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Impact of Educational Games To Introduction Tourist Destination In Central Java On Elementary School Student

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Abstract

Educational games are learning media in the form of games that contain material in them. Includes questions, guessing pictures or etcetera. Educational games can also become alternative learning media in the covid-19 pandemic. This study aims to determine the effect of educational games on the understanding of elementary school students regarding the introduction of tourist objects in Central Java. The method is pre-experimental research through pretest and posttest to determine the effect of two variables but there is no control group. Students of SDN 3 Purbalingga Lor are the subjects of this study, with a frequency of 14 students. Pretest data was obtained, the lowest score was 10 and the highest was 70, with an average grade as 33. If you look at posttest results, the highest score was obtained with a score of 100 and the lowest score was 80, with an average grade of 95. This proves the educational games have an effect on the ease of students in understanding the material, especially to know tourist attractions in Central Java.

Keywords: *Educational Games, Experimental, Covid-19 Pandemic, Online Learning, Attractions*

1. Introduction

Educational games are one of the learning media in the form of games that contain material in it. The form can be in the form of quizzes, guess pictures, and others. How many application developers are developing educational games for children's interests of education. Educational games are also considered to be able to more easily provide understanding to children in learning.

The world is currently being shaken by the COVID-19 pandemic since late 2019. The existence of this epidemic caused panic and claimed many lives in all parts of the world, including Indonesia.

On the other hand, the government also issued policies related to the world of education through the Circular of the Ministry of Education and Culture (Kemendikbud) of the Directorate of Higher Education No. 1 of 2020 states that learning is carried out remotely and at home. This policy is also in line with the results of Handarini and Wulandari's research (2020) which concludes that online learning methods have become one of the right solutions in the spread of the COVID-19 virus. One example of the application of fun online learning is educational games.
Although now in Indonesia the case of the spread of the Covid-19 virus has been quite sloping, the Indonesian government still encourages the public to remain vigilant. Therefore, there is an educational game innovation media as an alternative for children to learn and can find out tourist attractions in Central Java without having to come to a place.

The author wants to design and develop an Android-based educational game, which will then conduct research on the effect of educational games on the introduction of tourist objects in Central Java to students of SDN 3 Purbalingga Lor.

The research design is the medium used for the researcher's benchmark to complete the research process. The research design is used to make it easier for researchers to plan according to the initial purpose (Sugiyono, 2012). Referring to this study, one can use the One-Group Pretest-Posttest design, namely to determine the effect of two variables but there is no control group (Nursalam, 2011). Researchers used a method approach that is experimental. Experimental is a method in research that has the function of knowing the effect of special treatment on certain groups through controlled conditions (Sugiyono, 2012).

Previously, research using experimental methods had also been carried out by Aulia Rahma (2015) by conducting research to find the effect of guided inquiry learning patterns in class XI physics lessons. This study uses a One-Group Pretest-Posttest design to determine the effect of two variables but there is no control group. The students will be given a pretest to determine their initial abilities before being given an intervention in the form of educational games, then given a post-test again to determine the effect of changes in knowledge that occur.

Other research, such as that conducted by Karimatin Nurisa and Muhammad Abdul Ghofur, discusses the development of educational android games in class X social studies at SMA Negeri 1 Bangkalan about economics. Using research and development methods by utilizing the One-Group Pretest-Posttest research design. This study was aimed at measuring the feasibility of the media, learning outcomes and student responses.

By looking at the various studies that have been done previously, the authors conclude that the experimental method by utilizing the One-Group Pretest-Posttest design is a suitable method to determine the effect of game based learning on efforts to introduce tourist objects in Central Java to students of SDN 3 Purbalingga Lor.

2. RESEARCH METHODOLOGY

In this study, the authors used experimental research methods. Kerlinger (1986:315) writes that experimental research is one of the scientific studies in which researchers can manipulate and even control independent variables and make observations for the dependent variables in order to find results that appear simultaneously when certain manipulations or treatments are carried out.

Then Rakhmat (1985:44) provides information that the experimental method has the aim of being able to find out cause and effect by performing certain treatments on one or more variables in an experimental group and then comparing them with the control group who did not receive any particular treatment.

Isaac and Michael (1977:24) also stated the same thing where experimental research has the aim of knowing a causal relationship to one or more variables that are divided into two groups and one of them gets a certain treatment while the other doesn't.

Then Arboleda (1981:27) defines experimental, namely a method in research that the researcher deliberately does to make a manipulation of one or more variables in a certain way so that it can have an influence on other variables to be measured.

And Robert Plutchik (1988:213) who briefly defines experimental, which is a step to regulate the occurrence of causality in experimental conditions and identify the variables to be measured.

2.1 Research Design

Research design or commonly called research design is a plan and strategy in research in order to obtain results from several questions related to the research conducted and to control the variance of variables. (Kerlinger, 1986:300).

Basically, the use of research design has indirectly made the basic framework of the research, with an indication of the relationship between variables. By making a research design, it will show researchers about the steps or ways of carrying out the research, how to make observations, and analyze the results of observations and research.

The research designs contained in the experimental research method are also quite diverse. Stanley and Campbell (1963: 8-40) suggested various research designs as follows:

- *Pre-Experimental Design*which has several variants including: The One-Shot Case Study; The One Group Pretest-Posttest Design; and Static Group Comparison.
- *True Experimental Design*which has several variants including: Pretest-Posttest Control Group Design; Solomon Four Group Design; Posttest Only Control Group Design.
- *Quasi Experimental Design*which has several variants, including: Time Sries, equivalent Time Sample Design; The Equivalent Materials Design; The Nonequivalent Control Group Design; Counterbalanced Design, The Separate Sample Pretest-posttest Design.

In the research that the author does, will use a research design with a pre-experimental form, because in this research design there will be external variables that are also affected by the formation of independent variables. This can happen because there are no control variables and the selected sample is not done randomly or randomly.

In experimental research, the pre-experimental form has several types of research designs. The use of the research design to be used, of course, is determined based on the needs and functions desired by each researcher. For this reason, the author will apply a research model with a one group pretest-posttest design, which is a research design with experimental research methods using one group but no comparison group. Later in this study, a test will be conducted on one group. Before carrying out certain treatments, pretest questions will be given to research subjects. After that, treatment in the form of an educational game was applied. After the subject received the treatment.

2.2 Rating System

After the author conducts field trials or conducts the research process, the next thing to do is reprocess the data that has been obtained through the research process, namely by conducting the assessment stage. The processes at this stage include:

Table 2.1 Table of research stages with one group pretest-posttest design

Measurement ***initial (pretest)***	**Treatment** ***certain (Treatment)***	**Measurement** ***end (Posttest)***
Measurement of students' knowledge of tourism objects in Central Java. The questions consist of 10 questions in the form of visuals and quizzes. Students will get 10 points for each correct answer. If you answer incorrectly, it will not deduct points.	Providing quiz-based educational game learning media regarding the introduction of tourist objects in Central Java.	Measurement of students' knowledge of tourism objects in Central Java. The questions consist of 10 questions in the form of visuals and quizzes. Students will get 10 points for each correct answer. If you answer incorrectly, it will not deduct points.

After getting points, the benchmark reference assessment (PAP) will then be used from which the pretest and posttest scores will be obtained. The author uses the formula to calculate the value by:

value = current value / maximum value x 100

Then from the value that has been obtained, it can be converted into a letter value with the rules in table 3.1 as follows:

Table 4.1 Conversion of distribution of letter values

Mark	**Letter Value**
>80	A
>70 - 80	B
>50 - 70	C
>40 - 50	D
<=40	E

3. RESULTS AND DISCUSSION

The author has carried out a research process on students at SDN 3 Purbalingga Lor, Purbalingga Lor District, Purbalingga Regency, with a total of 14 students who became the population and the sample in this study. The process of doing this research using an experimental method by utilizing a one group pretest-posttest research design carried out in the VA classroom, which at that time was being carried out by the teacher. Which class has often become a class for teaching and learning every day. The teaching and learning process is carried out by teachers and students for 5 days a week, from Monday to Friday. The researcher entered 10 questions for the pretest and posttest stages with a weight of 10 points each, so the total points were 100 points. The questions given in the pretest and posttest are the same. The following are the questions that will be displayed:

1) Baturaden

2) Borobudur

3) Dieng

4) Gedongsongo

5) Kreo Cave

6) Lawang Sewu

7) Prambanan

8) Swamp Dizziness

9) Sam Po Kong

10) Young Monument

Figure 2.1 Questions to be displayed

3.1 Game Creation

After making and considering the questions that will be displayed and calculating the points that the students will get, the next step is the application of the method which will then be implemented in educational games. Here the author will explain the stages in the development of educational games include: analysis, design, development, and implementation.

In the analysis stage, the writer identifies the problem and tries to find a solution related to it. The author found that currently, during a pandemic in particular, children rarely go out of the house and visit tourist attractions. Visiting tourist attractions can also be a source of information and knowledge for children. Considering that Central Java also has several historical sites that are important for children to know. So the author developed an educational game about the introduction of tourist attractions in Central Java, so that children can learn and get to know tourist attractions in Central Java and are able to learn in an interesting and exciting way about tourist objects without having to come to the location. Therefore the author developed an educational game with device requirements specifications including: laptop, 10GB RAM, Intel Core i5 CPU. Researchers use software to support this research, including: Windows 10 64 bit operating system, Construct 2, and Adobe Illustrator CC 2020 to design the display of educational games.

Then next is the design stage which is a stage that has the aim of designing and providing an overview of the games that will be made later. The author does several things at this stage which include: making interface designs, doing layouting, and making feature designs. In carrying out the design stage, the author uses the Adobe Illustrator CC 2020 application. The reason for using it is because the application has its own toughness and sophistication, which really helps the author in the design process. The process of making an interface design design using the Adobe Illustrator application is shown in Figure 3.1 below:

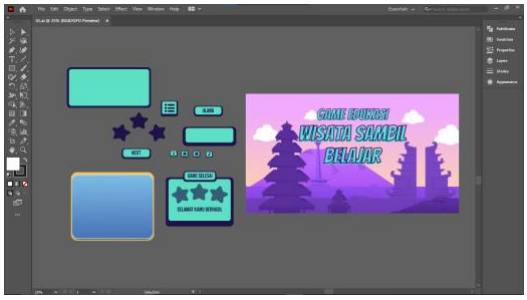

Figure 3.1 Adobe Illustrator CC 2020 application interface

Next is the stage of development (develop) and also the production of educational games. The game that will be made later will have a quiz game type. At this stage, the author will realize the design at the analysis and design stage, and then include logic so that educational games can be played properly. To complete this stage, the author uses the game engine application Construct 2. The author also provides several features that have been designed in the previous stage, these features include: providing visual material, and interface buttons that are easily understood by children.

The initial appearance of this educational game is quite simple. There's a game title at the top center, and then there's a Play and Learn button. The initial appearance of the educational game about tourism objects in Central Java is shown in Figure 3.2 below:

Figure 3.2 Initial view of educational games Travel while learning

To carry out the pretest process, students will be directed to press the Play button. When the Play button is pressed, a question will appear that must be answered by students. This is so that the author can find out the students' initial abilities regarding tourism objects in Central Java before the material from educational games.

This Travel Educational Game While Learning uses the quiz game genre. Students will guess the answers to the questions given by arranging the correct words in the answer box. When the student has answered correctly, a successful bar will appear and the question will move to the next question.
The display if students press the Play button (pretest) is shown in Figure 3.3 as follows:

Figure 3.3 Display of questions at the pretest stage

Then after the pretest stage is completed and a score is obtained, then students will be directed to press the Learn button, which contains material related to tourism objects in Central Java. The display that will appear when students press the Learn button is shown in Figure 3.4:

Figure 3.4 Learning menu display

Then after students understand the various materials given, the students will undergo a posttest stage, which will work on a number of questions based on the material that has been given. At this stage, it will also prove whether the use of educational games has an influence on the ease of students in learning. When students have successfully completed the learning stage, students will then switch back to the Play page to work on the posttest questions. The picture when students are on the Play page (posttest) is shown in Figure 3.5 below:

Figure 3.5 Display of students in the posttest stage

3.2 Test Results

The educational game system that has been completed will then be tested on students at SDN 3 Purbalingga Lor. This is to ensure that the system created runs smoothly and also proves that educational games can affect the ease with which students learn and understand the material. The total number of students who were sampled as well as the population in this study were 14 people, all of whom were class V students. The process of the author conducting the research is shown in Figure 3.6 below:

Figure 3.6 The research process at SDN 3 Purbalingga Lor

From the results of this study, the results obtained in the form of pretest and posttest values, where the pretest values are in table 3.2. While the posttest values are in table 3.3 below:

Table 3.2 Number and letter values for the pretest

NO.	Name	Final score	Letter Value
1.	dian	50	C
2.	Amalia	30	E
3.	Ibn	60	C
4.	Nur	30	E
5.	Falah	10	E
6.	Risky P	30	E
7.	Juan	70	B
8.	Marcel	40	D
9.	Nakeo	30	E
10.	Naufal	40	D
11.	Zaki	30	E
12.	Yoga	20	E
13.	Dudin	10	E
14.	Brian	10	E

Table 3.3 Numerical and letter values for posttest

NO.	Name	Final score	Letter Value
1.	dian	100	A
2.	Amalia	100	A
3.	Ibn	90	A
4.	Nur	90	A
5.	Falah	90	A
6.	Risky P	100	A
7.	Juan	100	A
8.	Marcel	100	A
9.	Nakeo	80	B
10.	Naufal	100	A
11.	Zaki	90	A
12.	Yoga	90	A
13.	Dudin	100	A
14.	Brian	100	A

Table 3.4 Statistical table

NO.	Statistics	Pretest	Posttest
1.	Min	10	80
2.	Max	70	100
3.	Average	33	95

From the table above, it can be seen that data has been obtained that in the pretest the lowest score was 10 and the highest score was 70, with an average of 33. If we look at the average value of the pretest, it can be said that it is relatively low. As many as 21 percent of students got grades A to C, where 1 student got grades B and two people got grades C. Meanwhile, 79 percent of students got grades D and E with the acquisition of 2 people getting grades D and 9 people getting grades E.

If you look at the posttest results, it can be seen that the highest score of students reached 100 and the lowest score was 80, with an average score of 95. There were 13 people who got an A while one person got a B. Where the average gain value increased by 3 times. In the posttest results, there are no more students who get grades C to E.

Referring to the data provided in the table above, after conducting research using pretest and posttest, it shows that there is a very significant increase in students' understanding of tourism objects in Central Java. This is indicated by the increase in the average value of students which reached 3 times. This is enough to prove that the application of educational games can affect the ease of students in learning and understanding the material, especially in recognizing tourist objects in Central Java. It is very unfortunate that the pretest score obtained is low, which indicates that the basic knowledge of students regarding tourism objects in Central Java is still low.

4. CONCLUSION

The application of the experimental method, in the form of a one group pretest-posttest design in the Tourism Educational Game While Learning, has concluded that in its use, this method is quite optimal. The researcher sees that the experimental method by utilizing the one group pretest-posttest research design can determine the effect of using game-based learning on the understanding of learning material in children, which in this study proved to make it easier for children to understand the material given. Then based on the research that has been done and refers to the results of research and discussion in the previous chapter, the researcher can conclude as follows:

1. The level of knowledge related to tourism objects in Central Java in 5th grade elementary school students at SDN 3 Purbalingga Lor, Purbalingga before being given educational games, the majority had less knowledge with an average class value of 33 out of a frequency of 14 people.
2. The level of knowledge related to tourism objects in Central Java in 5th grade elementary school students at SDN 3 Purbalingga Lor, Purbalingga after being given educational games, the majority increased, marked by a change in grades which showed an average grade of 95 from a frequency of 14 people.
3. Research conducted on 5th grade elementary school students at SDN 3 Purbalingga Lor, Purbalingga is running well as evidenced by the function and appearance of educational games as well as the delivery of material that is acceptable to most students.
4. The questions that have been given regarding tourism objects in Central Java are able to increase students' curiosity and interest in understanding and studying material about tourism objects in Central Java. This is evidenced by the number of students who scored high and the total number of correct answers for each student.

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