



Yogyakarta State University's 45th Anniversary

B5

INTERNATIONAL SEMINAR ON EDUCATION

Responding to Global Education Challenges

May 19, 2009

International seminar committee
2009

SEMINAR GUIDE



INTERNATIONAL SEMINAR ON EDUCATION:

Responding to Global Education Challenges

Yogyakarta State University

May 19, 2009

THE RECTOR'S WELCOME ADDRESS

Distinguished Guests, Seminar Participants, and Ladies and Gentlemen,

It is an honor and a pleasure for me to welcome you all here at this International Seminar on Education. This seminar, the first one of its kind, which is conducted in conjunction with the 45th Anniversary of Yogyakarta State University, is an effort to respond to global education challenges we are confronting right before our eyes. In facing these challenges we can do more if we work together. Inviting the international speakers enables us to share ideas on how different countries try to solve their problems. It may inspire others in finding the best way to solve theirs.

The idea of initiating an international seminar in conjunction with our university's anniversary is meant to mark our seriousness in materializing our commitment to moving towards the world class university. There is still a very long journey towards this ideal, but without a prompt start, we will never get there.

As the Rector of Yogyakarta State University, I would like to extend my highest appreciation to the international speakers from the UK, Japan, Malaysia, as well the local ones, lecturers, teachers, students, for the willingness to speak in this seminar, to share valuable ideas to meet the goal of this gathering. My appreciation also goes to the seminar committee's work hard to make this momentum effort possible.

I do hope participants of this seminar can make use of this opportunity to initiate or strengthen links with partner institutions represented by the speakers or participants present at this seminar. Do have a fruitful seminar.

Yogyakarta, May 19, 2009

*Dr. Rochmat Wahab, M.Pd., M.A.
The Rector of Yogyakarta State University*

ADDRESS BY THE CHAIRMAN OF THE ORGANIZING COMMITTEE

Distinguished Guests, Seminar Participants, Ladies and Gentlemen,

First of all, on behalf of the Seminar Committee, I would like to extend our warm welcome to this International Seminar on Education, with the proposed theme "Current issues in global education and their implications for pedagogical practices."

This seminar is the first of its kind. We usually cater a seminar on a single discipline: linguistics, language teaching, social science education, IT, sports, or any other coherent subjects. In response to the demands from emerging international-standard schools, that multidisciplinary forums may enable practitioners to share ideas, problems, and possible solutions, we are trying to accommodate these demands by conducting a seminar with participants of diverse disciplines.

Therefore, in the plenary session we will hear the speaker presenting topics on English language teaching, history, and vocational education. We do hope the speakers and the audience of these diverse disciplines may learn from each other so that we all can find this seminar broadening our horizon.

Though we realize that the success of this seminar is our vision, granting you convenience is our mission, we cannot close our eyes from the fact that some inconveniences may confront you before, during and after this seminar. For such inconveniences, please accept our apology.

I would also like to take this opportunity to thank all the individuals and institutions for the direct and indirect support to make this seminar possible.

Yogyakarta, May 19, 2009

Sugirin, Ph.D.

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Seminar Time Table 19 May 2009

| Session | Room | Topic | Presenter | Paper | Moderator |
|--------------------|----------------------|----------------------------------|--|---|--|
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| Plenary 2 | As above | ELT Vocational Edu. History | Hlywell Coleman Abdul Wahid bin Mukdhar Tsuclaya Takeshi | Are 'international standard school' really response to globalisation? Malaysia TVET: Approaches in meeting global challenges Professional teacher development | Moderator Subani M Saleh Noto-toko Dyah S Ciptaningih |
| Parallel Session 1 | 1 | Language Test & Assessment | Lusi Nurhayati | Examining IELTS speaking tests | Nurik Supri |
| | | | Jarrahah | Planning portfolio assessment to measure students' learning in English language classes | |
| | | | Sugirin | Know what you are doing: learning-teaching theories behind the classroom practice | |
| | 2 | Citizenship & Character building | Ota Stepany | Challenges of education in a developing country in the globalization era | Dyah S Ciptaningih |
| | | | Sri Wining | The building of good character through value (moral) learning | |
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| | | | Theresia Kristiani Nugrahaningih | Senior high school students' meta-cognitive process in solving mathematics problems | |
| | | | Eko Mulyadi | The concept of trigonometry learning through singing methods | |
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| Diriyati | | | Research concept on sport pedagogy | | |
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| | | Nurhita | | | |

| Session | Room | Topic | Presenter | Paper | Moderator |
|---------------------|------|--------------------------------------|--|--|-----------------|
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| | | | Lia Mula dan Sudaradj | Improving student's reading skill (Leseverstehen) in German department by using ' Inqilabgram) | |
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| | | | Misboudah, Umi Rochayati dan Muhammad Munir | The integrated briefcase model: a teaching media in the practicum of digital electronics | |
| | 4 | Teaching in primary schools | Siebrig H. Schneider | Innovation of the lesson plan in primary levels | Caly Setiawan |
| | | | Hilmiati | Developing social skills through the teaching of poems to primary school students | |
| | | | Rosida Triana Manarang | Absolute study of language using soft skill methodology | |
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UTILIZING STAD STRATEGY FOR IMPROVING MATHEMATICS TEACHING-LEARNING PROCESSES

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Abstract

Based on condition of Mathematics teaching-learning processes before, showing that few students participated in lecturing. The data showed that average percentage of Mathematics score more than 65 were about 40%. It informed that just 40% of all students have enough provision for continuing learn advanced concepts of technical knowledge. Generally, more students just listened to lecturer's explanation, wrote concepts and examples of problem of topics which were being discussed. So that, effective teaching-learning strategy that capable to activate the students and improve their achievement in Mathematics course requires to be managed systematically and continually.

In this paper will describe the strategy which can improve the quality of Mathematics lecturing. The name of that strategy is STAD (Student Teams Achievement Division), because this strategy has been implemented in Electrical Technology Study Program in Faculty of Technology, State University of Yogyakarta. Efficacy indicators of this implementation were: (1) when students have participated actively in course classroom, (2) students have participated actively in finishing group duties. From those results, students would have improved their ability in comprehending course items.

Result of this implementation indicated that the STAD strategy succeed to improve the attitude of students in Mathematics lecturing. This efficacy indicator could be seen from student activities in following lecturing, also cooperation of among students in finishing duties were better than before. Another indicator was the increasing amount of students who dare to enquire in class at the time of lecturing take place. Besides, if it was seen from score of Mathematics course, there were about 52% of all students had score 65 or more that classified in enough good (C+) to very good categories (A). In another word, there were 52% of all students have had enough provision of Mathematics concepts for learning another advanced technical concepts. It was a good result because before applied this strategy it was just about 40% of all students got score more than equal 65. But, for some topics that have high difficulty, its need more intensive attention in implementation, which is differential and integral. Because, the lowest score of Mathematics course was in those topics, either individually or group. According to the result above, it is good for implementing this strategy on different course and different condition.

Key words: Student Teams Achievement Division, quality of Mathematics teaching-learning process.

I. BACKGROUND

In the curriculum 2002 of Electrical Technology Study Program places Mathematics as a core course (common ground) that expected could give student an elementary ability provision. By comprehending this subject matter well, hence student will be able to comprehend science and skilled subject matters and having masterpiece skilled subject matters well. Therefore, in structure of the curriculum 2002, Mathematics is placed in first semester.

Based on condition of Mathematics teaching-learning processes before, showing that few students participated in lecturing. The data showed that average percentage of Mathematics score more than 65 were about 40%. It indicated that most of student has not had enough mathematics knowledge background for studying next subject matter. From the condition, it could be predicted that many students finding difficulties in comprehending lecturing matter required mathematics basic concept. Finally, it also could be predicted that study length of student of Electrical Technology Study Program will become longer.

Many factors related to the low of ability of student in comprehending Mathematics. There are student's basic ability, student-learning motivation, learning strategy and tools-aid learning utilized by lecturer, etc. From those factors, student participation in learning process is important factor, which can increase result of student learning. Student participation in learning process can be accommodated through: a) teaching-learning strategy, b) teaching material, and c) management of feedback.

Result of reflection of Mathematics course implementation last time, showed that most of students less participate in lecturing. In general, students just listened lecturer explanation, noted concepts and example of problems that written down by lecturer in blackboard, and only few students proposed question. Besides, based on observation and supervision indicated that most of student does not have source of learning which suggested by lecturer. They just learned from note of course.

Starting from the phenomenon above, effective teaching-learning strategy that capable to activate the students and improve their achievement in Mathematics course requires to be managed systematically and continually.

II. THEORETICALLY REVIEW

A. Mathematics

According to Courant and Robbins (1969), Mathematics is an expression of human mind that reflected an active capability, common sense based on result of *tafakur* (think deeply), and desire for perfection, beauty which based from logic and intuition, analysis and construction, generalized and individualized. Russell (1967) defines Mathematics is a study which beginning from studying a real recognized parts (simple) towards unknown. More known direction organized good (constructive), systematically towards to be complicated (complex), from integer to fractional number, from real number to complex number, from quantifying and multiplication of towards integral and differential, and towards to higher level Mathematics. Definition from Russell explains whereof (ontology) and how structure (epistemology) of Mathematics.

Cockeroft in Liebeck (1984) explained that from the axiology aspect, Mathematics useful for human being everyday life, for science, commerce and industry. Therefore, Mathematics gives support (communication means) for describing and predicting something through symbols and language method (syntax) in developing logical thinking and has fascination aesthetic. Mathematics lecturing gives implication to recognition of values Mathematics as a: (1) equipment of ideas communications which can be quantification, (2) training for discipline thinking and logical common sense, (3) equipment of activities that emerging from requirement expansion of engineering technology, science, organization, economics, sociology etc. (Bishop, 1991).

Thereby Mathematics subject matter in Electrical Technology Study Program has dominant and strategic role in forming student common sense ability, for comprehending another advanced technical subject matter.

B. Result of Learning

Woolfolk and Nicolich (1984) define that, learning is an internal change in a person, the formation of new associations, or the potential for new responses. According to this definition, learning is a process of activity, not a result or purpose. Slavin (1991) explains that learning is a change happened in a person that caused by experience. Change that caused by growth, for example someone grow increases height, is not concept of learning. Slavin's learning definition is more clarifying that internal change in an individual student happened because of student experience in interaction with their surroundings.

Change of temporarily behavior or change because hypnotic influence, fear which menacing soul, or because maturity of physical are not be including learning. Definition above more clarified by Kimble in Hergenhahn and Olson (1997) that learning is changing potency of behavior that relatively permanent, result of strengthened practice. From Kimble definition, it means that change of individual behavior in interaction with their surroundings that managed in the form of education or practice with giving reinforcement (reward) will produce permanent change.

Based on various the studies, it is concluded that there is five elements in truth of learning, namely: (1) response potentiality, (2) a change in behavior, (3) relatively permanent), (4) experience or practice, and (5) reinforcement.

A student can be stated has learned, if internal condition and student processed cognition has interacted with stimulus from learning environment, and in the end of student learning activity happened behavior change. In teaching-learning process context, change of student behavior match to the planning, relatively permanent, can be observed and measurable. Related to ability that obtained as result of learning, Bloom and his friend (1990) formulates classification of learning in three areas that is: (1) cognitive domain, (2) affective domain, and (3) psychomotor domain. Those domain are usually called as taxonomy of education purposes. Cognitive domain includes result of learning that related to memory or recognition of knowledge, developing skill and high-level intellectual ability. Affective domain that developed by Krathwohl and Bloom (1990) more focused at result of learning, it depict about enthusiasm change, position, and sense. Psychomotor domain is result learning related to skill of human body motion. Then, Bloom leads thirty-six researchers from various universities to develop ability as result of cognitive domain learning, that is: (1) knowledge, (2) comprehension, (3) application, (4) analysis, (5) synthesis, and (6) evaluation.

Anderson and Krathwohl (2001) revised that theory, described in their book entitling *A Taxonomy for Learning, Teaching, and Assessing*. Reason of why purpose of education (that published in 1956) need to be revised, that is existence of a requirement for focused to problems faced by lecturer, now. Some the problems include how developing and making student learns, how lecturer designing and implementing teaching-learning program, arrangement competence based curriculum, and implementing authentic assessment. According to Anderson and Krathwohl, category of purpose learning in cognitive domain covers remember, understand, apply, analyze, evaluate, and create.

Based on syllabus of Mathematics course, implementing this subject matter has two interests, namely: (a) student can describe concepts discussed in Mathematics lecturing, and (b) student can apply concepts discussed in Mathematics lecturing into various electrical technology subject matters. Mathematics subject matter include number system and complex number, matrices, integral and differential for function with one independent variables.

C. Student Teams Achievement Division (STAD)

STAD strategy is one of co-operative learning models. This teaching-learning model emphasizes collaboration among student to achieve the purpose of study. Ibrahim (2000) stated that there are four certain characteristics in this model: (1) student worked in group co-operatively; (2) group of student formed from student whose high ability, medium, and low, (3) when possible, member of groups come from different tribe, race, culture, and gender, and (4) achievement appreciation more orientation for group than individual.

In mathematics learning processes, interaction among the students was an aspect that is frequently neglected. Lecturer in managing mathematics learning activities should organize an interaction among students and students with teaching material. The pattern of interaction among students would persuade some aspects, i.e. quality of student learning, attitude of student into mathematics subject matter, attitude of student in relationship with another, student self-regard, attitude of student into teaching-learning material.

There are three models of interaction among students during attending Mathematics lecturing that could be set. First, they compete for being the best in the class. Second, students learn individually to gain the purposes of course regardless of other students. Third, they study cooperatively and still learn as they learn individually.

In this paper, the third model will describe, because this strategy had been implemented in Electrical Technology Study Program (ETSP), Faculty of Technology, State University of Yogyakarta. Subjects of the implementation the strategy were all students of ETSP that taking Mathematics course. Efficacy indicators of this implementation were: (1) when students have participated actively in classroom, (2) students have participated actively in finishing group duties. From those results, students would have improved their ability in comprehending course items.

Steps of applying STAD strategy, include

1. Explaining purpose and motivating student
In the early of lecturing, lecturer explains purposes of lecturing and competence that will be reached. Besides, lecturer should motivate student to learn concepts that has obtained and will be obtained.
2. Describing information
Lecturer informs material of learning, given in brief explanation, explains applied problems or demonstrates steps of solving problems that given before or shows example of solving problems that discussed in teaching material (handout).
3. Organizing student into group of learning
Lecturer explains forming procedures of teamwork for finishing tasks and assists every group to do transition efficiently. Establishment teamwork can base on ability grouping or heterogeneity (variance) background, gender, and original residence.
4. Guiding group to work and learn
During students are doing group discussion or working in-group, lecturer does monitor and guide when they study or finish duty in-group.
5. Evaluation
Lecturer evaluates result of finishing duty each group or presentation result of finishing duty. Moreover, lecturer does not forget evaluate every student performance individually.
6. Giving appreciation
Lecturer determines technique to esteem result of either individual learning or group. Also, lecturer give feedback to result of either individual duty or group.

As described above, STAD is one of some approaches in co-operative learning. It is developed by Robert Slavin (Ibrahim, 2000). STAD is simplest co-operative learning model. There are three references for applying this strategy, namely:

1. Learning group, student in class clustered into some groups with member 4-5, every group should be heterogeneous.
2. Cooperation among students in their learning group, for helping each other to finish subject matter that has been planned.
3. Every week, lecturer gives academic information to student. It is for encouraging student always to go forward, compared to time before.

III. IMPLEMENTATION

There are some steps for applying STAD strategy in effort improving quality of Mathematics lecturing. Those are as follows

1. In the beginning, it need observing data about original residence, former school, national final exam score (UAN) for Mathematics, and student opinion/ impression of Mathematics, through fulfilling of brief questionnaire given lecturer.

2. Lecturer gives explanation syllabus of subject matter that will be implemented, reference books for supporting understand the concepts. In addition, it need explain evaluation system of Mathematics lecturing for assessing student achievement. There are five aspects that taken as material to give final score, as follows.

| ASPECTS | WEIGHT |
|---|--------|
| • Presence | 5% |
| • Activities student during lecturing (shown by proposing question and response of lecturer question) | 10% |
| • Homework/task either in group or individually | 10% |
| • Middle Examination | 25% |
| • Final Examination | 50% |

3. Still in the beginning, lecturer review Mathematics based concepts that needed for learning advanced concepts.
4. Based on early observing, the class is divided to some groups which every group contains 4 – 5 students and heterogeneous. Heterogeneity group is based on value UAN, former school, gender, and original residence.

(Those steps explained above is done in the early of first lecturing or week of lecturing)

5. Giving of teaching material in the form of handout is containing topics which will be studied at every meeting. This teaching material given step by step topic for the shake of topic. Giving of this handout strived is slowest one weeks before its(the solution is executed. This thing taken to make student is more focusly in studying concepts which will be discussed in lecturing.

6. After lecturing is started, started with giving of quiz about this topic of the in handout which has been allotted before all. From this activity will seen readiness of student in following lecturing at that moment.

7. During lecturing takes place given [by] opportunity to student to enquire. Besides also is given provocation that student dare to submit question.

8. By the end of lecturing is given [by] duty either having the character of individual and also group. For initial weeks is given [by] duty group of that same togetherness or job(activity among student can be formed carefully. For weeks hereinafter is given duty haves the character of individual and also group of in rotation. Duty individually applied to control student, did they only base on group or no, the problem of made in such a manner so that every student must do x'self duty which has been given.

9. If lecturing time still fulfilling, at around 10-15 minutes before lecturing ends given [by] quiz either having the character of individual and also group. For quiz done by usable group to observe interaction between students in finalizing duty. Having the character of quiz individually applied to watch ability and motivation of learning every student. At the next week is given [by] feedback from quiz result which has been done by student.

10. Each time there are duty which must be finalized student either having the character of individual and also group, always is given feedback which in the form of solution at problems that is in general student experiences mistake. Despitefully, also is given opportunity for student to enquire about problem which they have not comprehended.

11. And so do for Ujian Tengah Semester which has been given, given feedback in writing in the form of brief solution from the problems. Giving baited in writing this gone through remembers available time limited to study topics which has been determined in silabi.

IV. DISCUSSION

Applying of study method of co-operative with approach of STAD and feedback giving, gives result existence of position of student to lecturing of mathematics towards towards positive, later on had an effect on also at motivation they to study mathematics carefully and seriously. This condition also seems to be from acquirement of their terminal value. The applying is realized [by] through action of team-work enableness, individual job(activity, and giving of feedback at duties which has been done student. With the action, student has been given facility to get more alternative of way of learning, to comprehend concepts in mathematics is being studied it.

This strategy successfully gives potting to student to learn cooperating good with others, who is the existing with its(the friend one classes is in advance although initially they feel unable to need with group of this learning. This thing seems to be from friendliness between students following lecturing of either in class and also outside class. However the strategy must always is watched that in the group every member can participate active. This thing is because of after done [by] the several group duty, based on informal observation and interview with a few student they arise that there are some student that is less active in its(the group. To overcome this inactivity has been brought an action against always reminds the importance of cooperation and giving of individual duty as individual livelines control in lecturing.

Job(activity strategy individual is done by the way of giving duties which must be done x'self by every students. Action taken to take care of every student still can stand is active in lecturing. Also, that development of understanding of every student to concept which has been given is knowable until how far they master it. Despitefully, to give other alternative to student having character to like working self-supporting, this thing also is done based on input obtained from enquette admission filling.

V. CONCLUSION

As a whole if seen from process which has been done hence action which has been executed gives impact which are positive to position of student to lecturing Mathematics. They become braver arises question at the time of lecturing even has not all students. Also, has the forming of same job(activity which either among student.

On the other side, if seen from product which has been obtained from execution of action study of this class hence can be categorized enough succeeding. This thing is shown with number of students having value 65 or more, or admission in categorizing good enough (C+) until very good (A) around 52 %. But this condition has not gratified because student getting value 70 upward or good category admission (B) until very good (A) only around 10 %. Thereby seen from product, hence execution of this study needs execution which more intensive especially at the time of forwarding of integral and differential matter which duty value obtained by student either group and also individual is low compared to other matters. This thing is fair because level of second difficulty of the matter of course highest is compared to other matters.

Based on research result giving positive impact to improvement of quality of mathematics lecturing, can be suggested in expectation of execution of lecturing of other base can apply model who has been applied in this research. Mean, in lecturing need to be peeped out condition the importance of cooperation between students one otherly and giving of good feedback which student feels can obtain answer or solving of from problems which they find. Mouldable cooperation passed giving of group duties controlled by consorted [by] giving of individual duty. Giving of feedback always is passed to result of work from duties which has been made by student, more than anything else if unwillingly there are student questioning about things which they have

not comprehended.

As according to above the thing, felt need to be done research of action of this class with the same study model but with eye kuliah which is different and different condition also. Mean how level of its(the success if its(the lecturing executed at hour(clocks noon that is lecturing started at 1300 or evening. Because applying of this STAD strategy executed at lecturing done before at 1300

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