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## *Gerakan Buka Kelas with the Assistance of Nearpod Platform in Astronomy and Geophysics Courses*

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### Abstract

This research aimed to provide information about students' perceptions of the Nearpod's use in Astronomy and Geophysics courses. The research site was the PMIPA Physics Education study program, FKIP, Universitas Jambi. Furthermore, the research samples were the bachelor's degree students who took Astronomy and Geophysics courses. The research was conducted using the stages that apply in lesson study activities. The research implementation took place in 2 cycles which were adjusted to the allocation and selected subject. Each cycle consists of the stages of the plan, do, and see. The instrument used in this research was the Nearpod usage perception instrument. Collecting student perception data using Google Forms while the learning process was using video recordings of learning, student perception data were analyzed using Excel.

### Keywords

Astronomy, Geophysics, lesson study, Nearpod, student perception

### Article History

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## Introduction

The rapid advancement of technology and its applications has led to developments in various fields, especially related to technology. Technology is a created system by humans that uses knowledge and organization to produce objects and techniques for definite goals (Carroll, 2017). Technology has transformed human lives in several ways. Through technology, people can achieve a lot of things. Technology is a huge contributor to human beings. It will be hard to pass the day without the simplest of technologies. Additionally, technology has become an integral part of modern society. In its integration, it occurs in some aspects of life. One aspect of technological development is the aspect of education. Education is a learning activity that gathers and includes closely related components that can determine progress and development (Baylor & Ritchie, 2002). Education is also the most essential thing in society. Students can develop their potential through an integrated learning process (Handerson & Trede, 2017). This integrated learning process can be done by using various technology.

Technology integration in education refers to technology to improve students' learning experience. Using technology during whole-class instruction can foster student engagement in auditory and visual. The implementation of technology in education can be seen in utilizing various types of technology in the classroom during the learning process, such as virtual classrooms that can create active students who are engaged with the learning objectives. In addition, technology has its products. The products are done in various ways, including the Internet and Internet-based applications, mobile technology, and various multimedia tools, and integrated into the classroom. Nearpod, an Internet-based response system, is an example of a frequently used technology in the classroom. Nearpod can help students and teachers or lecturers to have interactions without face-to-face. The use of Nearpod is known as an effective teaching and learning strategy that can foster students' autonomous learning. Furthermore, Nearpod is not only a tool but also a game-changer in the education sector that can change how students or lecturers teach and learn.

Nearpod can be used to achieve different results within classes. It can be used as a formative assessment tool by gathering direct feedback from students or as an interactive tool by engaging students with presentation content through answers, comments, and questions (Atherton, 2018). Nearpod can also be beneficial in the open class or *gerakan buka kelas*. *Gerakan buka kelas* is the stage of implementing the results of plans that have been designed at the planning stage (Plan). Some rules and regulations serve as guidelines for implementing lesson study activities so that the implementation of "*Gerakan buka kelas*" can happen according to the objectives.

This research presents a collaborative learning lesson study. Since the 2000s, this approach has been practiced and researched in various parts of the world outside the US, including Indonesia (Saito et al. 2006; Suratno, 2012), Hong Kong (Lee, 2008), UK (Dudley, 2013; Seleznyov, 2018; Vrikki et al., 2017), Singapore (Lee & Lim-Ratnam, 2014). The lesson study itself comes from Japan. With a history of around 100 years, the implementation method tends to differ from country to country and school to school. These differences can

be interpreted as differences in the coordination of professional development activities. Coordination here refers to the planning and adjustment of actions by actors, in this case, teachers and school leaders within the organization, to make more effective use of the limited available resources (Milgrom, 1992). In other words, differences in lesson study implementation methods are based on differences in coordination conditions (Milgrom, 1992) in a particular school environment and the context of the actors involved.

This research presents the results on student perceptions in learning Astronomy and Geophysics in lesson study collaborative learning, using Nearpod to conduct quizzes (test questions) and present material in class. It is beneficial as a pilot to test the effects of using quiz features and presenting material using Nearpod in class. In addition, the research objectives are to answer the following questions: 1) How do students respond to the Astronomy and Geophysics courses presented using Nearpod in learning? 2) What are the students' perceptions of Nearpod's integration with the learning system?

## **Literature Review**

### ***Nearpod***

Nearpod is accessible with an Internet connection. It is a platform that can enhance the teaching and learning process for the lectures provided by the lecturers (Hakimi, 2020). It helps lecturers make any lesson interactive in the classroom or virtual (Wang & Chia, 2022). A lecturer can create an interactive presentation containing quizzes, videos, collaborative boards, and others with Nearpod. Besides, students can view their learning materials during the lectures using the Nearpod platform on their own electronic devices, such as smartphones, tablets, and laptops (Kaddoura & Al Husseiny, 2021).

Using the Nearpod, the lecturers can share their presentation slides with their students by providing a unique code in the first part. Once the student gets access, they can see the presentation on the student's screen, and the lecturer can control the presentation's pace. Students can only see the slide until the lecturer chooses to display it and is restricted from accessing subsequent slides. The lecturer can view the number of active students during the teaching session. It enables the lecturer to monitor student engagement and understand the learning progress through the online activities prepared using the platform.

Nearpod also allows students to interact with the contents, and the lecturer can see the response from each student for definite activity. Then, the lecturer can choose to discuss further or give formative feedback. Hence, it makes teaching easier with the interactive tools, resources, and content teachers need all at once.

In Nearpod integration, there is a need to conduct tests on the student's learning preferences and to customize the subject matter to the test results (Mishra & Koehler, 2006). In addition, according to Zhao (2021), the Nearpod integration is to increase collaboration and interaction because Nearpod is a good tool to provide feedback to the students, a multitude, and formative assessments, and offers various content.

The Nearpod features enable the lecturer to see the result in real time. It eliminates the time-wasting element, which is mostly found in the traditional learning process. However, it

has challenges. The first is related to the pacing. Since it is designed based on the student's pace, the students will speed through the quiz costing them the lesson. The second is the students' possibility of anonymity. Meanwhile, it can increase the students' motivation, especially when answering wrong questions, which often decreases their morale in the lesson. In addition, it also enables students to give unrelated answers. In this research, there is a need to look at the challenges.

### *The advantages of nearpod*

Nearpod has a lot of advantages in the education world. [Sanmugan et al. \(2012\)](#) stated that one of the advantages of Nearpod for the lecturer is the ability to control the pace of the student's task presentation. The lecturer can view the number of students participating during the presentation of the learning process. In addition, another advantage is that an immediately recorded assessment can help the lecturer to understand the following lesson.

Next, [Selena and Sanda \(2017\)](#) stated that the advantage of Nearpod is the lecturer can receive immediate feedback or reports on students' activities with it. It means that the lecturer can check all the students' progress and share the best answers. This process is incapable of being done in traditional learning classrooms, where the lecturer must do it one by one manually. Furthermore, Nearpod can engage and help the students during the learning process with its guidance ([Delacruz, 2014](#)).

By using Nearpod, it can increase the student's engagement and participation during the learning process. It is known that one of the teachers' goals in teaching is to create student engagement. Here, with Nearpod, the lecture can ensure the students are on task and participating. The students can feel comfortable answering the given question when the lecturer encourages the class discussion. The students must submit the answers by typing, selecting images, or voice recording to promote inclusion and accessibility in the classroom. Besides, Nearpod can also access student feedback in real time. Several of Nearpod's interactive learning activities can be used as formative assessments during the lesson and allow the lecturers to modify the lesson instruction for the following day. The further advantage is that Nearpod can create fun learning through gamification. Gamification can be beneficial in learning to increase engagement and accessibility. Based on the video games, the students can engage in active learning by competing with classmates with Nearpod's Time to Climb which provides a friendly competition. Last, Nearpod can prepare students for future careers. Digital literacy means the students are better prepared for future careers since they build a growth mindset, and the students also need to be forward-thinking innovators.

## **Methodology**

### *Research design, site, and respondents*

This research is a descriptive survey research design. According to [Creswell \(2012\)](#), descriptive research is to collect information about the present existing condition. The purpose of the descriptive method is to find a detailed explanation and description of the

research sample systematically (Creswell, 2012). In addition, Creswell (2012) stated a survey design is a design used in quantitative research in which the researchers administer a survey to a sample or to a population of people to describe their attitudes, opinions, behaviors, or characteristics. The survey is implemented using Google Forms, which is given a limited time to fill out the questionnaire. The option to use an online data collection platform ensures the health safety of the respondent as much as the respondent fills out the survey questionnaire from home (Funa & Talaue, 2021).

This research was conducted according to the lesson study stages, which consist of plan, do, and see. Learning activities are carried out in two cycles, with a description of each stage presented in the following table, where the material in the Astronomy and Geophysics course was 'Plate Tectonics' and 'Earthquakes'.

**Table 1.** *Stages of lesson study*

No	Activities	Cycles	Dates	Materials
1	<i>Plan 1</i>	Cycle 1	Tuesday, 06-09-2022	Plate Tectonics
			Wednesday, 07-09-2022	
	<i>Do 1</i>		Thursday, 08-09-2022	
	<i>See 1</i>		Friday, 09-09-2022	
2	<i>Plan 2</i>	Cycle 2	Tuesday, 20-09-2022	Earthquake
			Wednesday, 21-09-2022	
	<i>Do 2</i>		Thursday, 22-09-2022	
	<i>See 2</i>		Friday, 23-09-2022	

### ***Research instrument, sample, and analysis***

The instrument in this research was Google Form, which consisted of 13 questionnaires: 8 items to find student responses to the material presented using Nearpod in learning, and five items to determine students' perceptions of Nearpod integration with learning systems. In addition, this research used a non-probability purposive sampling technique in selecting the research samples. The research sample was 64 Physics education students in semester 1 of the 2022 academic year. They were asked to fill out a consent form indicating the student's consent to participate in this research. Afterward, the researcher analyzed the data from the percentage of students who responded to each item using Ms. Excel. For learning activities, data were collected through video recordings during the learning process and became a consideration in the see stage. Both data were described descriptively. In addition, the researcher analyzed to find the answers to the research questions and to conclude the research topic.

### **Findings and Discussion**

Presented descriptive analysis in this research includes an analysis of the characteristics of the respondents and the number of students who agreed to fill out the instrument. The discussion regarding each descriptive analysis is presented as follows:

Figure 1. Characteristics of respondents based on gender

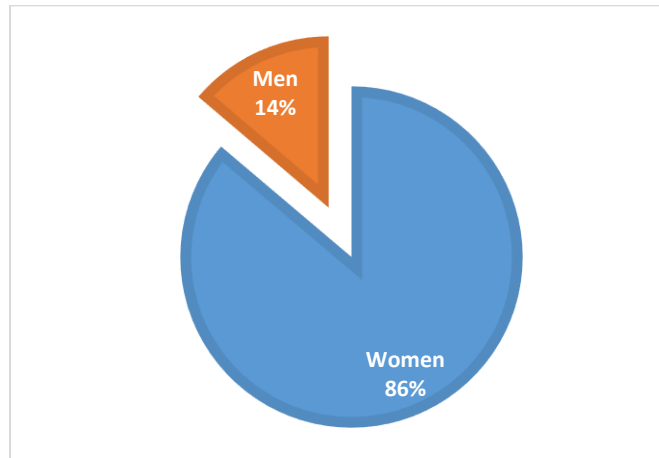


Figure 1 above shows data about the gender of the research sample. The research sample consisted of eight men, with a percentage of 14%, and fifty women, with a percentage of 86%. The difference between the male and female respondents was forty-two people. Based on the data, most respondents were women, with a percentage of 86%. It shows that the PMIPA Physics Education study program consisted of more women than men.

Figure 2. Number of student responses

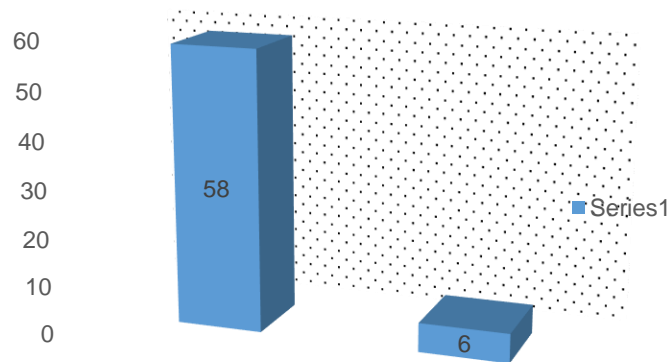


Figure 2 above shows that 58 students agreed to provide feedback from a total sample of 64 students. It means 6 Physics Education students did not share their responses to the research instruments. Of these 6 students, some students did not attend the class because of sickness.

**Table 2.** *Students' responses to the material using Nearpod*

No	Statements		
1	I have more opportunities to work together	96,9%	3,1%
2	My level of interactivity in class increased	97,2%	2,8%
3	Using the Nearpod collaborative activity tool improves my understanding	82,2%	17,8%
4	Asking questions helps me understand things better	93,6%	6,4%
5	I like to share my answers with the class	93,3%	6,7%
6	The diversity of learning resources adds to my understanding of lectures	97,7%	2,3%
7	Ways to control learning activities and materials help me to be more involved in the learning process	95,6%	
8	Lectures explained better	96,4%	3,6%
Average		94,1%	

Based on Table 2 above about the students' responses to the material using Nearpod, the highest score is 97.7%, which is "The diversity of learning resources adds to my understanding of lectures". Meanwhile, the lowest score is 82.2%, which is "Using the Nearpod collaborative activity tool improves my understanding". However, the average score is 94.1% on average. It adds value to their learning and enhances their overall learning experience. In general, students are positive about the experience and recommended using Nearpod in the learning process. Each item has almost the same score. Therefore, there were no significant differences from one item to another.

The highest score from Table 2 above shows that Nearpod can help students comprehend the lectures. As [Powa and Murniati \(2022\)](#) stated using Nearpod in learning activities can engage all students in the class during the learning process so they can understand more about the lesson explained. Besides, the students have more chances to work together during the learning process through Nearpod. It is also the same as [Musa and Momani \(2022\)](#) that Nearpod can make students work together easily and effectively. [Burton \(2019\)](#) also explained that Nearpod can increase the student's engagement in learning something. In addition, it can improve the student's achievement because they will participate in every activity during the learning process and look encouraged to be active during the learning process. Furthermore, the statement "I have more opportunities to work together" also shows a high score category. This situation is also the same as what was stated by [Měkota and Marada \(2020\)](#) that Nearpod can make one student with other students work in a team or together. However, when the students can work together, it shows that there is interaction with each other, so the learning process will be beneficial and efficient to help the students become easier to understand the lesson with the learning system and learning assistance.



**Table 3.** *Student perceptions of Nearpod integration with learning systems*

No	Statement		
1	The video conferencing learning system is a better learning tool compared to its integration with Nearpod	84,8%	15,2%
2	Using Nearpod distracts me from what I need to study	78,6%	21,4%
3	There is no difference in teaching with or without using Nearpod	71,4%	28,6%
4	I learn more when I am not using Nearpod	79,9%	20,1%
5	I do not like using new technology during college	61,6%	38,4%
Average		75,26%	

Based on Table 3 above, the highest score of students' perception of Nearpod integration with learning systems is 84.8% for the items "The video conferencing learning system is a better learning tool compared to its integration with Nearpod". Meanwhile, the lowest score is 61.6% for the item "I do not like using new technology during college", and the average score is 75,26%. The overall score shows that the student's perception of Nearpod integration with the learning system is having a positive perspective. In general, the students are positive about the Nearpod integration in the learning system.

Using Nearpod distracts the students from what they need to study. The results show that there are not several students who responded to that. Hakami (2020) stated that Nearpod is helpful and beneficial. However, the internet speed and the sound clarity need to be fixed because the sound in the class was the most distracting during the learning process. Furthermore, the table also shows that most students like using new technology in the learning process. It might happen since the technology, such as Nearpod, has various features that can interact with the students to use it and motivate them to study using the assistance platform as a tool. In addition, Putra et al. (2021), stated that from a total of 74 students, 61 students said they love to use Nearpod as a new technology for online learning. All the features within the technology encourage them to join and study the lesson better than before.

### Conclusion

The statistical analysis using Ms. Excel from 13 statement items shows that 1) student responses to the material presented using Nearpod in learning are very good and presumably support the use of Nearpod to present material in learning; 2) student perceptions of the integration of Nearpod with the learning system is at a good stage. Only in the 13<sup>th</sup> item, there is a low student response value, which was 61.6% of the interviews conducted with students, there are difficulties when adapting to using some of the Nearpod features during learning, such as the drawing feature. It causes students to be less free to present more ideas and answers.

### Declaration of Conflicting Interests

The author declared no potential conflicts of interests.



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