Interactive Learning media based Visual Basic and Smoothboard

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Abstract

Developing learning products are based on the survey on the characteristics and systematic learning of mathematics in secondary schools in Medan. Research and development aims to: (1) generate media interactive learning program that uses Visual Basic and Smoothboard technology, to facilitate individual student learning, (2) to determine the effectiveness of interactive learning media that developed in mathematics about the wake of a flat.

Keywords: Interactive learning

PRELIMINARY

Survey results on students' learning difficulties and hardships of teachers, media support teaching and learning and the need for the media to learn a higher quality of learning in junior secondary school in Medan to 315 students and 117 teachers of mathematics indicate students have difficulties in learning mathematics and teacher is difficult to make the subject matter more easily understood by students. Provided that 227 students (72.06%) expressed very difficult to understand the subject matter of mathematics, 36 people (11.42%) said it was difficult, 28 people (8.88%) stated they were quite difficult and did not find it difficult to express as many as 24 people (7.61%).

Difficulties of teachers in teaching students represented by 88 teachers (75.21%) that it's hard to teach the students, as many as 5 people (4.27%) said it was difficult, 5 people (4.27%) stated they were quite difficult and 9 (7.69%) said they did not find it difficult. The need for media that make it easier for students to learn their math learning that there are 243 students (77.14%) stated that desperately need to learn math, 30 people (9.52%) stated needs, 21 people (6.66%) were less demanding, 21 people (6.66%) did not require.

The support of the media to facilitate student learning of mathematics has been obtained by 218 persons (69.2%) said they did not support, 60 people (19.04%) stated they were quite supportive, 27 people (8.57%) expressed support, and 10 people (3.17 %) were very supportive. Based on this study that the media should be made to facilitate students' learning of mathematics by means of multi interactively.

The use of learning media can improve the quality of the learning process and in turn can enhance learning outcomes. The impact of the use of interactive learning media, among others (1) be more interesting learning that can motivate students to learn, (2) the learning material will be clearer meaning that students easily achieve learning goals, (3) to combine multiple methods of learning, (4) students more actively in learning activities.

Multimedia technology to fully integrate computer technology, video systems and audio systems to get a better combination and improve the interaction between users with computers. Serving audio and visual multimedia learning visualization makes it more interesting. Multimedia display will make students more freedom to choose synthesize and elaborate knowledge to understand.
Multimedia-based learning is learning using multimedia devices as the primary means in which the computer is the main component.

Computers give students the opportunity to present a response from the computer input, or vice versa. In the next process can be used as a response to a new stimulus that is possible any further response that will further strengthen the memory of students in the concept presented. Programs can be created from a variety of input and focused on the achievement of learning objectives (Kusumah, 2004:5).

Computer-assisted learning using computers as a tool for conveying to the user in an interactive learning. Learning lessons directly deliver content to students, provide training and test students' progress. Thus, the abstract nature of the subject matter will be understood and mastered easily by the students to use computers as a medium of multimedia-based learning. Learning can be easily visualized so that students will feel happy, excited in the course. Besides delivery of content that will be given to students with a visualization would be easier. Because during the instructional media used are relatively simple, such as using media transparency, modules and simple props.

Media can be grouped into: (1) medium that does not require special skills such as: board / white board, transparency (OHP), printed materials (books, modules, handouts), and (2) media require special expertise, namely: audio program visual, slide program, Microsoft Powerpoint and internet programs. Based on whether or not teachers or tutors in use, the media can be classified into: (1) that depends on the presence of the teacher eg. board / white board, transparency (OHP), and (2) that is independent of the presence of media teachers such as: recording media learning materials independent (can be learned without a teacher / lecturer).

Dick and Carey also revealed some important factors in the selection of instructional media, namely: (1) the availability of media in the learning environment, (2) the expert's ability to produce learning materials for use with selected media, (3) flexibility, time, and material compatibility media, and (4) the cost factor. In addition to compliance with the behavioral studies, other factors must be considered in the selection of the factors related media flexibility, practicality and durability of the media in question for a long time. Moreover effectiveness factors must still be considered because these factors affect the cost effectiveness of the use in the long term.

Thus the media has a clear function is to clarify, simplify and make the curriculum interesting message that will be delivered by teachers to students so as to motivate learning and streamline the learning process. Media as a component of learning resources in the environment can stimulate learners learners to learn.

As one of the media types in multimedia learning is defined as a collection of a variety of different media tools that are used for presentations. In this sense is defined as a variety of multimedia media used for the presentation of the subject matter. Tan & Wong (2003) state that traditionally multimedia refers to the use of multiple media, while today's multimedia refers to the combined use of multiple media in the presentation of learning through computers.

Hackbarth (1996) emphasized that hypermedia and hypertext, including computer-based interactive multimedia. Interactive Media ranked as konstruktifistik media consisting of learning, learners, and the learning process. The computer is a tool in multimedia and web-largest in the world and the most influential of the learners in the learning process. Interactive learning has the following characteristics: (1) can be used inappropriately or linear order in accordance with what is desired of students, (2) the concept is presented realistically in the context of the experience of learners, (3) apply the principles of science and konstruktifitas and (4) the material presented interactively.
Thus the term multimedia learning can be defined as a computer-based interactive communication system in an integrated presentation. The term means that the computer-based multimedia using a computer program in the present study. Integrated means that multimedia learning can display text, images, audio, and video or animation impressions in a single presentation. The development of interactive learning media is an attempt to solve the problem of learning mathematics with computer technology evolved through a series of increasingly sophisticated design, production, and evaluation. In this case study media products are developed in line with the design and utilization of learning to use the program Visual Basic 6.0 and Smoothboard.

Research Methods

Interactive learning media product development done in 5 steps: (1) the first stage of design software, (2) the second stage of data collection, (3) the third stage of creating and producing interactive learning media, and (4) the fourth stage of the review or field tests in order formative evaluation and revision of the product. Formative evaluation took place during the development process starting from the stage of analysis, design, production and implementation of the results to be obtained in accordance with the intended purpose, (5) Test the effectiveness of the product.

In evaluating the product development of interactive learning media used comments and feedback from the subjects consisted of two instructional design specialists, three expert matter, two software experts, and users of products ie students, consisting of three grade 9 students to the test try one-on-one, nine grade 9 students for small group testing and 38 grade 9 students for field trials.

Data were collected through a questionnaire with a rating scale of 1 to 5 (1: very poor, 2: poor, 3: quite good, 4: good, and 5: very good). The respondents were given numbers based on criteria established assessment. Besides, the data collected is qualitative data in the form of advice and input a description written by the respondents as additional data.

Test the effectiveness of the product made using the test and validation of learning outcomes matter experts for the development of interactive learning media in Mathematics. The information obtained is used to improve the quality of mathematics learning package especially curved side.

Research Findings and Discussion

The results of the validation of matter experts, instructional design experts and software experts is presented below. Validation matter experts suggest that the general aspect of the material, learning strategies and delivery systems are good. This can be seen in Table 1 below.

<table>
<thead>
<tr>
<th>No</th>
<th>Categorization</th>
<th>The average percentage</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aspect of learning materials</td>
<td>88,00 %</td>
<td>Very Good</td>
</tr>
<tr>
<td>2</td>
<td>Aspects of learning strategies</td>
<td>77,20 %</td>
<td>Good</td>
</tr>
<tr>
<td>3</td>
<td>Aspects of learning delivery systems</td>
<td>78,00 %</td>
<td>Good</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>81,07 %</td>
<td>Very Good</td>
</tr>
</tbody>
</table>

Based on the validation of expert instructional design in general quality of instructional design, information design and interaction design, and presentation design is good. This is shown in Table 2.
Table 2. Percentage Average of Interactive Learning Media Assessment in Mathematics Lesson

<table>
<thead>
<tr>
<th>No</th>
<th>Categorization</th>
<th>The average percentage</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Quality of the instructional design</td>
<td>92.50 %</td>
<td>Very Good</td>
</tr>
<tr>
<td>2</td>
<td>Quality of the information design</td>
<td>80.00 %</td>
<td>Good</td>
</tr>
<tr>
<td>3</td>
<td>Quality of interaction design</td>
<td>77.50 %</td>
<td>Good</td>
</tr>
<tr>
<td>4</td>
<td>Quality of Presentation Design</td>
<td>85.00 %</td>
<td>Very Good</td>
</tr>
<tr>
<td></td>
<td><strong>Average</strong></td>
<td><strong>83.75 %</strong></td>
<td><strong>Very Good</strong></td>
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The results of the validation engineer With regard to programming and technical quality and look of the software has been well demonstrated, as shown in Table 3 below.

Table 3. Average Percentage of Assessment Results Media Interactive Learning Math Lesson

<table>
<thead>
<tr>
<th>No</th>
<th>Categorization</th>
<th>The average percentage</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Programming</td>
<td>68.75 %</td>
<td>Good</td>
</tr>
<tr>
<td>2</td>
<td>Technical quality / appearance</td>
<td>70.00 %</td>
<td>Good</td>
</tr>
<tr>
<td></td>
<td><strong>Average</strong></td>
<td><strong>69.37 %</strong></td>
<td><strong>Good</strong></td>
</tr>
</tbody>
</table>

Learning outcomes of students who are taught using interactive learning media was measured to determine the effectiveness of instructional media product use. Score the learning outcomes of 150 students spread over a range of 13-30. From the results of the calculations show that the lowest score of 13 and the highest score of 30, mean 21.13, 24.5 mode, median and standard deviation 22.57 4.94.

Mathematics learning outcomes of students who are taught using interactive learning media, gained 14 people (9.33%) are on average, 60 people (40%) were below average, while 76 people (50.67%) were above the average. Mathematics learning outcomes on student textbooks dibelajarkan the media, it was found that the students' scores of 145 respondents spread over a range of 9-24. From the results of the calculations show that the lowest score of 9 and the highest score 24, mean 18.19, 18.825 mode, median and standard deviation 18.6 3.186. Mathematics learning outcomes of students who are taught using textbooks media, gained 65 people (44.83%) are in the class average, 27 people (18.63%) were below average, while 53 people (36.55 %) is above the average.

Based on tests conducted it appears that there is a significant difference between the learning outcomes of students who are taught with the use of interactive learning media and learning outcomes of students who are taught with the use of media texts. Retrieved $t = 6.08$ while the $t$-table at $\alpha = 0.05$ with degrees of freedom (149, 144) is 1.31. This means that the learning outcomes of students who are taught using interactive learning media higher student learning outcomes are taught using textbooks media. Rate the effectiveness of using the medium of 70.73%.

Product development of interactive learning media in Mathematics was developed by taking into account aspects of learning and media as message design principles of learning. Research development carried out is to produce interactive learning media Mathematics for Junior High School Grade 9 learners. The media is used to improve the learning process and the competence of learners.

The use of interactive learning media in teaching Mathematics enables students to interact directly and control directly on the source of information, so that students can control and obtain what the needs are. Students can also work on practice questions that have been equipped with feedback and discussion so that students can know the mistakes that have been made in working on the exercise. Interactive learning media is also equipped with a summary that can help students obtain a summary of the subject matter presented.
Learning with interactive media also allows teachers to interact freely with the students so that learning is interactive which makes learning focused on the information that is being studied. This is different to learning using instructional media textbook, students do not interact directly on the source of information and learning is dominated by the teacher presents the information in a linear or one-way. This occurs because the student textbook learning media sources of getting information only from teachers and materials that exist in textbooks without being able to obtain feedback from the practice questions done. Learning by using instructional media puts textbooks teachers use active learning with the control, while the students are relatively passive to accept and follow what the teachers. Teachers presenting the material in a structured way in the hope that the subject matter can be mastered very well presented with a focus on academic skills.

Although the research data showed that students' mathematics learning outcomes higher if dibelajarkan media interactive learning rather than learning outcomes of students who are taught mathematics textbooks with the media, but in practice the two media has been able to increase the learning and understanding of mathematics learning outcomes of students.

Cover

Research development of interactive learning media that have been tested have a positive impact implications than textbook learning with media that have been used by teachers in the learning process. The implications are as follows: 1) interactive learning media will contribute mainly in the practical implementation of the learning process for teachers in which interactive learning media makes it easy to organize learning so that impact on the effectiveness of the learning process and can improve student learning outcomes. Thus, interactive learning media to be considered for teachers in the delivery of the subject matter of Mathematics and other sciences with consideration where students have an interest in learning will improve learning outcomes as well. 2) Application of interactive learning media readiness requires students to carry out learning with new media independently so that students will be able to obtain maximum learning outcomes, when applying interactive learning media to the fullest anyway. 3) By using interactive learning media students are given the opportunity to develop their creativity as a business steeped in Mathematics given the subject matter. By the time students are having problems in depth material, students can collect information from the files provided and if it finds a problem in the execution of practice questions students can see the discussion provided in the media, so that students can learn more effectively.

Suggestion

Based on the findings outlined in the conclusions and implications of the research, the following suggestions are proposed: 1) Given all this learning process is still using instructional media textbook, it is suggested that interactive learning media used for interactive learning media were able to give better feedback to students. 2) It is recommended to teachers in order to motivate students to learn independently by using interactive learning media, because the students will get the information they want through interactive learning media and they also do not have to depend on the presence of teachers in improving learning outcomes. Given the conclusions in this study still allow influenced by factors that have not been able to control, then they would need to do further research on more representative samples.
REFERENCES


Marcy, Driscoll P. Psychology of Learning for Instruction. Florida State University: Allyn and Bacon