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The Use of Mentimeter to Improve Learning Interaction: A Classroom Action Research Study

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Abstract

The primary objective of this study is to ascertain the usefulness of Mentimeter in improving learning interactions. The type of research used is classroom action research, conducted in a class of 18 seventh-grade students in the even semester of 2022-2023 at SMP Hidayatul Muhajirin. The research consists of two cycles, and the implementation of each cycle includes stages such as planning, implementation, observation, and reflection. The study discovered that the learning interaction activities among students consistently increased in each meeting, with an average of 67% in Cycle I and 78% in Cycle II. There was an increase of 11%, indicating good criteria. The improvement in learning interaction among students was due to the utilization of Mentimeter as a learning media. The Mentimeter application has various features that allow teachers to create interactive and engaging learning activities, such as quizzes, polls, and word clouds. The use of these features helps students to be more involved in the learning process and improves their understanding of the material. The research also found that Mentimeter can provide real-time feedback to both teachers and students. Teachers can track students' understanding of the material, and students can see their progress throughout the learning process. This feedback helps teachers adjust their teaching methods and materials according to students' needs. Based on the analysis and discussion of the research, it can be summarized that the use of Mentimeter can enhance the learning interaction of students. The use of Mentimeter can be recommended for teachers to improve the quality of learning interactions and create a more engaging and interactive learning environment.

Keywords: Learning Achievement; Learning Interaction; Mentimeter; Physics Lesson

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INTRODUCTION

The fourth industrial revolution (IR 4.0) is an era where everything is done using sophisticated virtual technology. Especially in the industrial sector and even in the world of education, technology has become a crucial aspect to support development and follow the trend of globalization. The fourth-generation industrial revolution encourages systems that are fully automated in all activity processes (Efendi et al., 2020; Hamdan, 2018; Purba et al., 2021). Technological advancements play a vital role, especially in the education sector. Educators must develop their abilities to direct the learning process, create innovations that support the learning process, and keep up with technological and informational developments. One of the ways is by designing learning media that utilize

technology to deliver the material (Faradila & Aimah, 2018; Sofa et al., 2022; Tindowen et al., 2017). The utilization of technology as learning media is in the form of an Android device. Until now, Android has been used as a communication tool. Besides, it can be developed as an interactive learning media to serve students. Learning media is a crucial factor in supporting successful learning (Aditya et al., 2021; Gopal et al., 2021; Octasyavira et al., 2022). Interaction between educators and students is essential during the teaching and learning process since the interaction during learning is the effort to create a good learning situation (Rahmat & Gusman, 2020).

Physics is an essential subject to be taught in secondary schools since it can foster critical thinking skills that are useful in solving daily life problems. Besides, this subject is needed to provide knowledge, understanding, and various skills to students as a foundation for pursuing higher education and to develop science and technology (Asmawati et al., 2018; Putra & Wiza, 2019; Sari et al., 2022). However, in reality, high school students often complain about the difficulty of learning physics, resulting in errors when solving problems. Samudra et al. discovered that high school students harbor a dislike for physics subjects for various reasons. Among these, students perceive learning physics as challenging due to its demand for memorization and its inclusion of numerous mathematical elements. Besides, they want physics learning that is simple and contextual; they feel bored because learning in class is still dominated by lectures; and there is a lack of interaction between educators and students that makes students feel less noticed. Therefore, innovative learning media are needed to make the learning process more enjoyable and increase interaction between students and educators in learning. One of the learning media that can be used is Mentimeter (Herlawati et al., 2021; Mohin et al., 2022; Samudra et al., 2014).

Mentimeter is a web-based platform used to create presentations with feedback (Laswi et al., 2020; Pichardo et al., 2021). This application allows users to share knowledge and feedback on smartphones using presentations, surveys, or class opinion sessions, quizzes, meetings, conferences, and other group activities. Anyone can use this application for free, featuring an appealing background. Educators widely utilize Mentimeter media, stimulating students' interest in learning. The use of the Mentimeter learning media is expected to increase interaction in physics learning (Febrianti, 2021; Hermawan & Dewi, 2023; Sari, 2021).

This is in line with several previous studies that also discuss the use of Mentimeter. One of them is the first research conducted by Samat and Munir. This study found that using Mentimeter showed an improvement in students' English language abilities (Samad & Munir, 2022). The second study was conducted by Jackly and Lestariningsih. The study found that the use of Mentimeter as a platform for discussion has the potential to foster active participation and collaboration among students (Jackly & Lestariningsih, 2022).

Based on observations at Hidayatul Muhajirin Middle School and the data provided, the learning gap is the difficulty of students in learning physics, particularly in understanding the subject due to its perceived complexity, heavy reliance on memorization, and mathematical elements. Students also express a desire for simplified and contextualized teaching, along with more interactive teaching methods that encourage greater engagement between students and teachers. The lack of innovative and engaging teaching tools and technologies, especially in the context of the fourth industrial revolution (Industry 4.0), further exacerbates the learning gap.

This learning gap has important implications for the educational outcomes of students, as physics is a fundamental subject that develops critical thinking and problem-solving skills necessary for daily life. The difficulty of learning physics can impede the

acquisition of knowledge and skills and limit the potential for students to progress to higher levels of education or career opportunities in science and technology. To address this learning gap, there is a need for innovative teaching methods and technologies that cater to the needs and preferences of modern learners. This includes the use of interactive tools such as Mentimeter, which provides a more engaging and personalized learning experience for students. Additionally, teachers need to adapt to the changing needs of learners and incorporate more contextualized and simplified teaching methods that make physics more accessible and less intimidating. By bridging this learning gap, students can develop greater interest and engagement in physics and become better equipped to navigate the challenges of the fourth industrial revolution.

Mentimeter's role in overcoming problems in learning is to minimize boredom during the learning process in class, as well as make the atmosphere in the class more active so that students can more easily understand the material and ask and answer questions.

The aims of this study are to investigate the impact of using Mentimeter as a learning tool on the level of engagement and interaction of students during lectures or classroom activities. Additionally, the study seeks to explore the potential benefits of Mentimeter on the effectiveness of learning, including student retention and knowledge acquisition. The research also aims to identify the challenges and limitations associated with the use of Mentimeter as an educational tool and to provide recommendations for optimizing its effectiveness in enhancing the learning process.

METHOD

The research approach employed for this study is classroom action research (CAR). The research was conducted at Hidayatul Muhajirin Junior High School in the second semester of the 2022-2023 academic year with a class of 18 seventh-grade students. The factor studied in this research is the improvement of student-learning interaction. In classroom action research, four actions are carried out, namely: (1) planning, (2) implementation, (3) observation, and (4) reflection.

The research procedure carried out consisted of two cycles, namely Cycle I and Cycle II. Cycle I consists of planning, implementation, observation, and reflection stages. At the planning stage, the activities carried out are preparing learning plans, creating and completing learning media tools, evaluation tools, making questionnaires, etc. The implementation stage is carried out during the learning process. The observation stage carried out was observing student activities. At this stage, data analysis is carried out after conducting the research. In this observation, the researcher recorded the students' activities while they participated in teaching and learning activities. The reflection stage is carried out after carrying out learning activities. Reflection aims to discuss the results of determining the learning activity process that has been carried out. Reflection activities discuss the advantages and disadvantages of the cycle that has been carried out. Cycle II consists of planning, implementation, observation, and reflection stages. At the planning stage, (1) return to designing the learning implementation plan (*RPP*) for the topic of the solar system; (2) return to designing the learning scenario; (3) prepare student questionnaires; and (4) prepare a test plan. In the implementation stage, the actions in cycle II are improvements and delivery in cycle I. In the observation stage, observations are made of all changes in students' actions and attitudes in the teaching and learning process regarding deficiencies that occurred in cycle I. In the reflection stage, it is hoped that there will be changes to improve learning outcomes. At the end of cycle II, the test results are analyzed.

The data collection carried out in this research involved using observation sheets to increase learning interactions. The data technique used is quantitative descriptive, which aims to describe data about student activities in learning.

RESULT AND DISCUSSION

The research aimed to examine the effectiveness of utilizing Mentimeter in enhancing student interaction in the classroom. The research was conducted in two cycles, with data collected on January 10, 2023, and January 14, 2023.

The mentimeter used is an open-ended type of question where learners can answer the question in one long sentence. Figure 1 and Figure 2 show examples of questions about the solar system.

Figure 1 Asking for The Planet's Name in The Solar System

Figure 2 Asking to Write The Result of The Video Observation on The Solar System Phenomena

The results of the research are presented in Tables 1 and 2. The findings revealed that the average score of student interaction during the learning process increased in both cycles. During cycle 1, the mean score stood at 67%, meeting the good criteria.

Table 1 Finding

Observed Aspects	**Indicators**	**Cycle I**	
		Mean	STD
Teacher presentation	Number of words	2.28	0.46
	Content quality	2.17	0.38
Practicing Activities	Number of words	3.56	0.51
	Content quality	3.06	0.42
Total		11.06	1.06

In cycle 2, the mean score saw an increase to 78%. indicating an increase of 11% with a good criterion.

Table 2 Finding

Observed Aspects	**Indicators**	**Cycle II**	
		Mean	STD
Teacher presentation	Number of words	2.56	0.51
	Content quality	2.56	0.51
Practicing Activities	Number of words	3.89	0.32
	Content quality	3.67	0.49
Total		12.67	1.03

The learning theory that supports the use of Mentimeter is social constructivism theory, which emphasizes the role of social interaction in learning. According to Vygotsky's social constructivism theory, learning is a social activity in which students construct knowledge by interacting with their environment and others (Putu et al., 2020). The use of Mentimeter allows for interactive and collaborative learning, enabling students to construct knowledge through social interaction (Putra & Andriansyah, 2022).

Furthermore, the findings of this study are consistent with prior studies that found the use of technology-enhanced teaching tools, such as Mentimeter, positively impacted student interaction in the classroom. The results of interviews with students show that students feel happy when learning using a mentimeter because they can interact easily and add new insights.

Student 1:

> "*Pakai Mentimeter sangat senang seperti main game. Kalau seperti ini semua mata pelajaran, akan menarik*". (Using Mentimeter is very much like playing a game. If it's like this, all subjects will be interesting).

Student 2:

> "*Guru lain belum ada yang pakai ginian. Apalagi ada videonya juga yang bisa dilihat-lihat. Jadi tidak bosan*" (No other teacher has used this. Moreover, there is also a video that can be seen. So I don't get bored).

The results of the research also support the view that student interaction is essential in the learning process and that its enhancement can positively impact students' academic achievement. The utilization of Mentimeter as a teaching tool can enhance student interaction and contribute to their academic achievement. The social constructivism theory supports this approach, emphasizing the importance of social interaction in learning. Further research is recommended to explore the effectiveness of Mentimeter in enhancing other aspects of the learning process.

In addition to the positive results obtained from the utilization of Mentimeter within the classroom, there are several learning theories that support the use of technology to improve student engagement and interaction in the classroom. One such theory is Albert Bandura's Social Learning Theory, which highlights the significance of observation, modeling, and imitation in the learning process. By using interactive tools such as Mentimeter, students are encouraged to actively participate in the learning process, observe and learn from each other's responses, and model appropriate behaviors. Another theory that supports the use of technology in the classroom is the Cognitive Load Theory, which suggests that learning is optimized when the cognitive load of students is appropriately managed. Interactive tools such as Mentimeter can help manage cognitive load by providing students with a visual representation of concepts and allowing them to interact with the material in a way that reduces the burden on working memory.

Overall, the outcomes of this research suggest that the use of Mentimeter in the classroom can effectively increase student engagement and interaction. By incorporating learning theories such as social learning theory and cognitive load theory, teachers can optimize the use of technology in the classroom to improve student learning outcomes. This is supported by Suwarno (2020) in his research, namely that the multimedia developed must be managed well.

CONCLUSION

Based on the outcomes and discussion of this research, in conclusion, the utilization of Mentimeter can increase the interaction in learning activities among students in SMP Hidayatul Muhajirin. The results of the analysis show an increase in the teacher's presentation and the quality of exercises given to the students in both cycles. The overall interaction activity among the students increased from 67% to 78% between the first and second cycles. This improvement in interaction activities can be attributed to the active use of Mentimeter as a digital tool to enhance engagement, participation, and collaboration in learning activities.

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