EFFECTIVENESS OF TEACHING AND LEARNING PROCESS RESULTS USING A TPACK BASED APPROACH IN YAKHADA PRIVATE PRIVATE PRIMARY SCHOOL, HAMPARAN PERAK DISTRICT, DELI SERDANG DISTRICT, NORTH SUMATRA

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Abstract

This research aims to determine the effectiveness of using a TPACK-based approach which can be seen from the differences in learning outcomes of students who use the TPACK approach and students who do not use a TPACK-based approach in thematic learning for class V theme 6 sub-theme 1 at Yakhada Private Elementary School, Tanjung Perak sub-district. The population in this study was class V students consisting of 44 students. The research sample was selected from the control class and the experimental class. The research sample was taken from the class population, class VA as many as 23 students and class VB as many as 21 students. To test the hypothesis using t-test analysis. The data collection technique used in this research is tests, to analyze data from learning test results using descriptive statistics. The results of this research show that the learning outcomes or average post-test of the control class is 80.9 and the average post-test of the experimental class is 90. The t-test in the experimental class shows that t count is 2.566 > t table 0.018 at a significant level 5 %. Meanwhile, the control class shows that t count is 2.772 > t table 0.012 at a significance level of 5%. Thus, the group of students who received treatment using a TPACK-based approach had a higher average score compared to the group of students whose learning did not use a TPACK-based approach .

Keywords : TPACK Approach, Learning Outcomes

Abstract

This study aims to determine the effectiveness of using the TPACK-based approach, it can be seen from the differences in student learning outcomes who use the TPACK approach and students who do not use the TPACK-based approach in class V thematic learning, theme 6 sub-theme 1 Yakhada Private Elementary School, sub-district of expansion of silver. The population in this study were fifth grade students consisting of 44 students, the research sample was selected for the control class and the experimental class. The research sample was taken in the class population, class VA as many as 23 students and class VB as many as 21 students. To test the hypothesis using t-test analysis. The data collection technique used in this study is a test, to analyze the learning test result data using descriptive statistics. The results of this study indicate that the study results or the average post-test of the control class is 80.9 and the average post-test of the experimental class is 90. The t-test in the experimental class shows that the t count is 2.566 > t table is 0.018 in a significant level. 5%. While the control class shows that t count 2.772 > t table 0.012 in a significant level of 5%. Thus, the group of students who received treatment using the TPACK-based approach had a higher average score than the group of students studied without using the TPACK-based approach.

Keywords: TPACK Approach, Learning Outcomes

Introduction

The rapid progress of science, technology and culture has encouraged progress in various sectors. This situation will have far-reaching impacts and will place a significant burden on Education authorities. An organizational leader will face various difficulties, including conflicts that develop as a result of problems and changes, while simultaneously encouraging vision, mission and innovation within the organization. The more advanced and developed an organization is, the more problems it will face.

Changes in the world of education often give rise to various new problems, especially in the human resources (HR) sector, especially among workers who are less prepared. Meanwhile, highly skilled and competent human resources are needed to make these adjustments. In accordance with the implementation of

educational decentralization, regional autonomy and school autonomy. Therefore, educational staff are needed who can improve the quality of education which is manifested in school effectiveness in accordance with needs. Of course, in line with RI Law no. 20 of 2013 concerning the national education system (UU SISDIKNAS article 3) which states that national education aims to develop the potential of students to become human beings who believe and are devoted to God Almighty, have noble character, are healthy, knowledgeable, capable, creative, independent and become citizens. democratic and responsible in order to educate the nation.

Learning is one of the important cycles in school. Change and the capacity to change are obstacles and implications contained in learning. Learning according to Muhibbin Syah (2010:87) is a cycle and is a very important component in the implementation of each type and level. Learning is a confusing cycle that happens to everyone throughout their lives. The learning system occurs because of cooperation between individuals and their current situation. Therefore, learning can occur due to collaboration between individuals and their current circumstances. The teaching and learning process held in several schools as formal educational communities is expected to be able to coordinate changes in the self in a planned manner both from a cognitive, affective and psychomotor perspective. This learning interaction is greatly influenced by several components which include: students, teachers, school principals, learning materials, infrastructure (library), environment and several other facilities that fulfill the learning process so that it will support the effectiveness of the learning process.

TPACK is a framework that integrates the relationship between technology components and knowledge content (Spector et al, 2014). Teachers in the 21st century are not teachers who are only able to convey material using interesting methods. 21st century teachers are not just teachers who are good at technology. The teachers needed in the 21st century are teachers who have harmonious competence between technology, pedagogy and material content. If one component is not fulfilled, it can affect other components.

Schools not only encourage their students to achieve good achievements, so that schools are able to create conditions where every student is required to utilize the available time, so that school goals are created in accordance with applicable norms. The effectiveness of student learning outcomes is expected by various parties because student learning outcomes are a benchmark for the success of the teaching and learning process. The process of teaching and learning outcomes can be said to be effective if the results of the student learning process must be in accordance with what is taught and achieve satisfactory grades. Therefore, the use of appropriate learning techniques will greatly influence student learning success, therefore, choosing a learning approach is one of the very important things to pay attention to so that learning outcomes are as expected.

Based on observations made by the author at Yakhada Private Elementary School, Hamparan Perak District, Deli Serdang Regency, the teaching and learning process carried out by teachers can be said to be still monotonous because teachers still use the lecture method which is applied to students, which makes students feel bored and do not understand the material being taught during the lesson. . because it is still the new normal period, the teaching and learning process only lasts for a short time, around 2 to 3 hours of teaching and learning. Therefore, it is necessary to have an appropriate learning approach so that students feel that learning is fun. This will have an impact on student learning outcomes.

One thing that must be considered in the teaching and learning process is how the teacher chooses to implement a learning approach that creates a learning atmosphere that is able to attract student involvement, creates excitement that makes students ready to learn more easily, and can change students' negative thoughts about learning. The implementation that I can do is an implementation in the form of a TPACK-based approach.

TPACK learning is an optimization of TK used in learning to integrate CK, PK, and PCK into one complete unit which can produce an effective, efficient and more interesting learning process (Rahman, 2015). Rahman further explained that the learning process in question not only prioritizing cognitive mastery, but also attitudes and character formation of students. The integrity of TPACK is a prerequisite for a teacher to be able to implement PCK so that approaches, strategies, methods and learning techniques can be adapted to the specifications of the content being taught. With the TPACK approach to learning, teachers make pedagogical practices and understanding of concepts more effective by integrating technology. The technology used can be laptops, LCD projectors, Microsoft Power Point as learning media, videos, YouTube, smart phones and the internet. The TPACK approach aims to develop teachers' creativity and skills in using technology in learning and to improve students' learning experiences.

Based on the description above, the researcher is interested in presenting a scientific work with the title "Effectiveness of Teaching and Learning Process Results Using a TPACK-Based Approach at Yakhada Private Elementary School, Hamparan Perak District, Deli Serdang Regency, North Sumatra"

Research methods

This study uses a quantitative approach. This research involves independent variables and dependent variables which are explained as follows:

Independent Variable (X): TPACK Based Approach (in the Experiment class) Conventional Method (in the control class) Dependent Variable (Y): Results of the teaching and learning process .

The type of research carried out is quantitative research by determining the effectiveness of the results of the student learning process using a TPACK-based approach versus those who do not use a TPACK-based approach.

Research result

Based on the data that has been collected, the research findings have been summarized and then analyzed to determine the effectiveness of the results of the teaching and learning process using a TPACK-based approach at Yakhada Private Elementary School, Hamparan Perak District, Deli Serdang Regency. This data analysis went through two stages, namely descriptive analysis and quantitative analysis. The following is the research data:

Pre-test and Post-test data for class VA (Experimental Class)

Table 4.6
Respondents' assessment of the VA Class
Pre-test and Post-test

No	STATISTICS	CLASS VA	
		Pre-test	Post-test
1	Lots of data	23	23
2	Lowest score	70	60
3	Highest score	90	95
4	Mean (average)	78.4	84.5
5	Median	80.00	90.00
6	Mode	80	95
	Mean difference = 6.1		

Source: Processed Primary Data, 2022

Based on table 4.6 above, the 23 respondents taken as samples based on the post-test scores from the VA class had a difference that was higher than 1, namely 6.1, thus the difference was significant. This significant difference can be interpreted as meaning that the group of students who received treatment with a TPACK-based approach (class VA students) in the learning process had a higher average score compared to the group of students whose learning process did not use a TPACK-based approach. Furthermore, it can be interpreted that learning using a TPACK-based approach is more effective or can improve student learning outcomes.

Pre-test and Post-test Data for VB Class (Control Class)

Table 4.7
Respondents' assessment of the VB Class
Pre-test and Post-test

No.	STATISTICS	CLASS VB	
		Pre-test	Post-test
1	Lots of data	21	21
2	Lowest score	60	65
3	Highest score	90	90
4	Mean (average)	77.8	80.9
5	Median	80.00	80.00
6	Mode	80	80
		Mean difference = 3.1	

Source: Processed Primary Data, 2022

Based on table 4.7 above, the 21 respondents taken as samples based on the post-test scores from class VB have a difference higher than 1, namely 3.1, thus the difference is significant. This significant difference can be interpreted as meaning that the group of students who did not receive treatment using a TPACK-based approach (class VB students) in the learning process had a lower average score compared to the group of students whose learning process used a TPACK-based approach. This can be interpreted as learning using a TPACK-based approach that is more effective or can improve student learning outcomes.

Test Research Requirements

Normality test

The normality test aims to test whether the dependent variable and independent variable data have a normal distribution or not. Good data has a normal or close to normal data distribution. To test normality, you can analyze using the One Sample Kolmogorov Smirnov Test method. The basis for decision making is if the t-statistical probability value > Level of Significance = 0.05, then the regression model meets the normality assumption. The results of the normality test with the One Sample Kolmogorov Smirnov Test are as follows:

Normality Test Results

Variable	t-statistics	Sig.	Information
VA class pre-test	0.855	0.457	Normal
VA class post-test	1,023	0.246	Normal

VB class pre-test	0.893	0.403	Normal
VB class post-test	0.728	0.665	Normal

Source: Processed Primary Data, 2022

Based on the results of the normality test with Chi-Square above, it can be seen that the t-statistic probability value is > Level of Significant = 0.05, so the data meets the assumption of normality. Thus, the dependent variable and independent variable have a normal distribution and good data is having a normal or close to normal data distribution.

Homogeneity Test

The homogeneity test is used to determine whether the data obtained from the two groups has homogeneous variance or not. The homogeneity test results are as follows:

Homogeneity Test Results

Variable	F-statistics	Sig.	Information
VA class pre-test	0.672	0.581	Homogeneous
VA class post-test	3,537	0.037	Homogeneous
VB class pre-test	1,219	0.335	Homogeneous
VB class post-test	1,195	0.343	Homogeneous

Source: Processed Primary Data, 2022

Based on the results of the homogeneity test, the F-statistic probability value > Level of Significant = 0.05 is obtained, so the data meets the assumption of homogeneity. In this way, the populations being studied have similarities or are similar to each other.

Hypothesis test

Testing the group of students who received the TPACK-based approach treatment (class VA) in the learning process will have a higher average score compared to the group of students whose learning process did not use the TPACK-based approach (class VB students) below are the results of the different class students' test VA (experiment) using t-test:

Differential Test Results for Class VA Students (Experimental Group)

Variable	t-test	Sig.	Level of significance

Pre-test and Post-test	2,566	0.018	0.05
N : 23			

Source: Paired Sample t Test Data Processing Results, 2022

Based on the calculation results, the value of Paired Sample t Test-calculation = 0.018 > Level of Significant = 0.05. Thus, it is known that the group of students who received treatment using a TPACK-based approach (VA class students) in the learning process had a higher average score compared to the group of students whose learning process did not use a TPACK-based approach. This can be interpreted as learning using a TPACK-based approach that is more effective or can improve student learning outcomes.

VB Class Students' Differential Test Results (Control Group)

Variable	t-test	Sig.	Level of Significance
Pre-test and Post-test	2,772	0.012	0.05
N = 21			

Source: Paired Sample t Test Data Processing Results, 2022.

Based on the calculation results, the value of Paired Sample t Test-calculation = 0.012 > Level of Significant = 0.05. Thus, it is known that the group of students who did not receive treatment using a TPACK-based approach (class VB students) in the learning process had a lower average score compared to the group of students whose learning process used a TPACK-based approach. Furthermore, it can be interpreted that learning using a TPACK-based approach is more effective or can improve student learning outcomes.

Discussion

The results of this research show that learning using a TPACK-based approach has quite good effectiveness compared to learning without using a TPACK-based approach. This is shown from the results of the Paired Sample t Test analysis = 0.018 and 0.012 > Level of Significance = 0.05. In the experimental class the initial average was 78.47 and the final average after learning using the TPACK-based approach increased to 84.56. Meanwhile, the initial average for control class children was 77.85 and the final average after learning without using the TPACK-based approach was 80.95. This shows that the group of students who received treatment using a TPACK-based approach (class VA students) in the learning process had a higher average score compared to the group of students

whose learning process did not use a TPACK-based approach (class VB students).

This TPACK-based learning approach opens up opportunities for teachers in the teaching and learning process in the classroom. Therefore, with the learning process using a TPACK-based approach, the atmosphere in the class is not boring, because it uses TPACK learning support tools such as Power Point and Infocus because in Power Point there are thematic pictures that can attract students to learn. and playing, therefore this TPACK-based learning process makes students enthusiastic about learning, especially since there is a quiz in it.

In addition to the advantages obtained by using the TPACK free approach in teaching and learning. There are also obstacles. This obstacle is that the teacher's willingness to create and prepare TPACK-based materials or media is reduced, making it require a lot of time, especially making Power Points, where Power Points must be designed to be as attractive as possible for students so that they are more enthusiastic about learning. Teachers are reluctant to give up conventional methods, namely relying on textbooks and worksheets as learning media and lectures as the methods currently used.

From the description above, it can be seen that the TPACK-based approach can be used to increase students' enthusiasm and enthusiasm for learning, especially since the TPACK-based approach is usually used in the online learning process, therefore I try to use a TPACK-based approach with a face-to-face system, one of which is using media such as Power Point. The main objective of the TPACK-based approach system is to increase the efficiency and effectiveness of learning in schools, both time, facilities and energy in order to achieve goals optimally.

Conclusion

That from the results of the Paired Sample Test analysis of data in the VA class (experiment) shows t count $2.566 > $ t table 0.018 at a significance level of 5%. Meanwhile, the VB (control) class showed t count $2.772 > $ t table 0.012 at a significance level of 5%. In the experimental class the initial average was 78.47 and the final average after being given the TPACK-based approach increased to 84.56. Meanwhile for the control class the initial average was 77.85 and the final average after learning without using the TPACK-based approach was 80.95. Thus, the group of students who received treatment using a TPACK-based approach had a higher average score compared to the group of students who received learning without using a TPACK-based approach. This can be interpreted that learning using a TPACK-based approach is more effective in improving student learning outcomes compared to students who do not use a TPACK-based approach. These results have confirmed from the t-test that using a TPACK-based approach is more effective compared to learning without using a TPACK-based approach.

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