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**IMPROVING HIGHER ORDER THINKING SKILLS (HOTS) AND GOOD
CHARACTER OF STUDENTS OF FASHION THROUGH
THE APPLICATION OF HOTS-BASED ASSESSMENT FOR LEARNING (AFL)
MODEL IN LEARNING**

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IMPROVING HIGHER ORDER THINKING SKILLS (HOTS) AND GOOD CHARACTER OF STUDENTS OF FASHION THROUGH THE APPLICATION OF HOTS-BASED ASSESSMENT FOR LEARNING (AFL) MODEL IN LEARNING

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Abstract

The 21st century is the era of globalization followed by the era of knowledge and a very fast changing world. This of course has implications for many areas of life, including education in the field of fashion. Faced with these conditions, education in the field of fashion in higher education institutions should be able to prepare the next generation in order that they have the skills and habits of critical thinking, researching, problem solving, decision making, and good character, appropriately and wisely. Given this, it is very appropriate for education in the field of fashion in higher education institution to develop the higher order thinking skills (HOTS) and good character of students of fashion. Both of these can be achieved through the implementation of an integrated assessment models in learning, known as assessment for learning (AFL). At this context, then the model that can be applied is HOTS-based AFL model.

Accordingly, this paper presents the results of research on improving HOTS and good character of the students of fashion through the application of HOTS-based AFL models in learning. Model of HOTS-based AFL has proven to be effective to improve HOTS and good character of students of fashion.

Keywords: *Higher Order Thinking Skills (HOTS), Good Character, Assessment for Learning (AFL), the Students of Fashion.*

A. INTRODUCTION

The 21st century is the era of globalization followed by the era of knowledge and a very fast changing world. This of course has implications for many areas of life, including education in the field of fashion. Faced with these conditions, education in the field of fashion in higher education institution should be able to prepare the next generation in order that they have the higher order thinking skills (HOTS) and good character, appropriately and wisely.

Developing of HOTS for students of fashion in higher education institution is very important to develop abilities and skills of students comprehensively which include critical thinking, systematical thinking, logical thinking, applicative, analytical, evaluative, creative, problem solving, and decision making in an honest, self-confident, autonomy, and responsible.With this capability, then the student can determine the attitudes and behavior are good, and when good behavior is always done consistently it will form a good character in the students themselves. In other words, HOTS has a role in the formation of good character to students. In addition, students will also be able to compete in a global world and international relations.

Accordingly, it can be said that by having HOTS, the students have the skills and habits of critical thinking, researching, problem solving, decision making, and good character. The good character is reflected in the students' positive attitudes and behavior. This is in line with the opinion of Delisle (1997: 4) that in order to face the rapidly changing world, the education in the knowledge age (the 21st century) should develop the habit of thinking, researching, and solving problems. Similar feelings were expressed by Rose & Nicholl (2002: 13), namely that in order to deal with change very quickly, then the learners need to be given about how the provision of learning and how to think.

The above is in accordance with the demands of the workplace, including by Cotton (1993: 3), which states that employability skills consists of three components, namely: 1) basic skills, 2) higher order thinking skills (HOTS), and 3) affective skills and traits. With a different language but the same meaning, Robinson (2000: 1) use the term job readiness skills and job ready skills split into three groups as well, namely: 1) basic academic skills, 2) higher order thinking skills (HOTS), and 3) personal qualities. Therefore, to prepare graduates who have a ready work skills should include three components above and performed during the learning process takes place.

Given this, it is very appropriate for higher education institution to develop the higher order thinking skills (HOTS) and good character of students of fashion. Both of these can be achieved through the implementation of an integrated assessment models in learning, known as assessment for learning (AFL). This is supported by the results of research Barak & Dori (2009) which examines how to improve HOTS science student teachers through embedded assessment in learning. Barak & Dori found that by implementing an integrated assessment of learning, it can increase the HOTS students. At this context, then the model that can be applied is HOTS-based AFL model. By using this model, we can develop the students' HOTS and at the same time we also improve their positive attitudes and behaviors (good character).

In addition, it is widely believed that the application this model could prepare the students to become graduates having good character and have the ability to face the increasingly complex global challenges. By having HOTS, the students will have not only a positive attitude but also the ability to distinguish the good things from the bad ones, which in turn could lead them to have good character. The assumption is that by having HOTS, the students will be able to critically analyze the actions or attitudes and behaviors which are good and those which are not good that they can choose the best and positive for themselves, their family, their community, nation and state. Thus, it can be said that the development of HOTS for students indirectly has a very important role in the formation and improvement of college students' positive attitudes and behaviors (good character).

Accordingly, the application of the HOTS-based AFL model in learning in the classroom is an alternative strategy to improve the college students' HOTS and good character. Because, they have become increasingly important, especially in the face of an increasingly complex global challenges. Therefore, the purpose of this paper is to present the results of research on how to improve the HOTS and good character to students of fashion through the application of HOTS-based assessment for learning (AFL) model in learning. Specially, the objectives of this paper are:

(1) To describe of application form the HOTS-based AFL model is right for learning of fashion in higher education that are able and effective way to improve the HOTS and good character to students of fashion

(2) To describe the effectiveness of the application of the HOTS-based AFL model in learning to improve HOTS and good character to students of fashion.

B. LITERATURE REVIEW

1. Higher Order Thinking Skills (HOTS)

The simplest thinking skills are learning facts and recall, while HOTS includes the ability to applying, analyzing, evaluating, and synthesizing or creating. So, a person with the HOTS ability will be able to think critically and creatively, analyze, solve problem, and make decision quickly and appropriate. Therefore, inserting HOTS on learning outcomes is something very unusual for education quality improvement based on standards.

Accordingly, the HOTS is one of the components that need attention in earnest. The meaning of the HOTS term also been defined by some experts, namely Edwards & Briers (2000: 2), Thomas & Litowitz (1986: 6-7), Kerka (1992: 1), Bhisma Murti (2011: 2), APA (Spring, 2006: 2), Robinson (2000: 3), and Cotton (1993: 2). HOTS include learning skills and learning strategies are used, giving reasons, creative and innovative thinking, decision making, and problem solving. The various definitions of HOTS by the author elaborated into HOTS definitions used in writing this paper is on the higher level of thinking skills that require more complex thought process includes applying, analyzing, evaluating, and creating supported by the ability to understanding. So, the students be able: (1) to think critically; (2) to provide logical reasons, systematical, and analytical (practical reasoning); (3) to solve problems quickly and accurately; (4) to make decisions quickly and accurately; and (5) to create a new product based on what they have learned. Thus, to be able to develop these HOTS student must already have knowledge and comprehension. More specifically, the definition of HOTS is shown in Figure 1.
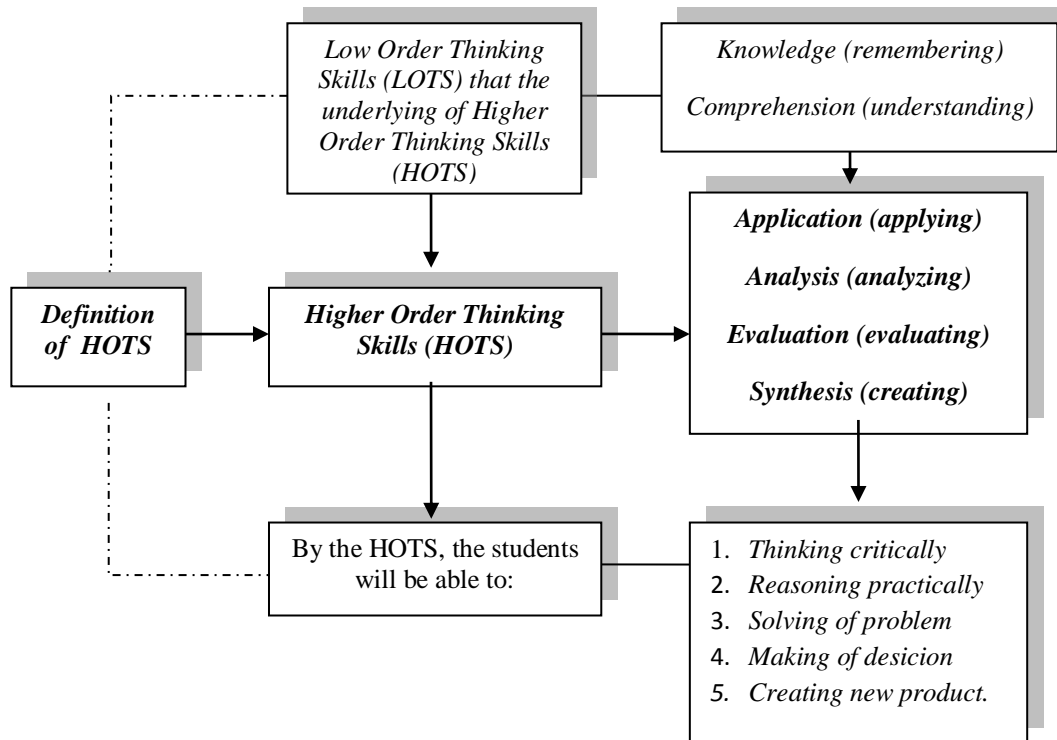
Figure 1. Definition of HOTS

For some people, HOTS can be done easily, but for others may not be possible. However that it does not mean HOTS can not be learned. Alison stated that as well as skills in general, HOTS can be learned by everyone. Alison further stated that in practice, HOTS in children and adults can develop (Thomas & Thorne, 2010). Just as Edward de Bono's opinion (in Moore & Stanley, 2010: 7) which states that if intelligence is innate, whereas thinking is a skill that must be learned. Therefore, the thinking skills necessary and very important for the improved and developed, and its development can be done through the implementation of   HOTS-based AFL model.

2. Good Character

Suyanto (2009) defines character as a way of thinking and behaving that characterizes each individual to live and work within the family, community, nation and state. Individuals are individuals of good character who can make decisions and be ready to account for any consequences of decisions he made. Similar delivered Suharjana's definition (2011: 27), namely that the character is a way of thinking, being, and acting that characterizes a person as well as a habit that is displayed in public life. Based on the definition of the characters that have been raised by two experts in the above, it can be concluded that in the character contained three key

words that way of thinking, being, and acting or behaving. Referring to the matter, in the context of this paper is the character is a way of thinking, being, and behaving that characterizes the habit of a person in public life. This character will be formed through a person's way of thinking that would lead one to take a stand (shaping attitudes), and this attitude will motivate and encourage to an action or behavior that is done consistently and persistently so that it becomes a habit.

By their very nature, a person's character can be divided into two, namely a good character (positive) and characters who are not good (negative). Both of which can be attached to a person, depending on the environment that influence it. Therefore, the college as one of institution that responsible to produce intellectual graduates, have a very important role and strategically in shaping the students' good character. The formation of good character can be done through a habituation way of thinking, acting, and good behavior (positive), both in the learning process and in the assessment process. A good way of thinking can be established through the development of HOTS which later can lead to the formation of a good attitude, and a good attitude will be realized in the form of good behavior.

Accordingly, it can be understood and concluded that a positive attitude is formed by positive thinking and a positive attitude can form good character. How positive thinking can be trained through habituation to think critically, analytically, solve problems, and make decisions, thus forming positive attitudes and behaviors, and ultimately formed a good character. A positive attitude may include: having a high learning motivation, honesty, self-confidence, autonomy, and responsibility. Therefore, a way of thinking and a positive attitude is necessary to continue increasing particularly among students. To achieve this, the system needs to be supported by an integrated assessment HOTS-based learning is called higher order thinking skills (HOTS)-based assessment for learning (AFL) on learning that can be applied in the field of fashion in college.

3. HOTS-based AFL Characteristics

The characteristics of HOTS-based assessment for learning (AFL) in the context of this study are as follows: (1) the process of assessment is integrated and on going with the process of learning; (2) the assessment process involves four elements of sharing learning goals and success criteria, using effective questioning, self-assessment and self-reflection, and feedback; (3) assessment process aims to improve and develop HOTS and positive attitudes and behaviors (good character) of students of fashion; (4) assessment process focuses on developing the ability to applying, analyzing, evaluating, and creating, so that students are able: to think critically,

give reason logically, analytically, and systematically (practical reasoning), to solve problems quickly and accurately, to make decisions quickly and accurately, and creating a new product, and not just to memorize or recall; (5) lecturers can give problems to students which need to be discussed and be solved in order to stimulate the students' activity of thinking; (6) assessment activities can be done through discussions, fieldwork, lab work, preparing lab reports, and students are asked to evaluate their own skills; (7) assessment can improve students' learning motivation; (8) assessment activities also encourage the students to perform self-assessment and reflection on the condition of their ability to master the material that they have been studied; and (8) the model can provide feedback that is able to correct errors or clarify errors (corrective feedback) to students.

4. The Application Form of the HOTS-Based AFL Model in The Learning of Fashion in Colleges

The application contexts of HOTS-based AFL model in the field of fashion learning in colleges is applying HOTS-based AFL that integrated in the learning process at the higher education. In this paper, the application of the HOTS-based AFL model in learning of fashion in higher education include the use of assessment systems that are as AFL in the classroom which aims to improve the HOTS and positive attitudes and behaviors (good character) of students of fashion. It is based on the idea that the students would be increased HOTS and positive attitudes and behaviors (good character) if they understand their learning objectives and how they can achieve that goal.

Referring to the opinion of the Assessment for Learning Guidance (2007: http://www.qcda.gov.uk/4334.aspx), then the application of an effective HOTS-based AFL model in learning of fashion in higher education includes several things: (1) sharing learning objectives and success criteria with the students, (2) to help students learn and recognize standards of learning objectives, (3) provide feedback that helps students to identify how to improve learning, (4) believe that every student can improve performance compared to previous achievement; (5) faculty and students jointly review and reflect on the performance and progress achieved by the student, (6) students are given the opportunity to learn techniques of self-assessment to find the areas they need and improve learning; and (7) identify motivation and self-esteem of students to achieve the progress and effective learning that can be enhanced by effective assessment techniques.

Accordingly, the application of the HOTS-based AFL model in learning in higher education to improve the HOTS and good character for students of fashion need to pay attention to key areas of the components and characteristics of the AFL, which are as follows:

- Sharing learning goals and success criteria
- Using effective questioning technique

- Give opportunity for the students to self-assessment
- Using marking and feedback strategies

The application form of the HOTS-based AFL model in learning that manifest in the syntax of preparation, implementation of the component of HOTS-based AFL model, and reporting of assessment results. The gathering of the information uses a set of assessment instruments of the HOTS-based AFL model, and the reporting of the assessment results is in terms of student's profiles, and the use of assessment information is in the form of feedback and reflection both for students and lecturers that aims to improve and enhance the quality of the results.

Accordingly, the application of the HOTS-based AFL model in learning field of fashion in colleges can indirectly be used to improve the students' HOTS and positive attitudes and behaviors (good character). Therefore, the application of the HOTS-based AFL model in learning can be used as a strategy to improve the HOTS and good character to students of fashion.

C. METHODS AND DATA SOURCES

This study is Classroom Action Research (CAR) which used model of Kemmis & Mc-Taggart, which was implemented in three cycles on learning in the field of fashion at   Clothing Engineering of Study Program, Faculty of Engineering UNY. The subjects were the students of S1 degree who are following the textile technology learning in the first semester of 2012/2013 at Clothing Engineering of Study Program, Faculty of Engineering, Yogyakarta State University, as many as 92 students and 4 lectures. The data are analyzed by using qualitative and quantitative approaches. The quantitative data are analyzed by using descriptive statistical techniques and the presented in form of as tables, graphs, and diagrams. Those data are also analyzed by using inferential statistical techniques namely by one-way ANOVA. The process of data analysis is conducted using Excel program and SPSS for Windows 17.0 program.

D. RESULTS AND DISCUSSION

The effectiveness test of the HOTS-based AFL model empirically conducted to determine whether the application of the HOTS-based AFL in learning field of fashion is able to improve the students' understanding and performance, the students' self-assessment and self-reflection,

the students' HOTS, the students' good character (positive attitudes and behavior) is to test whether no difference in average of the students' performance, the students' self-assessment and self-reflection, the students' HOTS, and the students' good character (attitudes and behavior) between cycle 1, cycle 2, and cycle 3.

Accordingly, then the effectiveness test of the HOTS-based AFL model empirically is done by using one-way ANOVA, where the measured variables include the students' ability to mastering and understanding of the learning material (performance), and the students' self-assesssment and self-reflection, the students' HOTS, as well as good character (positive attitudes and behavior) of students of fashion in each cycle. In this case, measurements were performed for three (3) cycles are cycle 1, cycle 2, and cycle 3, in each class. Through the analysis of variance of these lines, the results of the calculation of the one-way ANOVA, homogeneous subsets, and means plots are summarized in Table 2 and Table 3.

Table 2. Summary of The Result of Calculation of The Effectiveness of The HOTS-based AFL Model with One-way ANOVA

Effectiveness			Sum of Squares	Df	Mean Square	F	Sig.
Students' Performance (understanding & mastery of learning)		Between Groups	2251.204	2	1125.602	266.392	.000
		Within Groups	659.157	156	4.225		
		Total	2910.362	158			
Students' Self-assessment & Self-reflection		Between Groups	14.286	2	7.143	111.322	.000
		Within Groups	10.010	156	.064		
		Total	24.296	158			
Students' HOTS		Between Groups	4.182	2	2.091	19.458	.000
		Within Groups	16.762	156	.107		
		Total	20.944	158			
Students' Good Character (Students' positive attitude and behavior)	Motivation	Between Groups	18.314	2	9.157	49.811	.000
		Within Groups	28.679	156	.184		
		Total	46.994	158			
	Self-confidence	Between Groups	19.037	2	9.518	40.658	.000
		Within Groups	36.521	156	.234		
		Total	55.558	158			
	Honesty	Between Groups	13.010	2	6.505	34.191	.000

Table 2. Summary of The Result of Calculation of The Effectiveness of The HOTS-based AFL Model with One-way ANOVA

Effectiveness			Sum of Squares	Df	Mean Square	F	Sig.
Students' Performance (understanding &		Between Groups	2251.204	2	1125.602	266.392	.000
		Within Groups	659.157	156	4.225		
		Within Groups	29.680	156	.190		
		Total	42.690	158			
	Autonomy	Between Groups	37.968	2	18.984	136.403	.000
		Within Groups	21.711	156	.139		
		Total	59.679	158			
	Responsibility	Between Groups	7.232	2	3.616	11.891	.000
		Within Groups	47.435	156	.304		
		Total	54.667	158			

Source: Widihastuti (2013)

Looking at the Table 2, it appears that the probability value or significance of the students' understanding and performance, the students' self-assessment and self-reflection, the students' HOTS, and the students' good character (motivation, self-confidence, honesty, autonomy, responsibility) was 0.000 (p < 0.05). This means that: (1) there are significant differences in the understanding and performance of the students of fashion between cycle 1, cycle 2, and cycle 3; (2) there are significant differences in the self-assessment and self-reflection of the students of fashion between cycles 1, cycle 2, and cycle 3; (3) there are significant differences in the HOTS of students of fashion between cycle 1, cycle 2, and cycle 3; (4) there are significant differences in the learning motivation of the students of fashion between cycle 1, cycle 2, and cycle 3; (5) there are significant differences in the self- confidence of the students of fashion between cycle 1, cycle 2, and cycle 3; (6) there are significant differences in the honesty of the students of fashion between cycle 1, cycle 2, and cycle 3; (7) there are significant differences in the autonomy of the students of fashion between cycle 1, cycle 2, and cycle 3; and (8) there are significant differences in the responsibilities of the students of fashion between cycle 1, cycle 2, and cycle 3. Furthermore, to determine whether the three groups was significantly different cycle than other cycle groups can be seen from the output of homogeneous subsets in Table 3.

Table 3. Summary of The *Homogeneous Subsets* at The Caluculation of The Effectiveness of HOTS-based AFL model with The One-Way ANOVA

Tukey HSD[a,,b]

EFFECTIVENESS ASSESSMENT		CYCLE	N	Subset for alpha = 0.05			Means Plots
				1	2	3	
Students' Performance (understanding & mastery of learning)		Cycle 1	53	84.2736			
		Cycle 2	53	84.5058			
		Cycle 3	53		92.3692		
		Sig.		.830	1.000		
Students' Self-assessment & Self-reflection		Cycle 1	53	1.2736			
		Cycle 2	53	1.2796			
		Cycle 3	53		1.9125		
		Sig.		.992	1.000		
Sudents' HOTS		Cycle 1	53	2.287			
		Cycle 2	53		2.460		
		Cycle 3	53			2.683	
		Sig.		1.000	1.000	1.000	
Students' Good Character (Students' positive attitude and behavior)	**Motivation**	Cycle 1	53	2.9245			
		Cycle 2	53		3.3019		
		Cycle 3	53			3.7547	
		Sig.		1.000	1.000	1.000	
	Self-confidence	Cycle 1	53	2.6868			
		Cycle 2	53		3.0943		
		Cycle 3	53			3.5342	
		Sig.		1.000	1.000	1.000	
	Honesty	Cycle 1	53	3.0170			
		Cycle 2	53		3.3849		
		Cycle 3	53			3.7174	
		Sig.		1.000	1.000	1.000	
	Autonomy	Cycle 1	53	2.7491			
		Cycle 2	53		3.2075		
		Cycle 3	53			3.9358	
		Sig.		1.000	1.000	1.000	
	Responsibility	Cycle 1	53	3.0251			
		Cycle 2	53		3.3019		
		Cycle 3	53		3.5472		
		Sig.		1.000	.060		

Source: Widihastuti (2013)

Next look at the Table 3, it can be stated that the HOTS-based AFL model is able to improve effectively: (1) the understanding and performance of the students of fashion; (2) the self-assessment and self-reflection of the students of fashion; (3) the HOTS of the students of fashion; (4) the learning motivation of the students of fashion; (5) the self-confidence of the students of fashion; (6) the honesty of the students of fashion; (7) the autonomy of the students of fashion; and (8) the responsibility of the students of fashion in colleges.

Based on the Table 2, Table 3, and the above descriptions, it can be concluded that the application of the HOTS-based AFL model in the learning field of fashion in colleges were able to significantly improve the students of fashion abilities, which include: understanding and performance, self-assessment and self-reflection, HOTS, good character (motivation to learn, self-confidence, honesty, autonomy, and responsibility). This is evidenced by the significantly increased at each cycle, so that it can be said that the HOTS-based AFL model is effective to improve the understanding and performance of the students of fashion, the self-assessment and self-reflection of the students of fashion, the HOTS of the students of fashion, and the good character of the students of fashion including motivation to learn, self-confidence, honesty, autonomy, and responsibility.

E. CONCLUSION

The results of research showed that: (1) The form of application of the HOTS-based AFL model is manifested in the form of syntax that includes three stages: the preparation phase, the implementation phase, and the reporting of assessment results phase; (2) The application of the HOTS-based AFL model in the learning was able to significantly improve the HOTS and good character of the students of fashion, as evidenced by the significant improvement in each cycle. Thus, it can be said that the HOTS-based AFL model was effective for improving HOTS (applying, analyzing, evaluating, creating) and good character of the students of fashion in colleges.

F. Benefits of Research

With the application of the HOTS-based AFL model in learning for students of fashion, it is expected to benefit both theoretically and practically. Theoretically, it is able to contribute ideas about the theory and application of HOTS-based AFL models in learning of fashion, and particulary to teaching and learning of textile technology for students of fashion in higher education.

Practically, the benefits of the application of the HOTS-based AFL model in the learning of fashion for students of fashion in colleges are as follows:

1. For lecturer of learning of fashion, this model can be used as a reference in applying students' assessment model as an effort to improve the HOTS and good character of the students of fashion in colleges.

2. For students, the application of the HOTS-based AFL model can: (1) provide information about the HOTS level of each student; (2) provide information in accordance with the actual situation both weaknesses, problems faced, the requirements, and the strength of the students; (3) provide the opportunity to develop and improve HOTS that can assist the students in understanding and mastering the field of fashion instructional materials in general and specifically on learning textile technology; (4) know the students' strengths and weaknesses to the master of textile technology; (5) encourage them to get self-assessment so that they can grow their awareness, get motivated, self-confidence, autonomy, and responsible for their own learning; (6) obtain positive feedback from lecturers that can be used to correct flaws and improve the strength

3. For the world of science, the results of this study can be used to enrich the knowledge, especially in the field of educational assessment and learning in general and the field of clothing specifically on learning textile technology.

4. For lecturers in general, the results of this study can be used as a reference and a reference in developing models for HOTS-based AFL appropriate learning based on their respective fields.

5. Institute for Workforce Education (LPTK), then the results of this study can be used as one way to improve the quality of graduates and students' learning, especially for the students of fashion in vocational education in colleges, and in general to improve the quality of education in college .

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