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Improvement Student Learning Outcomes through Online Learning Using Nearpod

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Abstract:
This research is a quantitative descriptive study with a one group pretest posttest research design. The population in this study were 61 public high school students in East Jakarta, and the sample used was 72 students. The data collection technique is to do a pretest and posttest using multiple choice questions that have been validated as many as 21 questions with options A, B, C, D and E. The results of data analysis, namely the hypothesis test paired sample test using SPSS 24, the results are t_{table}=1.66 < t_{count} =7.35 for df=71 indicates that the alternative hypothesis is accepted with sig.0.00 (<0.05), thus an increase in student chemistry learning outcomes in online learning using nearpod, with paired sample t test. Further analysis using gain test obtained a gain score of 0.22 low category, this is possible because students are still in the system adjustment stage learning from full offline to full online.

Keywords: Chemistry, Covid, Learning outcome, Nearpod, Online Learning.

1. Introduction

Effective and efficient learning media does not limit space and time for teachers and students in improving learning achievement. The selection of learning media must be in accordance with various criteria (Abidin, 2017) such as form, type, tools used and forms of communication (Rohani, 2019; Sari, 2019). The form of communication that teachers and students use in the implementation of learning will affect student achievement (Tandiling, 2015).

The best communication through online learning must pay attention to various aspects, including the selection of learning media (Hodges et al. 2020). The use of learning media in the learning process must contribute to improving the quality of learning (Ramdhani & Muhammadiyah, 2015). In higher education, knowledge competence increases in online lectures (Yusmaridi, 2021). However, this is different from learning in high school, junior high school and elementary school. The quality of learning in Indonesia during the COVID-19 pandemic is uneven (Heliandi et al. 2020). Kualitas pendidikan tersebut tidak terlapas dari peran orang tua peserta didik (Pantan & Benyamin, 2020; kurniatai et al. 2020).

In order for the role of parents in assisting children in online learning, a learning management system is needed that gives parents access to check their children's school activities at home (Haq, 2020). Learning management system (LMS) must that can give information to parents to assist their children in learning is needed at this time (Manurung, 2020). In addition, teachers must also pay attention to collaborative learning in classes (Zhang et al. 2017). But in reality, there are still many teachers who ignore this.

One of the LMS that facilitates collabprative learning is Nearpod (Hakami, 2020). Nearpod is innovative teaching strategies to engage students in learning (Sarginson & McPherson, 2021). Nearpod is recommended because it is easy to use, engages students, and makes it easier for teachers to monitor student progress (Delacruz, 2014). Monitoring student learning progress provides information related to the development of student achievement (You, 2016).

Nearpod has been used by several teachers and lecturers in carrying out online learning such as Egypt (Shehata et al., 2020), Ireland (McClean & Crowe, 2017), Saudi Arabia (Hakami, 2020). The use of this nearpod has been researched in that country and has been found to be effective during online learning. In Indonesian, senior high school 61 Jakarta has used nearpod as a chemistry learning, but its use has never been evaluated through scientific research.

Research related to LMS that has been carried out in Indonesia is about Edmodo (Ompungsunggu & Sari, 2019) and Moodle (Kurniawan et al. 2021). In various studies, each LMS was declared effective in using online learning (Nugrah et al. 2019). Edmodo have similarities with nearpod (Hall et al. 2015), likewise, moodle has something in common with nearpod (Lowry-Brock, 2016). So, to find out whether the LMS is also effectively used in learning specifically for chemistry learning, it is necessary to conduct research related to the effectiveness of its use. By knowing the effectiveness of using nearpod, it will be known what are the advantages and disadvantages of using nearpod in chemistry learning in high school 61 Jakarta.

2. Research methodology

This research is a quantitative descriptive study with a one group pretest posttest design (Ahmad, 2018), as presented in table 1.

Table 1. Design of Research

Pretest	Treatment	Posttest
Q_1	X	Q_2

Q_1 : Pretest Implementation
X : Implementation of online learning using nearpod
Q_2 : Posttest Implementation

The population in this study were all students at senior high school 61 Jakarta, the sample was chosen randomly (Gunawan, 2016), namely class XI natural sciences A and B, as many as 72 people.

The data collection technique in this study was to use a hydrocarbon question instrument, in the form of 21 multiple choice questions with a distribution from C1 to C5 according to Bloom's taxonomy (Utari et al., 2011) choices A, B, C, D, and E. 21 items used in the pretest and posttest, has gone through a construct validation process (Prihatini, 2014).

The research process begins by conducting a pretest on the sample, then conducting online learning using nearpod and at the end of the activity conducting a post test.

The results of the pretest were tested for homogeneity and normality (Usmadi, 2020), as a prerequisite test using SPSS 25. Furthermore, to find out whether there is an increase in student learning outcomes using nearpod, then data analysis using SPSS 25, namely the paired t hypothesis test (Harlyan, 2012) with a significance level of 5% ($\alpha = 0.05$). To find out how much the increase in student learning outcomes is, a gain test is carried out (Nasir, 2018) with the distribution of categories as presented in table 2.

Table 2. Interpretation Gain Score

Gain Score	Interpretasi
≥ 0.7	High
≥ 0.3 - <0.7	Medium
<0.3	Low

3. Result and Discussion

The data from the pretest and posttest results from 72 samples used in the study were analyzed using SPSS 24 and obtained an overview of the data as presented in table 3.

Table 3. Data Description

Mean	N	Std. Deviation	Std. Error Mean
49.13	72	19.918	2.347
60.22	72	23.579	2.779

Based on the table of results of data processing research results, as presented in table 3 above, it can be seen that there are differences in the pretest and posttest values of the sample. The average value of the pretest was 49.23 and the average value was 60.22, as presented in figure 1. The posttest value is higher than the pretest due to the treatment given after the pretest (Kusuma & Hamidah, 2020; Arjanggi & Suprihatin, 2020;

Fitri, 2015). Adanya perlakuan yang sesuai akan berpengaruh terhadap kemampuan awal dan akhir siswa (Puspaningtyas & Suparno, 2017)

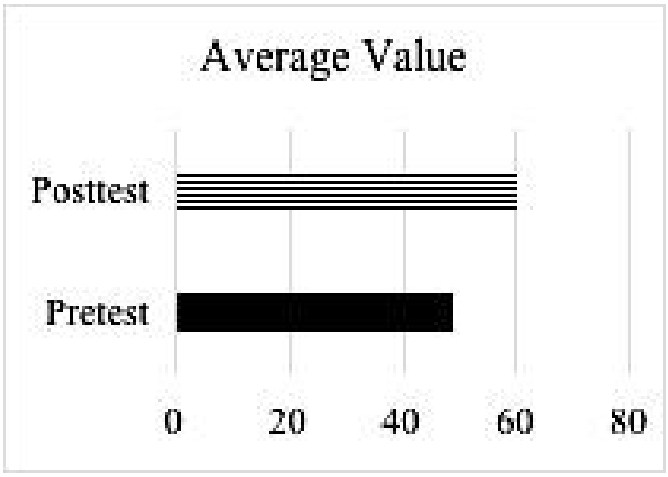

Fig 1. Average Value

Based on the picture above, it is clear that there is a difference in the average score of students on the pretest and posttest. Furthermore, the results of the hypothesis test, namely the paired sample t test carried out using SPSS 24, are presented in table 4.

Table 4. t Paired Sampel Test Result

Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
	Lower	Upper			
1.51	14.11	8.09	7.35	71	0.000

Based on the results of the hypothesis test in the table above, t_{table}=1.66 < t_{count} =7.35 for df=71 indicates that the alternative hypothesis is accepted with sig.0.00 (<0.05), thus there is a difference in the results of the pretest and posttest after being given treatment, namely online learning using Nearpod. Online learning media in the learning process that is utilized to overcome the Covid-19 pandemic conditions with various learning media such as Microsoft Teams 365 (Purba, 2021), online crosswords (Sababalat et al. 2021), quizizz (Purba, 2020), Kahoot (Purba et al. 2019). These learning media have advantages that can facilitate online and hybrid learning. The same thing with Nearpod learning media provides a very complete menu, content, and activities with the advantage that it is very easy to use. Easy to use in the sense that joining Nearpod can be done by sharing the join code with students. Another advantage is that Nearpod can be used to help teachers design learning media easily and more attractively (Astrini et al. 2024; Mursyid & Hula, 2024; Shehata et al. 2020).

Further analysis was carried out to find out how much the increase in student chemistry learning outcomes using Nearpod learning media, using the gain test and obtained a gain score of 0.22 with low category. The increase in learning outcomes using nearpod is low because students and teachers are still in the stage of adjusting the learning system from full offline to full online (Aini, 2021; Rini, 2021). Nearpod must be integrated into the chemistry curriculum so that student learning outcomes increase in the high category (Halloran, 2018).

Chemistry learning using nearpod learning media has disadvantages from the use of the nearpod application found in this study, one of which is the need for a maximum internet connection. This is in line with the results of research conducted by Musa & Al Momani (2022), the use of nearpod creates a positive learning attitude, but requires a strong internet connection. The disadvantage of learning using nearpod is that it requires costs to pay for additional features to make it more complete (Abdullah et al. 2022). Another thing that makes the use of this nearpod learning media less than optimal is that the interactive learning video media on nearpod can only be accessed for 1 month (Helnanelis & Ulyanti, 2023; Perlawanan et al. 2023).

The implementation of low category nearpod learning media when implemented in chemistry learning does not mean that the use of nearpod learning media is not recommended. The next researcher can try to maximize the use of this nearpod learning media by using nearpod in schools with adequate internet access during learning and have subscribed to nearpod so that teachers are free to explore creative and innovative chemistry learning. Another thing that can be considered is to consider this nearpod learning media in other subjects that are related to chemistry or social humanities, so that further the results of the nearpod effectiveness test can be obtained as input for all education stakeholders in efforts to improve the quality of education.

4. Conclusion

Improved chemistry learning outcomes in online learning by using the low category Nearpod.

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