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Utilization of Interactive Learning Media Tutorial Models in Geographic Learning (Geographic Information System Learning)

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ABSTRACT

The interactive learning media tutorial model is a computer-based learning media that has interactivity in it so that it involves the activeness of students in learning activities. The purpose of this research is to develop an interactive learning media application tutorial model that can help students improve their understanding of geographic information system learning materials. This research is a quasi-experimental study conducted at Watampone High School Class XII. The research subjects consisted of 33 students from 123 populations. The results showed that there was a significant increase in understanding of geographic information system material after learning using interactive media tutorial models with an average value after being given a pretest of 64.66 and after being given a posttest to 78, the average percentage increase was 36.05%.

Keywords: Interactive Media, Tutorials, Student Understanding, Geographic Information Systems

INTRODUCTION

Geography Subjects are often regarded as mere theoretical lessons by some students. This condition is caused by various reasons, one of the factors is from the educator. Geography teachers are often trapped in the classical method by using lecture and question and answer methods without using learning media as a means of channelling information to students, so verbalism cannot be avoided [1]. Information will be able to be remembered up to about 50% using the media of hearing and vision. Moreover, students are actively involved in doing something, so they can remember 70% of the teaching material. The higher the involvement of students in learning activities, the higher the teaching material they can remember. Therefore, the media has a very important function in the learning process Things that play an important role in the teaching and learning process are, the teacher as the main actor, student motivation, and learning media [2]. Learning media have an important role in achieving learning objectives to obtain effectiveness in the learning process. The use of media must meet certain criteria. Some criteria for assessing the effectiveness of a media are cost, supporting facilities, compatibility with class size, summary, ability to change, time and the power of preparation, the influence it has, the complexity, and finally the usability. The more learning objectives that can be assisted with a media, the better the media. Based on this statement by using interactive learning multimedia tutorial model is one of the media that can be used to deliver learning material to students very effectively and efficiently [3].

Besides, the cone of Edgar Dale's experience illustrates that the more concrete a student learns the lesson material, the more experience he gets. But on the contrary, the more abstract students learn the lesson material, the less experience they get [4]. Direct experience is very difficult to implement in the learning process. This is because not all learning materials can be presented directly in the learning process. Based on this, the learning media occupies a strategic position to realize an optimal learning process. The optimal learning process is one indicator to realize optimal student learning outcomes. Optimal learning outcomes are also a reflection of quality educational outcomes [5].

The results of preliminary observations made at SMAN 22 Watampone expertise competence and understanding of Geographic Information System material found several obstacles in the learning process namely the limited time in learning both theory and practice, besides the teacher's understanding of GIS applications was difficult for some teachers to understand because learning resources used does not explain in detail the things that must be done in the use of GIS applications in mapping. Mapping is a science and technique to describe the surface of the earth that is round on a flat plane. Therefore, the mapping will be related to images of space that exists and is spread on the surface of the earth. Mapping is a skill that is applied to studies related to space mapping on the surface of the earth. The fields in charge of studying Mapping are Cartography, Geographic Information Systems (GIS) and Measurement (Geodesy). The field of science studied in high school is Cartography and Geographic Information Systems (GIS). The study of mapping is very important in the subject of geography [6].

GIS Study is included as part of the Geography subject. Because it is part of engineering, GIS is a skill that must be taught and understood by high school graduates. That is, that the output of high school must-have skills from geography subjects about mapping. By having these skills students are expected to be able to map the natural and social potential of the surrounding environment and wider area [7]. Obstacles of geography teachers in the process of learning geography of mapping material and geographic information systems explained that geography teachers do not have the skills in operating GIS software and the availability of school facilities and infrastructure that can be used as GIS learning media is very lacking [8].

Interactive media in learning geography with a display designed to meet the function of informing messages and having interactivity with users (users). The development of media carried out by researchers is expected to make the learning process more interesting, the amount of teaching time more effective, the quality of student learning can be improved and the teaching and learning process can be done anywhere and at any time, and the attitude of student learning can be improved.

The objectives of this study are: (1) Analyzing the effect of the use of multimedia interactive learning tutorial models on student understanding of geographic information system learning materials. (2) Analyzing the effect of using conventional learning media on students' understanding of geographic information system learning material. (3) Analyzing the differences between interactive learning multimedia and conventional learning media on students' understanding of geographic information system material.

RESEARCH METHOD

The location of the study was conducted at Watampone High School 22 located in Bone Regency, South Sulawesi Province. The design of this study used a true-experimental research design with the pretest-posttest control group design method. In this design, Purwanto, (2004) states "that there are two groups chosen randomly, then previously given a pretest to find out the initial state between the experimental group and the control group". Furthermore, after knowing the results of the two groups pretest, the experimental class was given treatment (X), while the control class was not given treatment (X).

True-Experimental pretest-posttest control group design [9]

Eksperimen	:	R. O1	X1	O 2
Control	:	R. O3	X2	O 4

Information:
R: Random sampling

O1: Pretest is given to the experimental class
O2: Posttest is given to the experimental class
O3: Pretest is given to the control class
O4: Posttest is given to the control class

X1: Application of interactive learning media tutorial models.

X2: Application of conventional learning media (PowerPoint)

The subjects in this study were 33 students of 22 State Junior High School Watampone XII IPS 1 and XII IPS 3. Learning media were validated by expert experts and practitioners. Practicality is determined by the response of students and teachers. The effectiveness of the product was tested with one group pretest-posttest design. Test the gain value to determine the increase in value after the treatment. Test for normality to determine whether a data distribution is normal or not. Homogeneity tests to test whether the data is homogeneous or not. In testing the hypothesis in this study using the parametric statistical test Paired Samples T-Test.

RESULTS AND DISCUSSIONS

The results of the Pretest and Posttest increase students' understanding of the geographic information system material in the experimental class can be seen in the following table 1.

Table 1. Pretest and Posttest Results of Experiment Class

Subject	Score		Score	Score	N Gain	Average
	Pretest	*Posttest*	difference	difference		Increase (%)
			Post-Pre	Max-Pre		
1	80	84	4.00	20.00	0.2	20
2	68	88	20.00	32.00	0.63	62.5
3	68	80	12.00	32.00	0.38	37.5
4	68	76	8.00	32.00	0.25	25
5	48	68	20.00	52.00	0.38	38.46
6	52	72	20.00	48.00	0.42	41.67
7	56	68	12.00	44.00	0.27	27.27
8	64	88	24.00	36.00	0.67	66.67
9	64	76	12.00	36.00	0.33	33.33
10	64	84	20.00	36.00	0.56	55.56
11	56	72	16.00	44.00	0.36	36.36
12	64	80	16.00	36.00	0.44	44.44
13	64	72	8.00	36.00	0.22	22.22
14	68	72	4.00	32.00	0.13	12.5
15	64	84	20.00	36.00	0.56	55.56
16	76	76	0.00	24.00	0	0
17	80	84	4.00	20.00	0.2	20
18	60	80	20.00	40.00	0.5	50
Average	64.66	78	13.33	35.33	0.36	36.05

Based on Table 1 it is known that the experimental class given treatment (pretest) obtained an average value of learners at 64.66 and after being given treatment (posttest) obtained an average value of 78 with the difference in the average value of the pretest and posttest of 13.33. The average Gain value obtained in the experimental class was 0.36 with a moderate category and the average increase in value experienced by students in the experimental class was 36.05%.

The results of the Pretest and Posttest increase students' understanding of the geographic information system material in the control class can be seen in the following table 2:

Table 2. Pretest and posttest results of the control class

Samples	Score		Score difference	Score difference	N Gain	Average Increase (%)
	Pretest	*Posttest*	Post-Pre	Max-Pre		(%)
1	44	56	12.00	56.00	0.21	21.43
2	24	48	24.00	76.00	0.32	31.58
3	64	64	0.00	36.00	0	0
4	40	52	12.00	60.00	0.2	20
5	40	60	20.00	60.00	0.33	33.33
6	44	60	16.00	56.00	0.29	28.57
7	60	80	20.00	40.00	0.5	50
8	40	76	36.00	60.00	0.6	60
9	44	48	4.00	56.00	0.07	7.14
10	52	68	16.00	48.00	0.33	33.33
11	40	64	24.00	60.00	0.4	40
12	36	48	12.00	64.00	0.19	18.75
13	52	60	8.00	48.00	0.17	16.67
14	52	68	16.00	48.00	0.33	33.33
15	28	48	20.00	72.00	0.28	27.78
Average	44	60	16	56	0.28	28.12

After being given a treatment (pretest) obtained an average value of students by 44 and after being given a treatment (posttest) obtained an average value of 60 with a difference in the average value of the pretest and posttest of 16. The average Gain value obtained in the control class is 0.28 with a low category and the average increase in value experienced by students in the control class by 28.12%.

Based on the results of statistical tests conducted showed that both the experimental and control classes both experienced an increase in students' understanding of the geographic information system material after being given treatment. In testing hypothesis 1 that is the class that uses interactive learning media model tutorial there are differences in understanding of students before given treatment, the average value obtained is 64.66 and after being given treatment to 78 with an average percentage increase of 36.05%. The average Gain value obtained in the experimental class is 0.36 which belongs to the medium category. In hypothesis 2, the class that uses conventional learning media can be seen as the average value before being given treatment is equal to 44 and after given treatment becomes 60 with an average percentage increase of 28.12%. The average Gain value obtained by the control class is 0.28 which is included in the low category. Learning by using interactive learning media tutorial models can increase students' understanding of geographic information system material, learning media that provide direct interactivity to students can increase motivation and activeness in learning activities that affect student understanding of the material presented.

CONCLUSIONS

The conclusion of this research is: (1) There is an increase in understanding of the geographic information system material after learning in the experimental class using interactive learning media tutorial models. This shows that the interactive learning media tutorial model influences students' understanding. (2) There is an increased understanding of the understanding of geographic information system material in the control class that uses conventional learning media using PowerPoint media. This shows that conventional learning media influence the increase in understanding of geographic information system material. (3) There is a difference in understanding of the geographic information system material in students after learning between the experimental class using interactive learning media tutorial models and the control class using conventional learning media in the form of power media. Classes that use interactive learning media tutorial models are better at increasing understanding of geographic information system material in students than classes using conventional learning media.

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