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What are junior high maths students' Edmodo interests and learning outcomes?

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Abstract

This research aims to describe students' interests and learning outcomes after using the Edmodo application. This type of research is descriptive by categorizing and using a quantitative approach. The subjects of this research were class VIIB students at SMP Negeri 2 Tegalsari. To see students' interest after studying using Edmodo through data obtained from learning interest questionnaires and interviews given to students. Meanwhile, it is obtained from the quiz/test scores to see student learning outcomes. Based on the results of data analysis, it was found that the use of the Edmodo application in mathematics learning went according to expectations seen from student participation from the beginning of the learning activity to the end and was following the RPP, so it could be said to be quite successful. The students' learning interest results are categorized as good because they meet the three predetermined indicators: feelings of joy, attention, interest, and involvement. Student learning outcomes are also classified as having a reasonably good score so that it can be said that students can understand the learning material and solve problems well.

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1 Introduction

Education is a conscious human activity that improves human resources by transferring knowledge and character formation to prepare students for maturity and personal maturity in the nation's life so that they are more advanced and prosperous (Cholily, 2023; Cmeciu, 2016; N. et al., et al., 2022). Considering the importance of education, students are asked to learn (Park, 2019; Suki, 2017); learning is a change in students from not knowing to knowing or changes in their behavior (Alghasab, 2019; M. et al., 2024; Suranto, 2020).

However, learning does not always require memorizing the material in the same place and simultaneously (Budiarti et al., 2024; Cao, 2019). Still, students are also asked to understand the concept better to clearly explain the material (Dzulfikar, 2023; Reihani et al., 2024). Learning is a communication process between educators and students (Abus, 2023; Bausir & Rahmasari, 2023; Setio & Baiduri, 2023). The communication process does not always run smoothly (Hamutoglu, 2019; Syaifuddin et al., 2022), leading to misunderstandings or misconceptions.

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Therefore, teachers must be able to provide various learning alternatives for students so that they are not monotonous and can understand the concepts being taught well. According to (Schabas, 2023; Utomo et al., 2023), the current challenge is the need to prepare a more innovative learning system, for example, adjusting the learning curriculum and improving students' abilities in various matters related to the current era of the industrial revolution. One way of responding to the challenges of the industrial revolution is by providing learning through an e-learning-based Learning Management System (LMS) (Çeçen, 2020; Laila et al., 2023; Vedianty et al., 2023).

In general, students consider mathematics a complex subject to understand because many people have developed a perception that mathematics is a complex science (Winson et al., 2023). Mathematics is not a science that must be memorized but rather a science that must be understood, starting from the concept of how to do it to the order in which it is done. Mathematics is not complicated if the work is well structured and uses logical and rational thinking. Mathematics has a massive role in everyday life; therefore, mathematics needs to be taught at every level of education (Ihle, 2018; Putri et al., 2023; Venkatesh, 2000).

Teachers have widely used non-electronic learning media, unlike electronic learning media, which is still rarely used by teachers, including learning media using Edmodo (Choirudin et al., 2023). Edmodo is one of the many information and communication technologies in the form of a social networking website that has complete features that can be used to simplify the learning process for students and teachers in class and outside the classroom, as well as make it easier for students and teachers to discuss at any time (Pradana & Uthman, 2023). Edmodo can not only be used as a discussion space between teachers and students, but teachers can also manage Edmodo as a place to give assignments, store teaching materials to be used, and carry out daily exams (Lanusi, 2018).

In several Junior High Schools, subjects that students often complain about, especially Mathematics, are considered complex and less attractive than other subjects, resulting in low interest and learning outcomes in Mathematics at school (Ahmed & Kumalasari, 2023; Rahman, 2023). Several obstacles are encountered in the learning process (da Silva Santiago et al., 2023). Mathematics is characterized by completing assignments from teachers that are postponed and incomplete. Students also prefer simple tasks (Arif et al., 2023; Nasiha et al., 2023). Characteristics of interest in learning, such as being diligent, tenacious, independent, self-confident, and happy to solve problems, according to new teachers, are around 30% of students (Sugianto & Khan, 2023). Students show a response in learning mathematics with their behavior while still chatting outside the learning material. Students also feel happy when the teacher is absent (Khoiriyah et al., 2022; Tenda, 2021). Indicators include a feeling of liking or enjoyment in learning activities, a feeling of interest in learning, an awareness of learning without being asked, participating in learning activities, and paying attention to learning (Rahayu & Timur, 2020; Santiago et al., 2023).

The problem boundaries of this proposal will focus on mathematics subjects for class VII students at SMPN 2 Tegalsari in terms of learning interest and student learning outcomes with sub-material adapted from the discussion of previous material (Karim & Zoker, 2023). Analysis of using Edmodo in mathematics subjects is considered necessary to be researched so that it can be used as a reference in the future for consideration in the use of electronic learning media in schools that are not familiar with or familiar with the Edmodo application before.

Previous research conducted by (Ahmad et al., 2014) with the title Effectiveness of the Application of the Edmodo E-Learning Model in Islamic Religious Education Learning on Student Learning Outcomes showed that using Edmodo learning media would be more effective when compared to using conventional media in obtaining final score. This research shows the same results as research conducted by (Lanusi, 2018) with the title Application of Edmodo Digital Classes to Increase Student Interest and Learning Outcomes which shows that if learning using Edmodo media can increase student interest in learning, student learning outcomes increase, which is significant compared to before using Edmodo.

However, there are different results from research conducted by (Winson et al., 2024) entitled Development of an Online Daily Test Assessment Instrument to Measure Mastery of Physics Material and Know the Learning Response of High School Students showing the results that 50% of students gave excellent responses with this daily online exam. Although several researchers have tried to combine Edmodo with other variables, no one has ever attempted to combine Edmodo with interests and learning outcomes. Hence, researchers are interested in making it to increase experience and knowledge. Based on a literature review looking at previous research and student problems at SMPN 2 Tegalsari in mathematics subjects.

Based on the background described, the problem formulation to be studied is (a) What is students' interest in learning after learning to use the Edmodo application? (b) What are the student learning outcomes after using the Edmodo learning application? In the problem formulation described, the research objectives to be achieved are (a) Describe students' interest in learning after using Edmodo and (b) Describe student learning outcomes after using Edmodo. It can be helpful as a

reference if you are interested in conducting research that has the same concept as this research. This research has a goal, namely, so that students can have the motivation to learn without having to be asked, add learning references in a new way, namely by using Edmodo learning media, learning activities can be carried out without being limited by place and time.

2 Theoretical Review

Edmodo is an application that may be used to construct an online community of practice on mobile devices and the web. Edmodo is a free social learning platform that allows students to access course content published by their teachers (Aquino, 2019; Rahmawati et al., 2023; Shania et al., 2024).

The platform enables teachers and students to engage with one another via messaging, allowing students to converse and collaborate in a virtual classroom setting. Edmodo differs from other social networking sites in that it is a social learning platform created for collaboration, communication, knowledge sharing, assignments, and discussion among students, teachers, and parents. Every member on Edmodo has a profile page (Alia Mokhtar, 2016; Ekici, 2017).

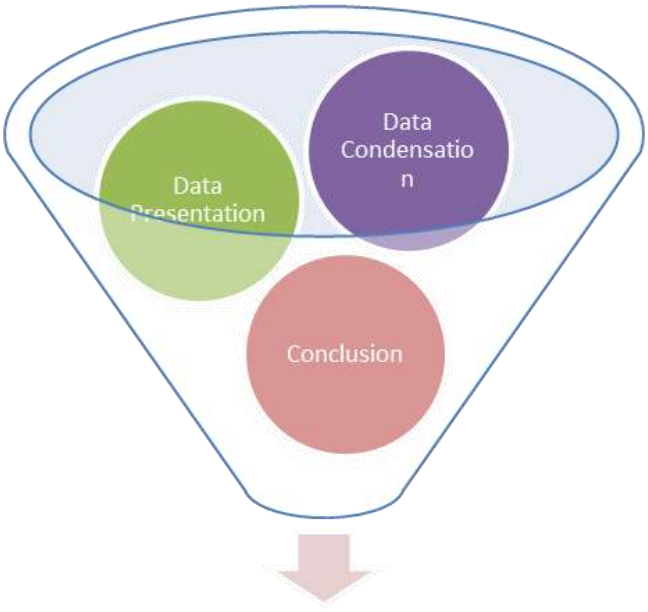
Edmodo is a social learning network labeled 'Facebook for schools' or a 'Facebook lookalike' by instructors, parents, and students. Edmodo was launched in 2008, and there are few studies relevant to Edmodo as a learning platform, according to MALCat (2016), a website holding literary works conducted by Malaysian researchers. Meanwhile, according to Alexa Internet's internet site summary, the United States won in having the most Edmodo users (Alia Mokhtar, 2016).

3 Method

This descriptive research categorizes and uses a quantitative approach to describe students' interests and learning outcomes after studying using the Edmodo application. Descriptive research clearly describes the variables related to the unit under study (Bausir et al., 2023; Darmayanti, Utomo et al., 2023; N. et al. et al., 2022). Meanwhile, the quantitative approach is an approach that leads to detailed descriptions of individual or group activities, participation, attention, and understanding of something, expressed in narrative writing to produce generalizations (In'am et al., 2023; Pandia et al., 2022). The subjects of this research were class VIIB students at SMP Negeri 2 Tegalsari. We are researching odd learning with two meetings, more precisely on February 15 and 17, 2022.

The implementation of data analysis in this research was obtained from the results of student learning interest questionnaires, test results, and interviews between researchers and research subjects (Cholily et al., 2021; S. et al. et al., 2021; Sandy et al., 2022). The data collection results were processed using data analysis techniques adapted to the research objectives.

Data analysis techniques are systematically searching and compiling data obtained from interview field notes, explaining it clearly, choosing what is essential and what will be studied, and making conclusions that are easy to understand (Çobanoğlu, 2018; Sumardi, 2020). Based on the approach used in this research, namely a qualitative approach, the researcher refers to the data analysis technique proposed by (Khoirunnisa, 2019; Tsetsos, 2019). Figure 1 illustrates the sequential phases of the research procedure to be conducted. Qualitative data analysis consists of data condensation, data presentation, and conclusion.



Qualitative data analysis

Figure 1 depicts the sequential process of the Qualitative data analysis procedure (Yolcu, 2019; Yuwono et al., 2021).

a. Data Condensation

Data condensation means summarizing or selecting important things in the data, summarizing and focusing on things that are considered essential, and discarding those that are not needed. Data that has been condensed will make it easier for researchers to carry out further data collection and provide a clearer picture. Data condensation activities were carried out after administering a questionnaire about interest in learning to students, with the following steps: (1) calculating the total score for each statement indicating student interest in learning using the Edmodo application, (2) grouping the total scores according to the indicators specified. Attached, (3) upload the test questions to Edmodo for each student to do, (4) after the test questions have been done.

b. Data Presentation

The following data analysis technique after data condensation is data presentation. In this study, researchers used narrative text to present data because the research approach was qualitative. Activities in presenting data in this research are as follows: (1) collecting information from the results of questionnaires, tests, and interviews; (2) the collection of information is discussed by narrowing it down into narrative sentences or texts that describe interests and learning outcomes—students after using the Edmodo application.

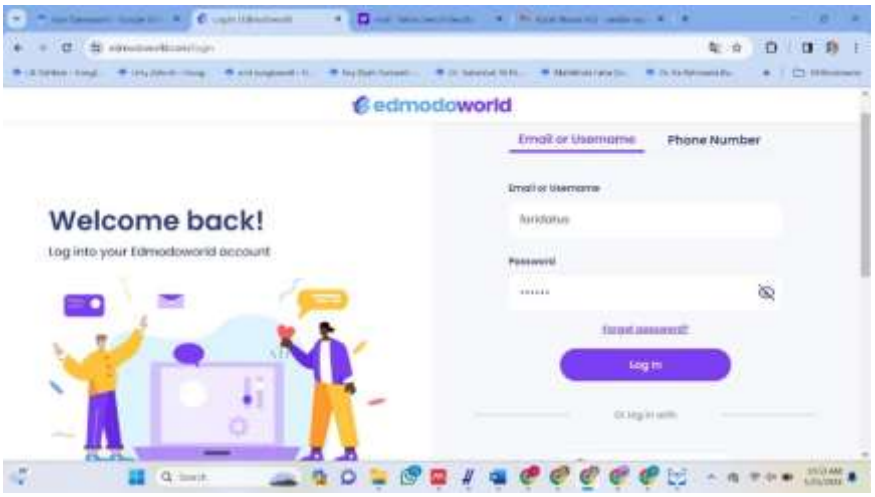
c. Conclusion Drawing

Concluding is the final stage of all data obtained and data analysis activities as a result of research. Conclusions in this study aim to describe students' interests and learning outcomes after using the Edmodo application. The activities carried out in concluding this research are as follows: (1) reviewing the objectives, problem formulation, and discussions that have been carried out, and (2) concluding the research results following the research objectives.

$$\text{Presentase} = \frac{\textit{Skor yang diperoleh}}{\textit{Jumlah Skor maksimal}} \times 100\%$$

4 Results and Discussion

This section describes the mathematics learning process using the Edmodo application, based on learning activities from the beginning to the end of the meeting to getting the results of the learning interest questionnaire, interviews, and test results. This research shows that learning using the Edmodo application runs quite well in Figure 2.



Based on the learning activities that have been carried out, the student responses obtained when asked to respond are based on an average percentage of 56%. It can be said that student responses in learning mathematics using the Edmodo application are pretty good (In' am, 2009; Niaghi, 2022; Ulfa, 2022).

There are three indicators of interest in learning: feelings of joy, attention, interest, and involvement in learning mathematics using the Edmodo application (Darmayanti, Arif et al., 2023; Safitri et al., 2022; Santoso et al., 2024). To see whether students achieved the indicators of interest in learning well, the researcher presented the interest in learning questionnaire results in a table.

The table contains data from the questionnaire obtained from student answers and is also supported by the results of interviews conducted with several students (In' am et al., 2021; Puspitasari et al., 2018; Sugianto et al., 2022). The following is the achievement of students' learning interest after

learning using the Edmodo application. The way to determine the percentage of observed aspects and then categorize them according to the predetermined categories is to use the formula:

Table 1. Percentage of Student Interest in Learning Questionnaire Scores

Presentase skor yang diperoleh	Kategori
P≥75%	Sangat baik
30% ≤P≤ 75%	baik
P≤30%	kurang

Below is a table of student interest questionnaire results that have been adjusted to indicators of feelings of happiness.

Table 2. Results of the Questionnaire on Interest in Learning Indicators of Feelings of Happiness

Indikator	No. butir pernyataan	Skala			
		1	2	3	4
Perasaan Senang	1	0	3	17	3
	2	0	2	18	3
	4	0	0	21	2
	8	0	0	22	1
	14	0	0	23	0
	19	0	5	16	2
Jumlah Frekuensi		0	10	117	17
Persentase		0%	6,9%	81,3%	11,8%

The results above show that in terms of students' feelings of happiness after participating in mathematics learning using the Edmodo application, it is categorized as very good, where 81.3% of students strongly agree that education has a positive effect, is valuable in work done correctly (Bača1 et al., 2005; Lasminawati, 2023; Saqr, 2024), motivates them to continue learning, and gives you the confidence to continue learning wherever and whenever (Kusumaningsih, 2018; M. Lubis et al., 2024; Yulianeta et al., 2024). This is reinforced by the following interview results, which show that students feel happy when using the Edmodo application.

P: Do you enjoy learning using the Edmodo application, and what is the impact?
V: Yes, I enjoy learning using Edmodo because I get new things I have never done before. The impact of studying using Edmodo is that I can research or view material anywhere using a gadget without carrying a thick book, and I am motivated to continue learning.

Based on the interview results above, it was concluded that students felt happy and enjoyed learning using the Edmodo application. They can follow from the beginning to the end of the lesson (Man, 2023; Thi, 2023; Ulfa, 2023), learn new things that have never been done before, and be motivated by an interest in learning (Jatmiko, 2022; Miftah, 2022; Putra, 2023). Below is a table of student learning interest questionnaire results that have been adjusted to attention indicators.

Table 3 Results of the Interest in Learning Questionnaire, Attention Indicators

Indikator	No. butir pernyataan	Skala			
		1	2	3	4
Perhatian	3	0	4	15	4
	5	1	3	12	7
	6	3	8	6	6
	9	0	4	19	0
	11	0	0	23	0
	12	0	0	19	4
	13	2	2	16	3
	20	0	4	18	1
Jumlah Frekuensi		6	25	128	25
Persentase		2,8%	13,6%	70%	13,6%

The results above show that in terms of students' attention after participating in mathematics learning using the Edmodo application, it is categorized as good, where 70% of students agree that this learning makes it easier, makes students develop more discussion space, and has more enthusiasm in learning new things. The following interview also strengthens these results, showing students pay attention when learning mathematics using the Edmodo application.

P: Do you have difficulty accessing Edmodo?
V: Yes, I had a little difficulty at the beginning because it was my first time using Edmodo, but over time, and being guided by the teacher, I got used to it and enjoyed learning using Edmodo.
P: How clear are the material and learning assignments using the Edmodo application?
V: For clarity of the material, the teacher not only posts it on Edmodo but also explains the material so that I understand the content of the material better. Maybe if the teacher did not explain, I would have difficulty understanding the material.

From the interview results above, it can be concluded that students have difficulties because it is their first time learning with the Edmodo application. Compared to class (Yulianeta et al., 2024), Edmodo learning activities have the advantage of not being limited by space and time. However, students have not taken advantage of this, so only some students respond or interact. There are no significant difficulties. However, several obstacles are faced, namely, difficulty writing equations and material that is not understood if there is no direct explanation from the teacher (Budiarti, 2024; M. et al. et al., 2023; Yulianeta et al., 2016). Meanwhile, students admit that it can be used as intended.

Below is a table of the student interest in learning questionnaire results, which has been adjusted to the indicators of interest and involvement. Table 4 Results of the Interest in Learning Questionnaire, Indicators of Interest and Involvement.

Table 4 Results of the Interest in Learning Questionnaire

Indikator	No. butir pernyataan	Skala			
		1	2	3	4
Ketertarikan dan Keterlibatan	7	0	0	10	13
	10	0	0	18	5
	15	2	6	12	3
	16	0	0	22	1
	17	0	0	21	2
	18	0	0	19	4
Jumlah Frekuensi		2	6	102	28
Persentase		1,4%	4,3%	74%	20,3%

The results above show that in terms of students' interest and involvement after participating in mathematics learning using the Edmodo application, it is categorized as good, where 74% of students agree that learning using the Edmodo application has a better learning attraction compared to having to study using thick module books. You can carry out discussions or other activities, such as posting answers and sending messages to each other between students and teachers via the Edmodo feature. These results are also strengthened by the following interviews, which show students' interest and involvement in mathematics learning activities using the Edmodo application.

P: *How often do you access Edmodo during learning and not during learning time?*
V: *After the lesson was finished, I opened the Edmodo application again to study and view the material studied so that I could understand better*
P: *Have you ever interacted with friends and teachers in accessing Edmodo?*
V: *Yes, once, when learning was taking place with Edmodo, I commented on posts posted by the teacher to provide feedback and reply to comments from other friends.*

From the results of the interview above, it can be concluded that students are not only recipients of what is given by the teacher but can also respond and carry out other activities, such as posting answers they have worked on and responding to each other with their friends in a new forum so that they are more interested and enthusiastic in learning activities, by using the Edmodo application.

At the second meeting, the learning activity was completing the quiz/test given by the researcher. The purpose of the quiz/test is to determine the level of students' understanding of the material that has been studied, as seen from the scores obtained by students from the results of the quiz/test. After the student has finished working, the score will immediately appear. Researchers will group students who get grades using reliable assessments: low, medium, fair, and high. So researchers can display the test results in a table to see indicators of learning outcomes achieved well by students. The instrument criteria are said to be reliable or trustworthy by highlighting the points in each question, with the assessment results as follows:

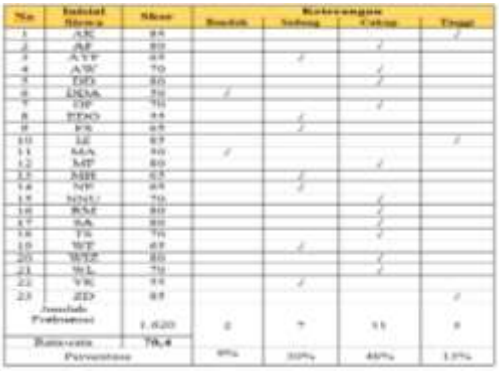
Table 5 Reliability Assessment Criteria

Hasil Penilaian	Tingkat Hubungan	Nilai
$85 \leq x \leq 100$	Tinggi	A
$70 \leq x < 85$	Cukup	B
$55 \leq x < 70$	Sedang	C+
$x \leq 55$	Rendah	C

(Source: Graciella & Suwangsih Adoption, 2016)

The following is the achievement of student learning scores after studying using Edmodo.

Table 6 Social Arithmetic Quiz Scores Student Learning Results



From the total scores above, the researcher obtained the average obtained by the students. The average obtained in the results of this quiz/test is 70.4. The data above shows that two students got low scores, 7 got medium scores, 11 got fair scores, and 3 got high scores. So, from the data above, it can be concluded that student learning outcomes using the Edmodo application are going quite well. In other words, indicators of learning outcomes, such as students understanding the learning material and solving the questions given, are achieved quite well.

5 Conclusion

Based on the research results, it can be concluded that: 1) Learning using the Edmodo application is going well. Based on the results of the learning interest questionnaire and interviews, it is in a suitable category. This means learning using the Edmodo application can be implemented following the RPP. The achievement of learning interest indicators, such as feelings of happiness, attention, and involvement, as well as student interest, are in the excellent category when learning takes place using the Edmodo application. 2) Student learning outcomes after using the Edmodo application can be pretty good. Based on the test results, how many are in the sufficient category, which means students understand the material presented via Edmodo well enough? Students also solve the questions well and correctly.

Suggestions from this research are: 1) Teachers are expected to be able to use the Edmodo application for learning activities to make students more interested in new things when studying at school. 2)

Students must be more active and willing to learn new things to increase their interest in learning. To improve their learning outcomes, they must more thoroughly understand the problems of the material provided by the teacher.

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