VOLUME 3 | NUMBER 2 | MARCH 2021
Available online at http://proceedings.worldconference.id.
ISSN: 2656-1174 (online)

Differences in Student Learning Outcomes Between Before and After Using Video Media Tutorials on Research Statistics Through E-Learning

Depi Pramika and Nuryanti Permata Sari
Faculty of Teacher Training and Education PGRI University of Palembang , Indonesia
depi.neynda0506@gmail.com, atiekalex83@gmail.com

Abstract

The purpose of this study was to determine the differences in student learning outcomes between before and after the use of research statistics tutorial videos through e-learning. The method used in this research is a comparative method with a quantitative approach. Data analysis techniques used documentation and tests. Data analysis used the IBM SPSS 24 application. The results showed that there were significant differences in student learning outcomes between before and after the use of statistical research video tutorials through e-learning both descriptively and by hypothesis testing. So it is recommended that the instructors use video tutorials as a medium to help the learning process.

Keywords
E-Learning, Learning Outcomes, Research Statistics, Video Tutorials.

1. Introduction

The development of the industrial revolution is increasingly developed and developing, are initially still manually or using manpower where must go to the field until it feels more difficult, slow or requires a long process and need to be expensive to become more sophisticated, faster, cheaper, even without being limited by space and time, namely using machine power or robots that are integrated with cyber technology. This development affects many aspects of life, especially the development of education in Indonesia today, to be precise in the industrial era 4.0 where learning activities are required to follow the era of disruptive innovation that is developing very rapidly with the characteristics of the use of digital technology in the learning process (cyber system), so learning can be done online or initial with the term synchronous or e-learning.

E-learning or distance learning can be done without having to meet face to face in a room like the usual learning process because e-learning can be done through a virtual world where the learning process can be done anywhere and does not have to be in one room or one place between students. and lecturers. E-learning is also a solution to continue to carry out the learning process in the face of the Covid-19 pandemic which is currently sweeping the world, including Indonesia. Where this pandemic demands to remain social distancing or maintain a safe distance to avoid transmission of the Covid-19 virus.

The existence of the Covid-19 pandemic and technological advances require education actors, especially lecturers, to think creatively so that learning materials can be channelled according to the learning objectives that have been set for students. This is because students are used to getting material or knowledge transfer through face-to-face, where the lecturer explains the material in front of the class with all the methods used and students pay attention while being able to have direct discussions without being limited by space. For subjects that are theoretical demands of development and the state are not too difficult, but for the practical subjects or exact, it would be rather difficult, moreover subjects with materials containing certain applications.

One of the practical or exact courses in which it provides material on data analysis with certain applications is the research statistics course. The research statistics course is one of the subjects taught in higher education, especially in the accounting education study program. This subject is a compulsory subject for students because by following the research statistics course students can extract quantitative information which can later be used for a scientific approach such as in writing a final project to solve a problem. Where in solving a problem statistics serve as a tool to help to analyze quantitative data research results eventually analysis can provide a reasonable conclusion. However, the reality behind the importance of these courses is that students are less interested in learning them because of the perception that statistics is a difficult subject matter, especially when analyzing using a tool in the form of an application.

To overcome this, many media, tools, or applications can be used to bridge this. One of them is through the use of video tutorial media. According to Baharuddin (2014) " Video tutorial media can replace educators when students want to repeat the learning material that has been learned in class, and can be a tool that is

conveyed by teachers to students and can be repeated at any time by students". Meanwhile in the opinion of Hidayah (2019) stated that " Video tutorials are very helpful to the delivery of material because they can record, process, and rearrange moving images by displaying videos containing the process '. Thus, when a learning material has not been understood, students can repeat it by playing the video tutorial while applying the material in the tutorial.

Video tutorials can be studied without limits on space and time because these videos can not only be played via a laptop or notebook but can also be opened via a smartphone or tablet so that this convenience is expected to be effective in improving student learning outcomes. This is in line with the opinion (Schneps et al. In Carmichael (2019) " Researchers note an explosion in online courses and a rapidly changing comprehension of how video can be used effectively to enhance learning". Meanwhile, according to Guolin Lai, Zhiwei Zhu (2017)" The study results showed the availability of video tutorials enriched students' learning experiences and enchanted their academic performance".

Based on the description above, the researcher is interested in researching differences in student learning outcomes between before and after the use of research statistics tutorial videos through e-learning. The purpose of this study was to determine differences in student learning outcomes between before and after the use of statistical research video tutorials through e-learning with comparative hypothesis testing materials using manual analysis and IBM SPSS 24.

2. Research Methods

"The research method is a scientific way to obtain data with specific purposes and uses (Sugiyono 2018). The research method used in this study is a comparative method with a quantitative approach which aims to determine whether there are differences in student learning outcomes between before and after using the research statistics tutorial video through e-learning learning on comparative hypothesis testing material with case resolution using the SPSS application. Population and sample in this study were students of accounting education FKIP PGRI Palembang University who took a course statistics k study consisted of 27 students.

According to Sugiyono (2018), "research variables are anything in the form that is determined by the researcher to study so that information is obtained about it, then conclusions are drawn". "The research variable is the object of research, or what is the point of attention of a study (Arikunto 2010)". From these two definitions, the variables in this study consisted of two, namely student learning outcomes before the use of statistical research video tutorial media through e-learning (X1) and student learning outcomes after using research statistics tutorial video media through e-learning (X2).

Data collection techniques used in this research are documentation and tests. With the following explanation:

1.1 Documentation

" Documentation is written items such as books, magazines, documents, regulations, meeting minutes, diaries, and so on, as well as not written in the form of relics such as inscriptions and symbols (Arikunto 2010)". The documentation in this study was used to obtain data regarding the number of students, student conditions, learning tools and student learning outcomes and achievements during the learning process of research statistics.

1.2 Test

"The test is a systematic procedure in observing one or more characteristics of a person. Examples of tests are tests used to measure abilities, namely competency tests and learning outcomes (Basir 2017)". In this study, t es was used to obtain data on student learning outcomes before and after the use of video tutorials. In this research, pre-test and post-test will be carried out. A pre-test to see student learning outcomes before using video tutorials. Furthermore, the post-test is carried out to see student learning outcomes after the use of video tutorials. All tests are carried out via e-learning using the google form application.

3. Result and Discussion

3.1. Result

1) Description of the Implementation of Research Results

This research was conducted in the Accounting Education Study Program FKIP, PGRI University of Palembang in students who took the research statistics course even semester of the 2019/20 20 academic years, amounting to 27 students but those who attended before and after the research statistics tutorial video were only 22 students, 5 students. not present due to limited signal during implementation. In this study, researchers wanted to see student learning outcomes before and after the use of research statistical video tutorials on the comparative hypothesis test material.

2) Description of Pre-Test Student Learning Outcomes Data (Before) Using Video Tutorials

Student learning outcomes data obtained from the pre-test (before) using video tutorials can be seen in the following table :

Table 1. Distribution Study Results in Pre Test Students (Study Results Before Using the Research Statistics Tutorial Video)

Score Interval	Frequency	Percentage	Category
8.5 - 10	4	18.18 %	Very good
7.6 - 8.4	17	77.27 %	Very well
7.0 - 7.5	1	4.55 %	Well
6.0 - 6.9	0	0 %	Pretty good
5.5 - 5.9	0	0%	Enough
4.5 - 5.4	0	0%	Less
0 - 4.4	0	0%	Very less
Total	22	100%	Very well
Average	7.9		

Source: Processed from research results

From the learning results obtained by students through the test (pre-test) before the use of statistical research tutorial videos, it is known that the students who get the very good category are 4 students with a percentage of 18.18 %, the category is like once 1 7 students (77.27 %), both 1 student with a percentage of 4.55 %, and for good enough, enough, less and very poor, namely 0% or none. The average student learning outcomes before the use of research statistics tutorial videos were 7, 9 with very good categories. Based on the description above, it can be concluded that more than most students get excellent learning outcomes, namely 77, 27 % in other words, student learning outcomes have been quite successful.

3) Data Description Student Learning Outcomes Post Test (After) Using Video Tutorials

After student learning by using video tutorials on student learning outcomes carried out by giving tests (post-tests), the results are as follows:

Table 2. Distribution of Student Post Test Results (Learning Outcomes After Using the Research Statistics Tutorial Video)

Score Interval	Frequency	Percentage	Category
8.5 - 10	7	31.82 %	Very good
7.6 - 8.4	15	68.18 %	Very well
7.0 - 7.5	0	0%	Well
6.0 - 6.9	0	0%	Pretty good
5.5 - 5.9	0	0%	Enough
4.5 - 5.4	0	0%	Less
0 - 4.4	0	0%	Very less
Total	22	100%	
Average	8.5		Very good

Source: Processed from research results

Based on Table 2 above, the obtained results of student learning are increased where the category of Most well increased so that it becomes as big as 31, 82 % (7 students). For the Good category, once decreased by 9, 09 % (2 students), where before the use the percentage was 77.27% and after the use of video tutorials became 68.18%. Then for the Well category after using the video tutorial it becomes 0% or nothing. Meanwhile, the percentage was good enough, adequate, insufficient, and very poor. The percentage was still 0% or not.

4) Description of Comparison of Student Learning Outcomes for Pre-Test (Before) and Post-Test (After) Using Video Tutorials

Comparison of student learning outcomes data before and after the use of video tutorials can be seen in the table below:

Table 3. Distribution of Comparison of Student's Pre-Test and Post-Test Results (Learning Outcomes Before and Se has Usage Video Tutorial Statistical Research)

Score Interval	Before (Pre Test)		After (Post Test)		Category
	F	%	F	%	
8.5 - 10	4	18.18%	7	31.82%	Very good
7.6 - 8.4	17	77.27%	15	68.18%	Very well
7.0 - 7.5	1	4.55%	0	0%	Well
6.0 - 6.9	0	0%	0	0%	Pretty good
5.5 - 5.9	0	0%	0	0%	Enough
4.5 - 5.4	0	0%	0	0%	Less
0 - 4.4	0	0%	0	0%	Very less
Total	22	100%	22	100%	
Average	-	7.9	-	8.5	

Source: Processed from research results

From table 3 above, it can be concluded that student learning outcomes before the use of video tutorials are in the Very Good category, namely 7, 9 and after the application of the video tutorial it increases to the Very Good category, namely 8.5. This means that video tutorials have a role in improving student learning outcomes.

5) Hypothesis test

Hypothesis testing is used to answer problems in research. The comparative hypothesis testing using the help of SPSS 24. The output is as follows:

Table 4. Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Mean Error
Pair 1	Before	79.68	22	4,005	.854
	After	84.55	22	8,836	1,884

Source: SPSS Output Processed From Research Results

From table 4, it can be seen in the mean column that the average student learning outcomes before and after the use of video tutorials are different, where before the use of video tutorials the mean or average value was 79.68, while after using video tutorials the average was 84, 55 (round to 85).

Table 5. Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Before after	22	.366	.094

Source: SPSS Output Processed From Research Results

Table 6. Paired Samples Test Paired Differences

				95% Confidence Interval of the Difference				
	Mean	Std. Deviation	Std. Mean Error	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1 Before - After	-4,864	8,259	1,761	-8,526	-1,202	-2,762	21	.012

Source: SPSS Output Processed From Research Results

Based on Table 6 above shows the kolo m significant is 0.012 <0.05 then Ha Ho accepted and rejected. While the price of t table is based on DK 21 (22-21) with a degree of error of 5%, the two-party test results in t table 2.080. So that the t value that can be seen in the t column above is 2.762 > 2.080, then Ha is accepted and Ho is rejected. This means that there is a significant difference between before and after the use of statistical research video tutorials through e-learning.

3.2. Discussion

Based on the research results, seen from the descriptive learning outcome data, there are differences in student learning outcomes before and after the use of video tutorials, where the learning outcomes before the use of video tutorials show the Very Good category with an average of 79.68, while after the use of video tutorials, student learning outcomes change categories. to be Very Good, namely 84.55. So that there is an increase in the average learning outcomes of 4, 87. Meanwhile, based on the results of the research hypothesis testing, it shows a significance value of 0.012 which is smaller than 0.05, this means that there is a significant difference in student learning outcomes between before and after the use of statistical research video tutorials through e-

learning. Thus based on these two results it can be said that video tutorials can improve student learning outcomes in taking research statistics courses.

The results of this study are relevant to the opinion of Schneps et al. (in Carmichael (2019)" Researchers note an explosion in online courses and a rapidly changing comprehension of how video can be used effectively to enhance learning". And also in line with the opinion of Lai et al. (2016: 31) "The study results showed the availability of video tutorials enriched students' learning experiences and enhanced their academic performance".

4. Conclusion

Based on the results and discussion of the research, it can be concluded that there are significant differences in student learning outcomes between before and after the use of statistical research video tutorials through e-learning with comparative hypothesis testing material both descriptively and by hypothesis testing.

Based on the conclusions of the research results, the authors suggest that the learning process through e-learning, especially for subjects that discuss data analysis or exact, can use video tutorials as a learning medium, especially in dealing with the Covid-19 pandemic and facing the advancement of the demanding industrial era 4.0. educators to always be creative in the learning process.

References

Arikunto, Suharsimi. .. 2010. Research Procedure A Practical Approach. Jakarta: Rineka Cipta.

Baharuddin, Ilham. 2014. “Effectiveness Tutorial Video Media Use As A Learning Support Of Interest And Math Students Learning Outcomes Sma Negeri 1Bajo District Of Luwu, South Sulawesi. Pp: 90-97.” Journal of Educational Reason 2(2).

Basir, Djahir and Dian Eka Amrina. 2017. Introduction to Educational Research Methods . Palembang: Sriwijaya University.

Carmichael, Michael at al. 2019. Assessing the Impact of Educational Video on Student Engagement, Critical Thinking and Learning: The Current State of Play. www.sagepublishing.com.

Guolin Lai, Zhiwei Zhu, and Douglas Williams. 2017. “Enhance Students’ Learning in Business Statistics Class Using Video Tutorials.” Journal of Teaching and Learning with Technology 6(1):31–44. doi: 10.14434 / jolt.v6n1.21161.

Hidayah, Nurul and Titin Supiani. 2019. “The Development of a Learning Tutorial Media Video in Making Sambiloto Masks with a Mixture of Rice Flour in Traditional Cosmetics Subjects.” International Journal of Innovation, Creativity and Change. 8(1).

Sugiyono. 2018. Quantitative Research Methods, Qualitative and R & D. Bandung: Alfabeta.

Biography

Depi Pramika was born on February 14, 1988. He completed his undergraduate education with an accounting education study program and obtained a Bachelor of Education degree, then continued his secondary education at Sriwijaya University and obtained a Magister Science degree. Currently active as a lecturer at the PGRI Palembang University as a teacher with a concentration in accounting education.

Nuryanti Permata Sari. He completed his undergraduate education at Sriwijaya University and earned a Bachelor of Economics, then continued his secondary education at Tridinanti University and obtained the title of Megister Management. Currently active as a lecturer at the PGRI Palembang University as a teacher with a concentration in accounting education.