THE EFFECT OF USING HEURISTIC STRATEGIES ON LEARNING OUTCOMES MAKING BLOUSE STUDENT CLASS X SMKN 3 MALANG

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ABSTRACT

Heuristic strategy is a learning strategy that requires students to actively engage in message processing, centered on students and aims to develop intellectual ability, critical thinking and problem solving. This study aims to examine the effectiveness of heuristic strategies in the learning practice of making blouses, compared with conventional learning strategies, in the class X students of Fashion Program Study in SMKN 3 Malang. Using Quasi experimental methods supported by documentation and tests. The t test is used to measure the difference between the mean score of learning outcomes between students in the experimental group and the control group. The results showed that student learning outcomes on blouse making materials using heuristic learning strategy is higher when compared with student learning outcomes taught using conventional learning strategy. Effective heuristic learning strategy is used to teach blouse in grade X students of SMKN 3 Malang Fashion Studies Program.

Keywords: heuristic strategy, learning result of blouse making

1. INTRODUCTION

Vocational High School is organized to prepare students to be able to work independently or to fill the employment field in the business world and industry as middle-level workforce, in accordance with the field of expertise or entrepreneurship. Directorate of Training Course and Training Directorate General of Early, Nonformal and Informal Education Ministry of Education and Culture Year 2014, explains that efforts can be made to anticipate the challenges of globalization in the employment sector by improving the resilience of national education and training system through various, (1) improve the quality of education and training, (2) develop a system of equality of learning achievement qualifications gained through education and training, work experience and independent experience with competency criteria required by a particular field and level of work,(3) promote mutual cooperation and mutual recognition between producer institutions and labor users, (4) increase the recognition and equality of Indonesian labor qualification with other countries in the world, both on the achievements of the learning set by the education and training institutions as well as the competence criteria required for a particular field and level of work. From this explanation can be concluded that to improve the quality of workforce in Indonesia need an improvement of education quality.

According to Gagne & Briggs (1974: 239) process strategies determine much of learning outcomes, thus to improve the quality of education in vocational schools, the need for a process strategy in the process of learning and teaching. This process strategy involves the way the teacher performs the actual teaching-learning process

in the classroom, so that the planned lesson can show its influence directly to the student's success. Skill is the ability of a person to do a job involving the trained senses, repeatedly in the form of organized and coordinated action. Sewing is a motor skill, in which one develops a set of responses into a coordinated, organized and integrated motion (Ravianto, 1985: 15, Lutan, 1988).

Practice making blouse is a subject of skills that exist in the grade X student of Fashion Program Study at SMKN 3 Malang. The main purpose of this learning is that students have the knowledge and skills in making blouses. The material of blouse is a material consisting of theory and practice. Students should understand the theories of making blouse steps that include, take the size, make patterns, pattern breaks, cut and sewing techniques used. In order for the purpose of this learning can be successful with a well needed learning strategy in accordance with the material being taught.

From the preliminary study, it is seen that less effective learning, where the work of teachers is very heavy because they have to teach and check the work of each student. This makes the teacher's work very much, the time spent is very long, in this case called learning using conventional methods. To overcome this, researchers want to try heuristic learning strategies to find a solution of this problem. The purpose of this research is to examine the effectiveness of heuristic strategy on learning practice of making blouse, compared with conventional learning strategy, at grade X student of Fashion Program Study at SMKN 3 Malang, Then find an effective method to teach the practice of making a blouse in the Department of Clothing SMKN 3 Malang.

Selection of Learning Strategies

Dick & Carey (1985) uses the term learning strategy to explain the step sequence of processes and content settings, determine learning activities, and decide how the content will be delivered. The making of a learning strategy encompasses the overall use of the information that has been collected and produces an effective plan for presenting teaching for students. Majid (2014: 108) explains that the teacher's consideration in choosing learning strategy refers to some of the suitability of the strategy with (1) the objectives to be achieved, (2) the type of knowledge to be conveyed, (3) targets (initial ability, student characteristics) 4) cost, (5) group or individual learning, (6) advantages and disadvantages of the strategy, (7) time.

From the message processing strategy, this strategy is divided into deductive strategies and inductive strategies. Deductive strategy is a learning strategy with message processing process that starts from things that are general to specific and include, (1) teacher put forward generalization, (2) explanation of concept, (3) searching data conducted by student. While the inductive strategy is a strategy where the process of message processing takes place from a special case to a general nature.

Inductive strategy steps outlined in (1) the submission of data / facts or special events, (2) the preparation of factual concepts, (3) generalizations based on concepts, (4) generalization applied to new data, (5) concluding remarks.

There are so many learning strategies that teachers can choose to deliver materials to students. Selection of learning strategies must be tailored to the material to be taught, the objectives to be achieved, the characteristics of students and also existing supporting facilities, so as to provide optimal results. One type of learning that teachers can choose and apply in the learning of blouses is heuristic learning.

According to Anitah (2007: 150, Riyanto, 2010: 137, Hasibuan and Mudjiyono, 1999: 4), explains that heuristic learning is a material or subject matter processed by students. Students who actively seek and process materials or subject matter. Teachers as facilitators to provide encouragement, direction, and guidance in solving problems faced by students in achieving goals (Lidinillah, 2011).

The purpose of learning is very important for teachers related to the selection of methods to be used in learning. The purpose of learning is the goal to be achieved which is the ability and skills that must be owned by students after following the learning process. Heurustic strategy is a learning strategy that wants students to be actively involved in the learning process. This strategy is more student-centered and aims to develop intellectual ability, critical thinking and problem solving faced by students, so that students dare to explore in the discovery and problem solving faced. Making blouses is a subject matter in practice that requires problem solving. Students are required to be able to think in understanding a fashion design, then designing that model into a comfortable clothing worn. Therefore, problem solving becomes very important in learning the practice of making clothes. The mastery of each standard of competency should always be preceded by the basic competencies related to the competency standard. Before students can do blouse making, the student must master the material about fashion design, take the size, make patterns, cut and master the sewing technique properly.

Heuristic Learning Strategy

According to Schoenfeld (1980) in Krulik (1995), explains that, "Heuristic will be used here to mean a general suggestion or strategy, independent of any particular topic or subject metter, that helps problem solver approach and understand a problem and efficiently marshal their resources to solve it." In that sense, heuristics can be called a general strategy unrelated to the subject matter that helps solve the problem in an attempt to approach and understand the problem and use its ability to find solutions to problems.

Heuristics are common steps in solving problems to find solutions to the problem. A study of problem solving and learning can not be separated from the heuristic role as a strategy in the problem-solving process. Learning using problem solving means teaching the heuristic way of thinking that contains more detailed steps, (Lidinillah, 2011).From some opinions above can be concluded that the strategy of heuristic learning requires students to be active in understanding the material that requires understanding and problem solving, with knowledge and skills that have been previously owned.

In blouse making a lot of problems encountered and must be solved by students with the help of teachers. This is in the start of reading the design of the blouse to be made up into a blouse that is ready to wear. The most common problem is an improper fitting point or an uncomfortable blouse worn. This problem must be solved, because otherwise the blouse will not be worn. In making blouse, if one of the process pengerjaanya wrong, then the result so blouse certainly not comfortable to wear, maybe even not be worn. Practice making blouses concerning cognitive, affective and psychomotor aspects or complex skills. Before making a blouse the student must think about what steps to take, because each model requires analysis and understanding of suitable materials, as well as accessories to be installed when needed

The affective aspect has in learning to appreciate the value of the object encountered through the nature of the feeling, whether the object is a person, thing

or event / event and how to express that feeling in the form of a reasonable expression (Winkel 1987: 41). Psychomotor aspects can be seen from the work skills of students, the timeliness is used with a minimum of errors or none at all. Opinion is in accordance with what was expressed by John & Wittaker (1985), that cognitive skills, perceptions and movement or motor behavior is an integrated activity in work activities. Therefore cognitive and perceptual skills are needed to produce skills. According to Polya in Reys, 1998: 76), the solution of problem solving contains 4 steps of settlement, namely: (1) understanding of the problem (see)2) planning of problem solving (plan); (3) carry out the planning problem solving (do); and (4) checking the checks.

This study was conducted in 2 classes that were taught using different learning strategies. For the control group, students are taught using conventional learning strategies, where the teacher teaches how to take a measurement, then draws a pattern on the blackboard, and the students are told to follow it, then the patterns are checked one by one. The next step is cutting and sewing. This strategy makes the teacher very tired of having to check all the patterns made by the students, in addition to the time used to be very long. Using heuristic learning strategies researchers try to find solutions to make learning more effective. Using Polya solving solutions (in Reys) these steps can be learned and taught to the student in learning to sew a blouse. The blouse to be made in this study is a blouse with a collar and variations of sleeveless arm wearing a construction pattern. Materials given to both groups (experimental groups and control groups alike). The heuristic learning process in teaching the blouse process begins with the appearance of 2 students to take each other in making a blouse, witnessed by all the friends in one class, then students are told to write the results on the board. This activity is then continued by creating a pattern with each size. Here the problem will arise because the size of each student's body is not the same, students start thinking to create a pattern according to the size of each, which then proceeded to cut and sew. Teacher strategy is done by dividing the class into several groups, each group consists of 4-5 people with heterogeneous group members there are clever and some are less clever. The purpose of this group division is so that clever students can help their less intelligent friends, so that all students understand what to do. Teacher's job controls what all students do, so that no one makes mistakes in making blouses, also help find a solution if there is a problem faced by students. Making a blouse is a long process, done through many stages. Every step should not go wrong, because the error will make the final result less perfect.

Learning Outcomes

According to Jihad and Haris (2012: 14) the result of learning is the attainment of behavioral change form that tend to settle from the cognitive, affective, and psikomotoris through the learning process done at a certain time. Learning outcomes are the abilities students have after learning experiences, after the learning process ends. Learning outcomes have an important role in the learning process, which can be used to determine the extent to which students can understand and understand the material. Hamalik (2004: 31) explains that learning outcomes are patterns of action, values, knowledge and attitudes, appreciation, abilities, and skills.

Reigeluth and Merril (1979) in Degeng (1989: 186) suggest that measurement of teaching effectiveness should always be linked to achievement of objectives. There are four important indicators that can be used to establish the effectiveness

of teaching, which then by Degeng plus 3 more indicators, so be 7 indicators. The indicators are, (1) the accuracy of behavioral mastery, (2) the speed of performance, (3) compliance with the procedure, (4) the quantity of performance, (5) the quality of the end result, (6) the transfer rate, and (7) retention rate. The accuracy of mastery of behavior can be used to establish the effectiveness of teaching. The more carefully the students master the learned behaviors, the more effective the teaching becomes. Kemp (1985: 230) gives guidelines on the effectiveness index (1) the percentage of students achieving the goal mastery level, (2) the average percentage of goal mastery achieved by all students.

These seven indicators are in fact rarely used in their entirety to determine the effectiveness of a teaching. Options need to be made based on the objectives to be achieved. Skill teaching makes blouses, which will be measured in the quality of the end result, in addition to the manufacturing process and speed

2. RESEARCH METHODS

This research is a quasi experimental research because random sampling by randomizing the class can not be done. To determine the control group and experimental group is done by using coin Rp. 500,00. When the bird image comes out or above, it means the XA class becomes the experimental group and the class XB becomes the control group. The experimental group is the treatment-treated group, with a heuristic strategy of learning. While the control group is a group that is taught using conventional learning. Population in this research is the student of X class of Department of Clothing Department SMKN 3 Malang. The sample of the study or subject to be studied is all students of class X. Both of these groups (experiments and controls) were assumed to be the same in all relevant aspects, and differed only in the "t" test treatment, were used to determine whether there was a significant difference between the experimental and control groups before being treated on average pre-requisite values them, and to control that no other variables influence the results of the study.

The design of this study used a static group comparison design or The Static-Group Comparison, because the pre-test could not be implemented. The design is illustrated in the table below.

Table 1. The Design Chart of Static-Group Comparison

Group	Treatmen	Post-Test
Eksperimen	X	O
Control	-	O

(Moore, 1983: 171)

X = treatment given to the experimental group
O = measurement on post-test

Measurement of validity is done using construct validity, since the items constructing the test measure every aspect of thinking as mentioned in the learning objective.

3. RESEARCH RESULT AND DISCUSSION
a. Result

From the result of the analysis the difference of mean score between the students who taught using heuristic learning strategy and conventional learning strategy is presented in the table below.

Table 2. Results of Differences in Average Value Analysis

Value	N	Eksperimen	Control	db	t
Theory	29	72,4138	66,8103	56	1,73
Practice	29	70,2931	66,4138	56	3,169
Theory & Practice	29	71,3534	66,6207	56	2,649

From the summary of the results of the analysis between the experimental group and the control group shows that the students' learning outcomes from the experimental group is higher when compared with the control group learning outcomes.

From the t test conducted on the combined values between the theory and practice values between the experimental group and the control group obtained t = 2.649 at the level of trust 0.05 (db.56) = 1.6736 or t count> of t table means there is a difference significant intermediate learning outcomes between experimental and control groups on theoretical and practical lessons made blouses between students taught using heuristic learning strategies and conventional learning strategies. This means that there is an influence of the use of heuristic learning strategies to the learning outcomes of blouse making. Student learning outcomes taught using heuristic learning strategies are higher when compared with student learning outcomes taught using conventional strategies.

The result of t test for theoretical material of sewing between experimental group and control group obtained t arithmetic = 1,730 at level of trust 0,05. Because t arithmetic> from t table 1.6736 it can be concluded that there are significant difference of learning outcomes between experimental group and control group on the theoretical material of making blouse. This means that student learning outcomes are taught using heuristic learning strategies higher when compared with student learning outcomes taught using conventional strategies.

The result of practical value analysis between experimental group and control group obtained t value = 3,169 at level of trust 0,05. This means t count> t table (1.6736). In conclusion there was a significant difference between the experimental group and the control group on the practice material making the blouse. This means that the results of practice learning make blouses on students who are taught using heuristic learning strategies higher than the students taught using conventional methods.

b. Discussion

A learning will work well if designed well. Student learning outcomes are taught using heuristic learning strategy is higher when compared with student learning outcomes are taught using conventional learning strategies.This happens because in the heuristic learning strategy students are taught how to solve problems and learn to think to find solutions to problems encountered.Making blouses is a practical learning done through several stages.If in the process there is something wrong then the result is not perfect. A dress when the manufacture is not perfect would not be comfortable worn, maybe even not be used. In learning sewing a lot of problems to be solved students, therefore required a lesson that will help overcome the problem.

Heuristic strategy makes students more easily understand the material taught, so the mastery of the material faster.

The burden of teachers is reduced because they do not have to correct and supervise their students one by one. It can be seen from the result of the research between the experimental group and the control group shows that the students' learning outcomes from the experimental group is higher when compared with the control group learning outcomes.

In accordance with the opinion of Reigeluth and Merril (1979) in Degeng (1989: 186) that the measurement of the effectiveness of teaching should always be linked to the achievement of objectives. The accuracy of mastery of behavior can be used to establish the effectiveness of teaching. The more carefully the students master the learned behaviors, the more effective the teaching becomes. Using heuristic learning strategies, can improve student learning outcomes in blouse making, this is in accordance with the results of research on the value of the theory, the value of practice and the combination between the value of theory and practice values between the experimental group and the control group. The analysis shows that the learning outcomes of students who are taught using heuristic learning strategies are higher when compared with student learning outcomes that are taught using conventional learning strategies. This finding is reinforced by the opinion of Kemp (1985: 230) that the percentage of students achieving the goal mastery level, and the average percentage of mastery achieved by all students, is an index of effectiveness in learning.

4. CONCLUSION

Heuristic learning strategies can be used to improve student learning outcomes in blouse-making materials, as these strategies can help solve problems with approaches in understanding the problem and use its ability to find solutions to problems facing students. Student learning outcomes that are taught using heuristic learning strategies are higher when compared with student learning outcomes that are taught using conventional strategies on mastery of theory, practice and the combination of theory and practice of making blouses. Effective heuristic learning strategy is used to teach the material of making blouse on the students of Department of Fashion SMKN 3 Malang. Teachers need to consider the suitability of the learning strategy to be accomplished with the objectives to be achieved, the type of knowledge to be conveyed, the objectives (initial capability, student characteristics), cost, (5) group or individual learning, the advantages and disadvantages of the strategy, required, this is in accordance with Majid's (2014: 108) opinion.

REFERENCES

Anitah, Sri, 2007, *Strategi Pembelajaran*, Jakarta, Universitas Terbuka,

Arikunto, Suharsimi, 2007, *Dasar-Dasar Evaluasi Pendidikan*, Jakarta, Bina Aksara.

Direktorat Pembinaan Kursus dan Pelatihan Direktorat Jenderal Pendidikan Anak Usia Dini, Nonformal dan Informal Kementerian Pendidikan dan Kebudayaan 2014.

Degeng, I Nyoman Sudana, 1989, *Ilmu Pengajaarn Taksonomi Variabel*, Depdikbud Dirjen Dikti P2LPTK.

Dick, W., & Carey, L., 1985, *The Systematic Design of Instruction*, Second edition. Glenview, Illionis:Scott, Foresman and Company.

Gagne, R.M,. & Briggs, L.S., 1974, *Principle of Instruction Design*, Holt Rinehart and Wiston, New York.

Hamalik, Umar, 2008, *Perencanaan Pengajaran Berdasarkan Pendekatan Sistem*, Jakarta, Bumi Aksara.

John, J.E., 1975, *Testing Instructional Skill*, Essex UK: Gower Press.

Kemp, J.E., 1985, *The Instructional Design Process*, New York:Harper and Row.

Krulik, Stephen dan Rudnick, Jesse A. (1995). *The New Sourcebook for Teaching Reasoning and Problem Solving in Elementary School.* Boston : Temple University.

Lidinillah,,D.A.M., 2011, *Heuristik Dalam Pemecahan Masalah Matematika dan Pembelajaran di Sekolah Dasar*, Jurnal Eletronika UPI.

Luthan, 1088, *Belajar Ketrampilan Motorik, Pengantar Teori dan Metode*, Jakarta, P2LPTK Dirjen Dikti Depdikbud.

Majid, Abdul, 2014, *Strategi Pembelajaran*, Bandung, Remaja Rosdakarya

Ravianto, 1985, *Produktifitas dan Manusia Indonesia*, Jakarta, SIUP.P30.

Reigeluth, C.M. dan Merril, M.D., (1979), *Classes of Instructional Variables".* *Educational Technology*, 19(3).

Riyanto, Yatim., 2010, *Paradigma Pembelajaran sebagai Referensi bagi Pendidik dalam Implementasi yang Eefektif dan Berkualitas*, Jakarta: Prenada.

Winkel, W.S., 1987, *Psikologi Pengajaran*, Gramedia, Jakarta