Interactive Learning Media Development for Courses Of Mathematical Logic And Set

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Abstract. *This research aims to find out how to develop and produce interactive learning media using Adobe Flash CS3 for students of mathematics education in the course of mathematical logic and Set in class D academic year of 2017/2018, as well as how the quality of the resulting learning media. The population in this research is the entire class D in first semester student in Mathematics Education academic year of 2017/2018. The model used is the development model of the development of the Borg and Gall which includes: (1) analysis of the content standards, (2) the collection of references to interactive media, (3) the preparation of draft interactive media, and (4) creation of interactive media in the form of digital discs (CD). interactive learning Media to be created should be referred to the material as well as media experts and tested on students*.

1. Introduction

Aspects in learning mathematics are the most important skills in the process was stressed thinking. Students are trained to be able to develop the ability of logical thinking, analytical, systematic and consistent. To assist in the process of thinking, or animated images and can be used. In the planning of learning lecturer can enrich the material to be conveyed by taking several contextual examples that exist in the virtual world with the help of the internet.

The computer can be used as media in learning mathematics. The computer could present in the form of graphics and media audio video. Of course this adds an attraction for students in learning, so that the nature of the monotone presentation on teaching lectures can be reduced.

Mathematical logic and the set as one of the discussion in a lecture in mathematics education courses has its own difficulties UAD. In this material the students are asked to determine the truth of a statement, which is sometimes very confusing students, so it is necessary to use the media could explain more real, as well as provide simulation-simulation to train and improve the understanding of the students.

One of the ICT products that can be used in the learning process is Adobe Flash CS3 (formerly Macromedia Flash Professional 8). With this software not only makes a presentation of learning, but it can develop interactive learning where students are learning with display has been prepared. In this learning process, students will choose and live every step, starting from the opening, the core material to the evaluation question.

Some of the explanation above make the researchers intended theme of Learning Media Development mathematical logic and the set using Adobe Flash CS3.

Learning Mathematics

Learning is a process characterized by the presence of changes in a person. Changes as a result of the learning process can be shown in various forms such as changing knowledge, understanding, attitudes and skills, whose behavior, skills and ability, power reaction, power reception and other aspects on the individual [1].

According to Rudiyanto [2] learning is the whole set of kegiataan consciously and effect change on him in the form of change of knowledge. Are Morgan says that learning is a relatively settled any change in behavior that occurs as a result of exercise. Still in the same book, m. Ngalim Anthony [3], also quotes the opinion of Hilgard and Bower about the definition of learning which says that learning is associated with changes in the behaviour of a person against something particular situation caused by his experience over and over in that situation, where changes in behavior that cannot be explained or the basic tendency of the bringing of the response, the maturity, or momentary circumstances someone, such as fatigue, the influence of the drug, and so on.

According to Suparni [4], learning as a process of cooperation, not only focuses on the activities of the lecturer or student activities, but professors and students are jointly trying to reach the learning objectives have been specified.

Mathematics

There are several definitions of mathematics based on the experts, with the intention of enriching the knowledge of mathematics. Sumaryanta [5] in their handouts about the understanding of mathematics, mention some sense experts about definitions of mathematics, including (1) Johnson and Rising: mathematics is the structured knowledge in which the nature and theory of deductive generated based on the elements that are defined or not defined and based on axioms, properties, or theory has been confirmed . Mathematics is the language of symbols about the idea of using the terms carefully defined, clear, and accurate. Mathematics is an art in which beauty is contained in keterurutan and harmony, (2) Beth & Piaget: mathematics is knowledge related to various abstract structures and the relationships between the structure so well organized, (3) Kline: mathematics is knowledge that cannot stand on its own but it can help people to understand and solve the problems of social, economic and natural

From the sense of the above can be said learning math is an intentional activity to modify various conditions that are geared to the objectives are achieved through the activities of the reasoning so that mathematical objects are abstract and are socio-kultruralis can be carried so that the mathematical learning objectives can be achieved.

Learning Media

The word derives from the Latin media, which is the plural form of the word medium, which means something that is in the middle (between the two parties, or pole) or a tool. Meanwhile, the Association of education and Communication Technology (AECT) stated that the media is any form that is used to transmit information [6].

Learning media play an important role in improving the success of the learning process. The success of the learning process will be achieved if the medium used meets the principle of media utilization. It is therefore to be aware of the principles of their use are, among others (1) The use of the media learning should be seen as an integral part of a system of learning and not just as a tool that serves as additional used when deemed necessary and only utilized at any time It takes (2) Learning Media should be viewed as a learning resource, (3) Lecturers should be truly mastered the techniques of an instructional media used, (4) Lecturer should take into account the profit and lose the utilization of a medium of instruction, (5) The use of the media learning should be organised systematically.

According to kemp and Dayton [7] the contribution of the media in learning are Delivery of messages can be more terstandar learning, Learning can be more interesting, Learning to be more interactive, Timing of implementation of the learning process can be shortened, Quality of learning can be improved, The process of learning can take place whenever and wherever, Can increase students ' positive attitudes towards the learning material, The role of the lecturer changed to positive direction.

Rudy Bertz classify media learning into several groups, namely (1) Audio Visual. Media can display the elements of sound and moving pictures such as film sound and video-cassette; (2) Audiovisual. Media featuring the sound and still images such as the film frame sound (sound slide), the movie sets of voice, a voice print, (3) Audio Media accompanied by movement in a linear and disjointed. For example the telewriter, morse and media board, (4) Visual Media without the sound. E.g. silent movie, (5) Visual Media silent. This medium can present information in a visual media alone

without any movement. For example, microform images and graphics, film strips and print.(6) Spring Motion Media that are capable of showing the movement of a point in the linear (line and writing) but without the sound. (7) Media Audio Media which only accentuates the audio alone without any picture or any movement. Examples include radio, telephone, audio tape (cassette program) and audio discs. (8) Print Media. Media that display information through words and symbols or diagrams only. For instance teletype and papertape. (9) Visual Media. Consists of film frames, transparency, projector and microfiche. (10) Audiovisual Media audio Visual Media consists of the VCD and DVD.

Interactive Multimedia

In 90 's, the multimedia concept began to shift in line with the development of computing technologies that so quickly. Currently the term multimedia refers to a form of transmitting text, audio and graphics in the same time period is meant as a computer-based interactive communication system that is capable of creating, storing, serving and access the information in the form of text, graphics, sound, video or animation. With current computer technology, it allows to store, process and present again the source of sound and video in a digital format.

Rob Phillips explains the meaning of interactive student empowerment as a process to control the learning environment. In this context the intended learning environment is to learn using computers. Classification of interactive multimedia learning in scope is not on the system hardware, but rather refers to the characteristics of the learning of students in responding to the stimulus that displayed the screen computer monitor. The quality of the student's interaction with the computer is highly determined by the sophistication of computer programs.

The position of the learning media as learning resources will begin to shift the functions of lecturers, especially as a source of learning. One of the media that can perform such interactive multimedia program is as a medium of learning, including: (1) Interactive. When students apply for this program, he was urged to engage in auditif, visual, and kinetic, so with this involvement made possible the information or message is easy to understand (2) Provide a climate of affection individually (3) Increase the motivation of learning (4) Give feedback (5) Control it is used fully on its users.

In addition to excellence-excellence in interactive multimedia over, it also has its disadvantages, such as: (1) Development requires the presence of a professional team (2) Development requires a long time

Adobe Flash CS3

Adobe Flash was formerly popular known as Macromedia Flash. After macromedia was bought by adobe so namasoftware is changed to adobe flash. The program originally was an application for the menganimasi vector, but nowadays is becoming a very popular program for creating a Rich Internet Application that provides new experience for its users.

Adobe Flash (hereinafter referred to as the Flash) is a program dedicated to the designers or programmers who designed the animation to aimed at the pembauatan web page, presentation for business purposes as well as the learning process to creation of interactive games as well as other goals more specific [8].

Flash can generate animated movie and mengkompresinya be a size that is small enough to be used on computers with low specifications.

Another advantage owned Flash is able to make buttons interactive with a movie or other objects. Flash is able to make the changes the transparency of the colors in the movie. Flash is able to make changes to the animation from one form to another form and able to create animated motion by following a predetermined plot. With Flash, files can be converted and published (publish) to the application file (.exe).

In the Adobe Flash CS3 features several elements [9] (1) Panel of Tools is key to the set up and design objects. (2) Timeline section is to organize and control the contents of the document in a layer and frame. (3) Layer is the part to set up the picture in the stage. (4) Frame is part of the layer to organize the creation of animations. (5) Stage is the worksheet used to design objects.

2. Method

This research is research development (Research and Development). Development of the research method is the method of research used to produce a particular product and test the effectiveness of these products. Research development not to test the theory.

Learning media development model used in this study using measures adapted from Borg & Gall in Sugiyono [10], as follows:

Introduction

The study of the literature, that examines the theories and results of relevant research in accordance with the research and development that will be carried out. Analyze the needs and characteristics of the program.a field Study to know and prepare the necessary needs in doing research.

Development

Determine the standards of competence, basic competence, the indicator and the subject matter will be presented. Compile Media Learning that Teaching Materials, Assessment Instruments. Compiling the research instruments include: questionnaire for expert, student observation sheet, and questionnaire.

Validation

Test Development Limited is Do test early product design by expert field of mathematics, a field of mathematics materials, media experts. Small Group Test is A small group of test done to find out the effectiveness of product design. A test performed on a group representing students with ability of high, medium and less. Trial results form an effective design, both in the substance or methodology. Field trials and feasibility is Tests conducted on students in one class.

3. Result and discussion

This research has managed to develop interactive learning media refers to media quality is good. The resulting learning CD consists of 3 submateri, i.e. a compound statement is a statement, and the set.

Research development of this was done through the steps as follows:

Planning

On the planning phase was carried out by the study of literature and the study of the field. The study of literature that is done is by way of analyzing the material that will be made in the form of a learning CD, and retrieved the material logic matematiika and set that includes a compound statement and the statement, the withdrawal of the conclusions in the laboratory computers in mathematics education UAD, observations on the students in learning mathematics. The number of computers owned by the mathematics education lab is 30 computers, and students can use one computer to one of the students, where computers are available at a minimum meet the specifications as follows: (1) Using Windows XP opertasi system up with the latest. (2) Using minimal Processor Intel Pentium III 600 MHz up to the latest. (3) Using minimal RAM 512 MB.

Plan and choose the type of media content will be used. The selected learning media, namely in the form of CD (Digital Disk/Compact Disk) learning that can be used with any computer. Then, Collecting the references. At this stage the researcher is looking for and collect references that support the research. References in the form of print media (book) or digital (e-book). The book used, among others: (1) Drs. Sukirman, m. Pd. book titles with logic and Set (2). Drs Ibn Ngathoillah with the title of the book mathematical logic and the set

Design

At the stage of design, measures undertaken include: (1) analysis of the content of the curriculum. At this stage done sorting material mathematical logic and the appropriate set for pass through the medium of interactive learning. Such material be removed from the source books which reference by researchers. The material had already been drawn up is used as the content of the media learning plan is then inserted into the material of the medium of instruction. (2) drafting the Story board of the learning media. Story board pembeljaran media compiled for ease in making learning and media

as a learning medium making peruses. (3) setting up the music, making videos and voice in the media of instruction. Music used in this study is media music accompaniment so that students don't instrumentalia feel saturated when learning. The volume of music has its own settings so that it can be tailored to the needs of the students. In addition to setting up the music, the researchers also prepares related contextual video material, where this video researchers create their own material needs. To clarify the matter, the researchers also provided the voice of the companion on the learning media.

In addition to software and hardware needs, at this stage of the development of learning CD also includes: (1) Making learning CD components made using adobe flash cs3. Create animated image is required, create the buttons and makes writing or text in titles, subtitles and other writings. (2) Create interactive multimedia in accordance with designs made from ingredients that have been collected. In this stage done some stage development, include Making a display of learning there is nothing that should be mastered by the student before learning the material, manufacture of display usage instructions CD learning, Making the content of the material medium of learning, creation of evaluation exercises and display to give an evaluation after learning using learning CD, Making the display profile. Profile view contains data about the framers of the learning CD, Making display minimize, maximize, and exit. Making this display aims to let students or the user can shrink the display, but with the look and out of learning media. The displays are in Picture 1:

Picture 1

Validation of Learning media.

Holds validation CD learning to 1 people expert content and learning, and 1 person media expert, 6 students in small class test, and 20 students at a large class using test instruments or sheet assessment research instrument quality media learning that consists of a combination of the now and the previous observation sheets have been validated by a lecturer who ruled. Pieces of the research instrument consisting of 51, with 13 statement statement on the education aspect is assessed by experts and learning material, 19 statement on aspects of display multimedia judged by media experts, and 19 indicators on aspects a technical assessed by students either in small classes or test on a test class is great.

4. Conclusion

This results have successfully evolved an interactive multimedia using Adobe Flash CS3 for students of mathematics education in the course of mathematical logic and Set.

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