Interactive Multimedia-Based Animation: A Study of Effectiveness on Fashion Design Technology Learning

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Abstract. The learning process is believed will reach optimal results if facilitated by diversity of learning's device from aspects of the approach, method, media or it's evaluation system, in individually, groups, or as well as classical. One of the learning's Device can be developed in an attempt to improve the results of the study is Computer Based Learning (CBL). CBL was developed aim to help students to understand the concepts of the learning material which presented interactively by the system and able to provide information and learning process better. This research is closely related to efforts to improve the quality of Fashion design in digital format learning, with specific targets to generate interactive multimedia-based animation as effective media and learning resources for fashion design learning. Applications that are generated may be an option for delivering learning material as well as to engender interest in learning as well as understanding with students against the subject matter so that it can improve the learning achievements of students. The instruments used to collect data is a test sheet of mastering the concept which developed on the basis of indicators understanding the concept of fashion design, the material elements and principles of fashion design as well as application on making fashion design. As for the skills test is done through test performance to making fashion design in digital format. The results of testing against the mastery of concepts and skills of fashion designing in digital formatted shows that experimental group obtained significantly higher qualifications compared to the control group. That means that the use of interactive multimedia-based animation, effective to increased mastery of concepts and skills on making fashion design in digital format.

1. Introduction

The development of information technology in recent years has been growing at a very high pace, so that with this development has changed the paradigm in the life of society, one of them is in the field of education. New technologies, especially in the field of ICT have an increasingly important role in learning. Many people believe that multimedia will bring us to the learning situations where "learning with effort" will be replaced by "learning with fun". Especially in adult learning, learning with effort becomes quite difficult to implement because of various limiting factors such as age, ability to catch, willingness to try, and others. So the fun, creative, not boring learning process being the choice of the facilitator. If such learning situations are not created, at least multimedia can make learning more effective in the opinion of some teachers. At this moment we all understand that "learning processes" need to be developed through an active and participatory, constructive, cumulative, and goal-oriented process of learning, both General Learning Objectives and Special Purpose Learning Goals.

Fashion Design Technology as one of the courses developed through the structure of the lecture is entirely directed at the mastery of technology systems in the manufacture of fashion design. Rational
steps that need to be taken to realize the objectives of learning, one of which is to develop learning programs that optimize the whole process of teaching and learning. One component of education that can be developed in the learning process and assumed to have a fairly good influence in the effort to implement the teaching objectives of Fashion Design Technology, is to develop effective and efficient learning media, which can fully support the learning of Fashion Design Technology, then Student behavior in accordance with the objectives to be achieved.

Learning media used today is more diverse, ranging from conventional media such as books or traditional props to modern audio visual media such as cassettes, videos, and other modern performances. Learning media used to facilitate communication in teaching and learning process, strived optimally to be able to foster creativity and motivation in learning activities to improve the quality of education. One of the media used in learning and believed to be more exciting student interest in the lecture is an interactive learning media based on animation.

An interactive learning media based on animation is one of alternative that believed can optimize learning activity based on computer technology. This interactive multimedia application provides learning materials with a more interesting and informative display, it is expected to facilitate and increase student interest to learn. Learning media is a very important component in helping the learning process, as an effort to reduce the level of teacher's verbal, so as to optimize the level of students' understanding of the material being taught. The presentation of interesting and informative learning media can increase the interest of students in following the learning process. In addition, based on various studies conducted on the implementation of multimedia use in the learning process obtained data that the use of multimedia in the learning process can improve learning motivation, can support the effectiveness and efficiency of learning, and can improve the achievement of learning objectives that have been determined, one of the indicators of skills Fashion Designing in digital format. The development of interactive learning media based on animation is also believed to facilitate the teaching and learning process that optimizes the use of computer technology in teaching and learning process, as well as on learning Fashion Design Technology.

Several studies conducted on the implementation of interactive multimedia in the learning process showed that multimedia effectively able to improve learning outcomes significantly. Dongsong Zhang (2005) conducted two experiments to assess the effectiveness of the implementation of interactive multimedia e-learning, and obtained research results where students who are fully integrated in an interactive multimedia e-learning environment achieve better performance and higher levels of satisfaction than conventional class in a non-interactive e-learning environment. Another research was conducted by MI Jawid Nazir, Aftab Haider Rizvi, Ramachandra V Pujeri (2012) who conducted research on skills development on multimedia-based learning in higher education environments, and the results showed that multimedia-based instructional formats helped in better understanding, Innovative teaching methodologies, providing an excellent opportunity to interact and help in conducting discussions in a self-controlled way.

Based on the background and some research results as described before, it would be necessary to develop learning by utilizing interactive multimedia, which will then be investigated how the influence of the use of interactive multimedia is to increase students' creativity skills in the making of fashion design digital format.

2. Literature Review

Learning media is one of the components supporting the success of teaching and learning process. According to RI Law No.20 Year 2003 Article 1 paragraph 20: "Learning is the process of interaction of learners with educators and learning resources in a learning environment". Media in learning has a function as a tool to clarify the message conveyed by the teacher. Media also serves for individual learning where the position of the media fully serve the learning needs of students. According to Edgar Dale In Prasetyo (2007 page 16), it is explained that: In general the media has the utility of: clarifying messages to be less verbal, overcoming the limitations of space, time, energy and sensory power, causing passion of learning, more direct interaction between students with sources Learning, enabling children to study independently in accordance with their talents and visual skill, auditory and kinesthetic abilities, providing the same stimuli, likening experiences and generating the same perception.
The use of media in learning give many benefits to the learning process. From the benefits, the use of learning media in the learning process can generate new desires and interests, generate motivation and stimulation of learning activities, and even bring psychological influences on students. In addition to generating student motivation and interest, appropriate media selection will be able to help students improve understanding of learning, can present data in an interesting and reliable way, facilitate the interpretation of data, and can compact the information submitted. Kemp and Dayton in Prasetyo (2007, page 7) describe that the use of media in learning has very positive benefits, as follows: 1) Submission of materials can be uniformed, 2) The learning process becomes more clear and interesting, 3) The learning process becomes more interactive, 4) Time and energy efficiency, 5) Improving the quality of student learning outcomes, 6) Media enabling learning process can be done anywhere and anytime, 7) Media can foster positive attitude of students to the material and learning process, 8) Change the role of teachers to be more positive and productive direction.

The use of media in learning strongly recommended, but in it’s use not all media is good. There are things that should be considered in the selection of media, including learning objectives, educational goals, characteristics of the concerned media, time, cost, availability of facilities, context of use, and technical quality. Proper use of media will greatly support success in the learning process. Otherwise, the use of inappropriate media will only squandering costs and energy, especially for the achievement of learning goals will be far from what is expected. As one means of learning, universities should be able to provide the right media to support the academic community in learning in order not to saturate in receiving learning in the classroom. An interactive learning media based on animation is one of alternative means that can optimize learning activity based on computer technology. Rusman (2011 page 296) discloses specifically that: Multimedia is the use of computers to create and combine text, graphics, audio, motion pictures (video and animation) by combining links and tools that enable the user to navigate, interact, create and communicate. Multimedia generally divided into two categories:

- Linear multimedia is a multimedia that is not equipped with any controller that the user can operate. This multimedia runs sequential. For example Television and movies.
- Interactive multimedia is a multimedia equipped with control tools that can be operated by the user, so users can choose what is desired for the next process. Examples of interactive multimedia are: Interactive CD application tutorial learning fashion design.

As one component of the learning system, the selection and use of multimedia learning should consider the characteristics of other components, such as: objectives, materials, strategies and also learning evaluations. The characteristics of multimedia learning are: 1) Having more than one converging media, such as combining audio and visual elements 2) Have an Interactive character, meaning having the ability to accommodate user responses 3) Independent, meaning providing convenience and completeness of the contents in such a way that the user can use without other guidance.

In addition to fulfilling these three characteristics, learning multimedia should fulfill the following functions: 1) Be able to strengthen user response quickly and frequently, 2) Be able to provide opportunities for students to control their own learning rate, 3) Observe that students follow a coherent sequence and Controlled, 4) Able to provide opportunities for participation of users in the form of responses, either in the form of answers, selection, decisions, experiments and others.

The most important thing about the use of interactive multimedia in learning is the characteristic of interactive multimedia display that directs students not only pay attention to media or object, but also required to interact during learning because interactive multimedia combines and synergizes all media consisting of text, graph, audio and interactivity.

3. Research Method

The type of research which developed is experimental research using Pretest-posttest control group design (Sugiyono, 2012) as shown in the following table 1:

| Table 1. Design of Research Class Design Treatment |
The N-gain criteria can be seen in table 2 below:

| Limitation | Category |
|------------|----------|
| g > 0.7    | High     |
| 0.3 ≤ g ≤ 0.7 | Medium  |
| g < 0.3    | Low      |

4. Result and Discussion
4.1 Result
4.1.1 Device Validity of Interactive Multimedia Based Animation
This research begins with the development of interactive multimedia-based animation to facilitate the learning of making fashion design in digital-format in the course of Technology Design. Before it is implemented in learning, the device is validated by an expert. Based on the validation done by the experts to know the feasibility of multimedia done at the stage of multimedia development, the experts determine the multimedia qualification developed Very Good, that is 83.55% for media qualification and 89.17% for material qualification, so that multimedia is appropriate for use in learning making of fashion design in digital format.

4.1.2 Skill Data of Making Fashion Design in Digital Format in Experiment and Control Class
Based on data processing result on initial condition of student skill in making of fashion design in digital format shows that initial ability between experiment and control class is relatively same, that is in experiment group average ability reaches initially 40.70 while in control group reach 41.08. In the next process, different treatments were given to the experimental group and the control group. The control group is guided by the conventional method in the learning process, whereas in the experimental group applied the learning using interactive multimedia based on animation.
Based on the calculation of the increase of learning result using Normalized Gain obtained a higher gain value in the experimental class than the acquisition gain in the control class. The following is the visualization of the gain value data in the experimental class and the control class.

4.2 Discussion
In this study, the data collected is adapted to the needs of the analysis, namely the analysis of the skill of making fashion design in digital format of the students of Fashion Design in the Materials of Fashion Design Technology taught using interactive multimedia in the Experimental class, and the skill of making the digital format design on the students taught without using interactive multimedia in the Control class. The following will be presented the results of research from the influence of interactive multimedia use to mastering the skill of making digital-format fashion design on students Fashion Design of FPTK UPI.

4.2.1 The Influence of Interactive Multimedia on Mastering of Tracing Skill Process in making Digital Format Fashion Design
The tracing material discussed in this research is the technique of making the shape / construction of fashion design using CorelDraw program. Competence and qualifications of tracing skills in making fashion design include students' ability to operate the device (tool) which is in the program to make fashion design in digital format. The acquisition of N-gain on the skills aspect of the tracing process for the experimental class is 64% and the control class is 44%. The average N-gain for the experimental class and the control class is included in the moderate category. Based on the data seen in the same category but the average N-gain for the experimental class is higher than the average N-gain of the control class.

4.2.2 The Effect of Interactive Multimedia on Mastering Color Editing Process Skill in Making Digital Formula Design
Material color editing process discussed in this research is the technique and construction shape filling in fashion design with color characters using CorelDraw and Adobe Photoshop program. Competence qualifications in the editing skills of color on creating fashion designs include students' ability to operate the device (tool) which is in the program CorelDraw and Adobe Photoshop in the coloring process, with the qualification results of editing on the accuracy and precision in applying color characters and , either on analog or contrast characters, which can improve the look of the design in the digital format. N-gain obtained in the aspect of color editing skills in Experimental class is very high at 90%, and N-gain the Control class included in the medium category, which amounted to 50%. Based on these data it can be observed that the average N-gain much higher in Experimental class compared average N-gain on Classroom control.

4.2.3 The Effect of Interactive Multimedia on Mastering of Pattern Editing Process Skill in making Fashion Design in Digital Formal Clothing
The material of pattern editing process discussed in this research is the technique of filling the shape and construction of fashion design with character of pattern using CorelDraw and Adobe Photoshop
program. Qualification of the competence of pattern editing skill in making of fashion design in digital format include student ability in operating tool that exist in program of CorelDraw and Adobe Photoshop on pattern giving process, with qualification result of editing on choosing type and shape of pattern according to design type that made, accuracy in selecting and applying the size / resolution of pattern images according to the character of the design, as well as the accuracy in laying the pattern / motif on the design, so the design has good qualification not only from visual and aesthetic aspect but also from utility aspect. The acquisition of N-gain on aspect of motive editing skill in Experiment class and Control class is relatively sufficient, that is 57% in the Experiment class, and 52% in the Control class. Based on these data it can be observed that the average N-gain for the Experiment class and the Control class is balanced in medium qualification. These conditions indicate that the process of editing motif has a high level of difficulty in an attempt to master his skills.

4.2.4 The Effect of Interactive Multimedia on Mastering Processing Texture Editing Skill in making of Fashion Design in Digital Format

The texture editing process material discussed in this research is the technique of filling the shape and construction of fashion design with certain character and texture pattern using CorelDraw and Adobe Photoshop program. Qualification of the competence of texture editing skills in the fashion design in digital format includes the ability of students to operate the tools that exist in the CorelDraw and Adobe Photoshop program on the process of giving texture characters on the design of the fashion that student made. This textural editing qualification is related to the ability in character selection and texture shape / pattern according to the type of design made, accuracy in selecting and applying texture image size / resolution according to the character of the design, as well as the ability to put pattern / pattern texture on the design, So the design has a good qualification not only from the visual and aesthetic aspects, but also from the aspect of its use. The acquisition of N-gain on aspects of textural editing skills in the Experiment class is relative sufficient, at 52% and in the Control class included in the low category, at 39%. These data indicate that texture editing process has a high degree of difficulty, but by using interactive multimedia in the learning process, the average of learning achievement in the Experimental class is still higher than in the Control class that apply the conventional pattern in the learning process.

4.2.5 The Effect of Interactive Multimedia on Mastering Skills Editing Process of Special Effect in making Fashion Design in Digital Format

The subject of special effects editing process discussed in this research is the technique of giving special effects to fashion design using Adobe Photoshop and Macromedia Firework program. Qualification of competence of special effect editing skill in making this fashion design in digital format include student ability in operating the tools that exist in Adobe Photoshop and Macromedia Firework program on certain effect giving process on design like 3D effect, dark and light effect, fall effect of material, dimension / volume effects, glow effect, shadow and reflection effect. The result of this special effect is that the fashion design in digital format has better visualization and perfect. The acquisition of N-gain from the aspect of special effects editing skill is 62 % in the moderate category for Experiment class and the Control class is included in the low category, which is 35%. These data indicate that the special effects editing process has a high degree of difficulty, but using interactive multimedia in the learning process, the average acquisition of learning outcomes in the Experiment class is much higher than in the Control class that apply the conventional pattern in the learning process.

5. Conclusion

Based on the results of processing and data analysis of research data that has been done on the implementation of interactive multimedia-based animation on the learning of making fashion design in digital format, obtained the following conclusions:

1. Based on the result of research, the average of pretest result showing the students' initial ability in the experimental class and the control class is relatively the same, but after going through the
learning process, there is a difference in the average of learning outcomes. Classes are facilitated with interactive multimedia in the learning process, obtaining higher learning outcomes than the class with conventional learning.

2. Viewed from the indicators of learning mastery, context-based interactive multimedia learning play a role in improving student learning outcomes to a lesson material thoroughly better than conventional learning, so interactive learning-based animation can be said effective in supporting the learning process, especially on learning making fashion design with digital format.

3. Learning supported / facilitated by interactive multimedia-based animation can be said provide a positive learning atmosphere to students, where learning by using interactive multimedia-based animation makes students feel easier to understand the subject matter and feel comfortable in exploring on each subject, and feel Satisfied with the learning they have been living.

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