instruction is feasible and effective in improving students' competence in accordance with the demands of competency-based curriculum. Three standards of competence and minimum mastery criteria can be achieved by the students after applying the module and instruction.

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# SOCIETY FOR IPTEKS WEAVE FASTEN ATBM SUB IN VILLAGE JUWIRAN JUWIRING DISTRICT KLATEN

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## Abstract

The factors that cause unemployment in Indonesia, including the number of job seekers is greater than the number of job opportunities competence gap between job seekers with the competencies required by the labor market, occurrence of termination of employment for global crisis. These conditions interfere with development and national stability. Problems faced by people due to the low level of education, knowledge and skills.

Based on these problems required a helping hand from the university in accordance Tri Darma Higher Education Community Service is the effort to educate and train local residents as needed in order to master the practical skills to work functional formal sector / informal employment according to (Job Oppofinities). Batik Surakarta Islamic University in collaboration with DP2M Higher Education in 2011 in the Program of Work for the science and technology (IbM) in the Village Artisans Weave Fasten A T B M Juwiran Juwiring Klaten District.

The results of all service activities participants can make products Weaving With Batik Design Development, Training participants able to prepare business plans. A total of 70% of training participants are able to realize its business into the business riel. Independent venture participants post-training, 20 people of all learners can work at the company Nastek Tegal The work in each order can be done at home itself.

**Keywords: Empowerment, Management Training and Weaving Appropriate Technology**

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## 1. Introduction

### 1.1 Background

Unemployment and poverty to date is a major issue of Indonesia which have not been resolved. The agency in August 2010, the number of unemployed people registered as many as 6.96 million (9.87%) of the total labor force of about 113.83 million people. 8.96% of the amount of millions of people unemployed are mostly located in rural areas. If viewed from an educational background of the unemployed based on BPS February 2009 of 2667.09% had elementary education down 22.62% junior high school education, 25.29% high school education, vocational education and 15.37% 9.63% educated Diploma to degree. The factors that cause unemployment in Indonesia, including: number of job seekers is greater than the number of available job opportunities (the gap between supply and demand). The gap between job seekers competence with the competence required by the labor market. Still a child out of school and pass not to continue the work that is not absorbed world / trying to be independent because they do not have adequate skills (unstill labor). The termination of employment as the global crisis. Given the unemployment data is still quite high unemployment, such as: drugs,

crime, promiscuity, hooliganism, trafficking, and so forth. These conditions would interfere with development and national stability. Based on the quality of education needed a helping hand from the university in accordance three Darma Higher Education Community Service is the effort to educate and train local residents as needed in order to master the functional skills, practical work for both formal and informal sector employment in accordance with (Job Oppofinities). Problems faced by rural communities in sub juwirting juwiran Klaten district today is the problem of the large number of poor people remember urgent need to immediately alleviated poverty will lead to disintegration and social unrest. Conditions of citizens in the rural districts juwiran juwirting Klaten district is basically caused by low levels of education, lack of knowledge and skills. IBM partners in the activities in the Village Artisans Weaving ATBM Juwiran Juwiring Klaten District. Appropriate objectives for Community Services provides an opportunity for the artisans / trainees of childbearing age to increase the knowledge, skills and attitude in accordance with the needs / opportunities of labor market and employment opportunities in the world industrial world. Development training on ATBM batik designs can

utilized to meet the tastes of the market that can compete in the global market.

## **1.2 Conditions Partners**

Klaten district is also known as the "Thousand Temple District" one of 35 districts in Central Java province. The location is strategic because Klaten district directly adjacent to the Yogyakarta special region known as one of the destinations. Klaten district has an area of 65 556 ha consisted of 26 Kecamatan and 401 administrative villages with a population in 2009. Sebanyak 1.972.740 soul, 46.95% Klaten Economy Agriculture is the economy as indicated by the use of the land area of 30 779 ha. For the rice field area and 53.05% (34 777 ha) is not wetland. Small businesses in the craft of weaving villages juwiran juwiring Klaten district is the work done by the community for generations. Woven product is a fabric woven with threads of raw material remaining low-quality textile company purchased from the craftsmen had difficulty in obtaining raw materials, and even when obtained is not cheap prices while producers with limited capital. Market access is very limited craftsmen, artisans sell their products directly to consumers in the market every market day cawas Pahing and Kliwon. Due to low quality materials and product design and motifs seem "old" the craftsmen cannot be set higher prices for their products. These conditions imply low levels of education in Indonesia and the still large target groups in need of community service through the training required to expand access to training and to encourage community participation in education to prepare human resources in the competitive global job market. Assessment on the author shows, adult ATBM weaving craft center is located in a collapsed condition with low business performance as reflected in the low income of the business so that most of the poor artisans. Some of the constraints faced by producers is the limited field of capital, lack of market access, lack of access has applied technology to deal with changing consumer tastes and poor work ethic and entrepreneurial attitude.

## **1.3 Meaning of Existence Partners Against Environment**

By considering the potential Weaving as the basis for community economic development activities in the region as a target Klaten Batik Design Training In ATBM Weaving in rural districts juwiran juwiring Klaten district. Implementation of community service in the form of entrepreneurship training with more emphasis on learning or training efforts that can provide income (Learning and Earning) by type of vocational or skills training Batik Design In Weaving with the

inherent nature, creativity and innovation need to be developed by its nature Training Batik designs are all efforts to create prosperity for the individual or group of people and increased prosperity will have an impact on reducing unemployment. Consideration in the selection of the type of skills training is that most citizens have limited skills of batik design. Through the efforts of Batik Design Training In Weaving ATBM learners are expected to have a high work ethic able to work more efficiently and produce innovative and quality products that have a higher economic value as well as meet the demands of the market tastes. Potential to support the smooth process of solving the problem of poverty facing people in rural districts juwiran juwiring Klaten district are: 1) From the assessment carried out in the field of batik that skill much in demand and needed in addition to the material is quite easy to obtain. 2) With the development of batik design of the market outlook for operating results are still quite cerah. 3) batik) batik business in the economic sector Klaten people absorb enough manpower to potentially address the problem of pengangguran. 4) Villagers juwiran sub juwiring Klaten district is a type of society that open and responsive enough to the empowerment intervention of outside parties.

## **1.4 Partner Problem.**

Small businesses in the craft of weaving ATBM Juwiran Village District Juwiring an attempt by the majority of the villagers for generations. Skills are practiced by most people since decades ago. Juwiran woven products produced in the village is in the form of woven fabrics by using the material remaining low-quality yarn is purchased from a textile company in the area around such as PT. Sri Tex Tek Sukoharjo or PT. Kusuma Karangayar Hadi. Sluggish due to the textile industry of craftsmen have difficulty in obtaining raw materials is an acquired if not cheaper prices while producers with limited capital. Market access is very limited craftsmen, artisans sell their products directly to consumers in the market and market Klewer solo cawas every market day and Kliwon Pahing. Due to low quality materials and product design and motifs that seem "old fashioned" and not just the craftsmen sodium absorption ratio can be set higher prices for their products. Selling price in the market cawas woven fabric only reached Rp 6000/ piece. taking into account production costs, income derived by a craftsman is Rp. 750 per piece, or Rp. 67 500 per bull, an amount of income considered below the poverty line. Some of the factors inhibiting the development of artisan businesses in addition to the limitations that can be classified in the field of market access capital and is also the majority of low-educated craftsmen (most of the basic school

level education only), lack of knowledge and skills to try and poor mental attitude so that they are less proactive entrepreneurs as well as poor with innovative ideas are indeed indispensable in the face of a competitive market. Factual issues facing rural communities in Sub Juwiran Juwiring Klaten this is the problem of the large number of poor people remember urgent need to immediately alleviated poverty will lead to social disintegration and insecurity. Conditions of poverty experienced by residents in the village in the district Juwiran Juwiring Klaten basically caused by low levels of education, lack of knowledge and skills to try to close a large extent. In brief, the problems faced pengrajin adalah low quality of human resources is the lack of knowledge, entrepreneurial skills and mental attitude to be able to think kreatif an innovation that leads to business development efforts.

## 2. Resolution

One alternative solution to solve the problems facing producers is to improve the quality of human resources through the provision of education and life skills training that will provide four types of life skills training for participants, namely: personal skills, social skills, academic skills and proficiency vaksional. Training materials given to the substance of personal and social skills are common subjects of the group developing the entrepreneurial spirit of creativity and innovation cored Creativity and innovation through the design of technology development among ATBM weaving looms in the village district juwiran juwiring Klaten district that is the product of craftsmen who originally striated patterned woven fabric developed into products with a dab batik (batik and painting). Several factors that potentially supports the idea of innovation are: 1) The business of weaving craft to villagers juwiran is the people's economy and the sector has historically been woven craft is also a real crafting community so that the majority of villagers have basic weaving skills that they inherited from generation to temurun. 2) yarn as raw material is the raw material is fairly easy to obtain local as well as equipment of ATBM that can be encountered almost every home residents. 3) The export market for shawls and ATBM woven material, has good potential for export to countries especially Malaysia, Japan, Belgium and Venice. 4) Villagers juwiran is a type of society that is open and responsive to any external intervention of empowerment.

With the development of batik design technology innovation, practical course material given to the substance is for the provision of vocational technical skills of weaving production process with

the development of batik design. While the substance of academic skills: the basics of business management, bookkeeping penyusuann practical and business planning.

## 3. Implementation Of Activities

Implementation of training places in the Village Hall Juwiran Juwiring Klaten District. Over the past 6 months for training and assistance with the development of batik design technology innovation, practical course material given to the substance is for the provision of vocational technical skills of weaving production process with the development of batik design. While the substance of academic skills: the basics of business management, bookkeeping practical and business planning. Learning activities include: a) Trainees, Number of participants who dibelajarkan is as much as 20 (twenty) ATBM weaving village district juwiran juwiring Klaten district. b) Workers in Training Teachers / Lecturers, teaching staff qualifications required to perform community service is a lecturer who has a group of subject matter competence entrepreneurship, skills development of batik design, skill and craft of weaving ATBM management, financial and business plan. Educator's power totaled 5 (five) people with deskripsi competency as follows: a) 1 (one) of the Master with competence: Finance and Entrepreneurship. b) 1 (one) Master of Management with competence: Management of SMEs. c) 1 (one) of the Master of Management with competencies: Marketing Management. d) 1 (one) of the Master of Arts with competence: Textile Design. e) 1(one) Bachelor of Engineering with competence: Technical Textiles. Means of Learning: To support the course of the learning process, available facilities and infrastructure that consists of learning facilities, instructional media, tools and practice materials and other supporting facilities. With practical considerations, the learning activities undertaken where Juwiran District Headquarters Juwiring Klaten. Instructional media in the form of practical tools such as NonWoven Machine Tool (ATBM) binoculars, gun, combs, Peker, kletek and yarn are provided from the utilization of budgetary funds DIKTI (IBM) which has been approved. Learning Materials. Learning materials provided in IBM includes four substances, namely skills: personal skills, social skills, academic skills and proficiency skills. Given the subject matter of each of these substances generally consist of groups of subjects, support and skills. General subjects as well as supporting the theory are subjects practice a skill. Training is done by meeting frequency and duration of 16 sessions each time the meeting is 150 minutes. Learning processes Learning strategies

implemented in the following way: learning strategy group. For purposes of efficiency and effectiveness of learning strategies conducted with the model group approach. Androgogi approach. Approach to students / trainees done personally as required and the personal skills of students by minimizing the instructional approaches that lead .

#### **4. Results Of IBM**

##### **4.1 Output Target**

Target service activities are: 1) All participants can make products weaving With Batik Design Development 2) All participants can prepare a business plan based on science and technology plan. 3) Most of the 70% of training participants are able to realize its business into the riel. 4) Post-training Self-venture participants may open .5) Of the 20 people of all learners can work at Nasatex CV, while employment in each order can be done at home itself, the work presented in accordance with the orders of Nasatex CV. Target the training activities carried out with the involvement of technical resource persons namely Mr.Rafik Leader CV. Nasatex the purpose of efficient and effective, ptraktek activities performed by each group consists of 5 groups of people who are all numbered 4 groups. At the end of the implementation of training activities carried out an evaluation of training results in collaboration with CV Nastex. Training includes the practice of the technical production of batik design ATBM Weaving, technical plan and manager and effort in preparing the accounts. Assessments are being made to build a networkmarket for trainees are by CV Nasatex. If the CV. Nasatex can order from home and abroad for batik weaving craft that is expected to be completed the employment of the order. Through dedication to the community expected the participants skilled and able to work according to market demand, so get the maximum results, the revenue received under how much can be done more and more able to complete the job more and more wages. For example, to spell out the scarf which was price @ Rp. 6000, - (six thousand Rp) after the shawl price to Rp. 18.000, - (eighteen thousand Rp) so that the increase is 300% and the results are quite encouraging for the trainees. In one day be able to do 10 scarves after batik @ Rp. 18.000, - (300 X Rp. 18,000, -) = 5.4 million, - then in a month income earning above minimum wage. Therefore, this training can improve people's lives, especially in the training and income may rise as well: All the trainees after the training is expected as follows: 1) Improve student skills in planning and managing the business and Batik Design In Weaving ATBM market taste so as to obtain a decent income to make ends meet. 2) to cultivate knowledge of the entrepreneurial spirit among the

students artisan that has a high work ethic and can produce excellent works that can compete in the global market. 3) Improve the ability of learners in managing natural resources, social, cultural and diverse environment and is able to utilize in the field of batik design. 4) Have the ability to understand ourselves, others and the environment, and capable of working in teams both formal and informal paid. 5) For People Around the employment opportunities, reduce social inequalities so negative impact on the social unrest that might be caused. 6) After the training participants are expected to provide mentoring assistance from artisans may implement the theory and practice of what is gained from the provision of training. 7) With Business Group was formed to open an independent business, with the cooperation with partner companies so all participants can be employees or can net working to production marketed by partner companies, namely CV Nasatex Tegal export company.

##### **4.2 Feasibility Of Higher Education**

Batik Surakarta Islamic University had been doing community service activities in various regions, as well as cooperation with both industry and government agency business of manufacturing and service businesses. UNIBA Surakarta had been having quite a lot of eye Entrepreneurship lecturer, who has experience in both community service programs around the environment and cooperation with partners and relevant government agencies. UNIBA Surakarta has relevant stakeholders kerjasama activities through PPM, PPA, LDP, and LP3M in cooperation with related institutions such as banking institutions, the Ministry of Manpower and Transmigration, the Ministry of Education and Culture, Ministry of Cooperatives and SMEs and Industry, Ministry of Tourism, Ministry of Women Empowerment LIPI, P2PNFI, BPPT and so on in various activities such as research and community service.

#### **5. Closing**

##### **5.1 Conclusion**

Implementation Program outlines IBM's implementation of IBM's Program in the Village Artisans Weaving ATBM Juwiran Juwiring Klaten District consists of three stages of implementation are: 1) Preparation Stage. Consolidation activities include team recruitment of students, educators and the preparation of training events. 2) Training Implementation Phase. Include the provision of training materials both theory and practice. 3) Post-Phase Treatment Program: Includes activities of learners kepda after IBM's training program in the Village Artisans Weaving ATBM Juwiran Juwiring

Klaten District., Distribution / placement of self-employment or business after implementing mentoring.

## 5.2 Institutional Benefits

As in applying science and technology developed has contributed an increase in the role of the Faculty of Economics, University of Surakarta Islamic Batik in order to improve the quality of community life, education, economic and social budaya.

## 5.3 Social Benefits

Implementation of coexistence education and training programs on IBM Artisans Weaving Village ATBM Juwiran Juwiring Klaten District held is the provision of contributions towards the development and improvement of human resources for the community in the Village Artisans Weaving ATBM Juwiran Juwiring Klaten district so as to change their behavior that had only as a side job so it is a permanent employment or independent business / entrepreneurship became an independent business managers to work more professional.

## 5.4 Economic Benefits

The application of science and technology for the Craftsman Village Weaving ATBM Juwiran Juwiring Klaten District provides added value in the form of business planning skills, production, bookkeeping and batik designs customized market that may impact on the improvement / increase income.

## 6. Suggestion

To further enhance the effectiveness of future training to: 1) Improve the quality of inputs (people learn) is to enter the selection criteria for prospective residents who have studied the potential of entrepreneurship and have a strong desire for batik design business as a core business and not a business sideline. 2) The consistent design of training to be developed towards the design of participatory training by adapting the content of training to the needs of participants, the grasp of the participants and the presentation of material that allows participants to participate actively. 3) Develop a training design models that include training analysis, training implementation and evaluation of training, so that learners can acquire new skills knowledge and attitude in training but also be able to apply on the job.

Hope, IBM's program in the Village Artisans Weaving ATBM Juwiran Juwiring Klaten District is expected to change the behavior of

trainees succeeded in carrying out their work as expected so that a transfer of training can be accomplished by either transfer of training is defined as an ongoing activity to apply the expertise, skills and attitudes acquired sari the training. By considering the benefits of the IBM program in the Village Artisans Weaving ATBM Juwiran Juwiring Klaten district as an encouraging step Trainees working professionals the training of batik design is already implemented for people who are still unemployed. Can be done in future studies to measure the effectiveness of a "transfer on training" so that it will be the extent to which training can be done to change the behavior of students who entered the world of business and industrial world. For further studies that will identify the factors that influence the success of learning (Learning) and transfer (generalization) training is expected to be able to provide management direction for better training in the future

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