Proceeding books:
The 2nd International Conference of Education on Science, Technology, Engineering, and Mathematics (ICE-STEM 2020)

The Effect of Reciprocal Learning Model Using Edmodo on Student Learning Outcomes

Haseena Chika Pawinsky[1*] and Tri Isti Hartini[1]

[1]Physics Education Study Program, Muhammadiyah University. Prof. Dr. Hamka
Tanah Merdeka Street, Kp.Rambutan, Pasar Rebo, East Jakarta, 13830, Indonesia
Correspondence email: haseenachikap24@gmail.com

ABSTRACT

This study aims to determine the effect of student learning outcomes using reciprocal learning learning models using edmodo on student learning outcomes. The research method used is quantitative research methods with the research design One Group Pretest-Posttest Design. The sample used was purposive sampling. In the validity test using Point Biserial Correlation, there were 25 selected essay questions with 20 valid questions and 5 drop questions. While the reliability test using the KR-20 formula obtained rcount 0.9378> 0.433 rtable, then the data has a reliable instrument. Furthermore, the data were analyzed the requirements test, namely the normality test using the Liliefors test. Estimated errors were obtained $L_o = 0{,}0951 < L_t = 0{,}190$, it can be concluded that the data is normally distributed. While the homogeneity test using the Barlett test was obtained $\chi^2_{count} = 2.47 < \chi^2_{table} = 20.28$, it can be concluded that the homogeneity test has group variance data with a homogeneous distribution. In the hypothesis test, t-test was used, it was obtained $t_{count} = 10.95 > 1.68 = t_{table}$, it can be concluded that the null hypothesis H_0 was rejected, which stated that there was a significant effect on learning using the Reciprocal Learning learning model using Edmodo on student learning outcomes..

Keywords: Reciprocal Learning, Edmodo, Learning Outcomes

INTRODUCTION

Indonesia is a country that prioritizes education for the advancement of its people. Education is a process of obtaining knowledge through relevant sources in order to educate humans. Human or someone who gets education will have high knowledge, abilities and resources. In schools, especially in physics lessons, educators have not involved students to take an active role in a series of learning activities and still use conventional methods and do not use learning media, which causes students to be passive, lazy to read, not listening to what educators say, and do not understand what the educator says. This, makes learning activities boring, educators not interested and what was conveyed by educators did not sink in the heads of students. So that students consider physics lessons to be very difficult to understand. Because physics has many different formulas in each material taught, this causes physics to be disliked and less attractive to students and affects the learning outcomes of students. According to [7] learning outcomes are abilities that children get after going through learning activities. Learning itself is a process of someone trying to obtain a relatively permanent form of behavior change. In learning activities or intural activities, teachers usually set learning goals. Students who succeed in learning are students who have succeeded in achieving learning goals or instructional goals.

The achievement of learning objectives cannot be separated from the teacher developing a learning model that involves students effectively in the learning process. The development of the learning model aims to build learning conditions that make students able to learn actively and pleasantly so that students get optimal learning outcomes. There are many learning models that can be used by teachers in teaching, one of which is the reciprocal learning model. According to [6] Reciprocal is reverse learning is a constructivist approach based on the principles of making or asking questions. Reciprocal Learning learning model itself has the aim of teaching reading comprehension independently in the classroom and students are required to summarize, ask questions, clarify and predict. In the 21st century, the uses of technology created by scientists are very diverse.

Students are very easy to find any kind of information, anytime and anywhere through the technology they have such as; Smartphones, tablets and laptops that are accessed by internet networks. Many students misunderstand technological advances that are currently developing rapidly. Many learners use their Smartphones to play games, accessing social media, and even being used as a prestigious event that is less useful in education. With the ease of accessing this information, students must be wise

in the use of advanced and developing technology. In accessing information, students usually access information through their social media, google, websites and learning or e-learning applications. E-Learning is a software used in learning. E-learning as one of the monotonous and boring learning solutions becomes interesting learning and follows technology. One of the e-learning lessons is edmodo. According to SEAMLOC inside then students must be wise in the use of technology that is currently advanced and developing. In accessing information, students usually access information through their social media, google, websites and learning or e-learning applications.

E-Learning is a software used in learning. E-learning as one of the monotonous and boring learning solutions becomes interesting learning and follows technology. One of the e-learning lessons is edmodo. According to SEAMLOC inside then students must be wise in the use of technology that is currently advanced and developing. In accessing information, students usually access information through their social media, google, websites and learning or e-learning applications. E-Learning is a software used in learning. E-learning as one of the monotonous and boring learning solutions becomes interesting learning and follows technology. One of the e-learning lessons is edmodo. According to SEAMLOC inside E-Learning is a software used in learning. E-learning as one of the monotonous and boring learning solutions becomes interesting learning and follows technology. One of the e-learning lessons is edmodo. According to SEAMLOC inside E-Learning is a software used in learning. E-learning as one of the monotonous and boring learning solutions becomes interesting learning and follows technology. One of the e-learning lessons is edmodo. According to SEAMLOC inside [3] edmodo is a social media platform that is often described as a faceook for schools and can do more as needed. Edmodo is developed based on the principles of group-based class management and social media. Edmodo is very comprehensive as a course management system like Moodle, the difference is that access is faster and easier to use by using several features that have the same function as the course management system.

Theoretical basis

A. Learning Media

The word media comes from Latin which is the plural form of "medium" which literally means intermediary or introduction [4]. Then in the Big Indonesian Dictionary (KBBI) the media is defined as an intermediary, a liaison, which lies between two parties (people, groups), as well as a means (means) of communication such as newspapers, magazines, radio, television, films, posters, and banners. . According to [9] said, if it is understood in broad terms, then the media are people, materials, or events that build a condition or make students able to acquire knowledge, skills, or attitudes. In this sense, teachers, textbooks, and the school environment are media. More specifically, the notion of media in the teaching and learning process tends to be defined as graphic, photographic, or electronic tools to capture, process, and reconstruct visual or verbal information. [2] implicitly saying that learning media includes tools that are physically used to convey the content of teaching material, which consists of, among others, books, tape recorders, cassettes, video cameras, video recorders, films, slides (picture frames), photos, pictures, graphics, television, and computer. In other words, media is a component of learning resources or physical vehicles that contain instructional material in the student environment that can stimulate students to learn. On the other hand, the National Education Association defines media as forms of communication, both printed and audio-visual and their equipment; thus, the media can be manipulated, seen, heard, or read. Media can also be interpreted as a tool that can be used as a messenger to achieve learning objectives. Media is something that is convincing messages and can stimulate the thoughts, feelings, and willingness of the audience or students so that it can encourage the learning process in these students. Media is an inherent or inseparable part of the learning process to achieve learning goals. Media functions and plays a role in regulating the effective relationship between teachers and students in the learning process [11].

From some of the opinions above, it can be concluded that the experts position the media as a tool that can be used as a messenger in learning activities. Emphasis on the meaning of media is something that acts as an intermediary to connect several different parties. It implies that the word linking or intermediary is the main point of this discussion, because its position in the middle indicates that there is a function to facilitate several parties which can lead to deeper integration.

B. Reciprocal Learning Learning Model

Reciprocal Learning is learning in the form of teaching material to friends. In this learning model students act as "teachers" to deliver material to their friends. Meanwhile, the teacher plays a more role as a model who becomes a facilitator and mentor in scaffolding. Scaffolding is guidance given by people who know better to people who don't know or don't know [12]. Reciprocal Learning or Reciprocal Learning is a learning model to improve reading comprehension. Developed first, Reciprocal Learning is intended to encourage students to develop skills possessed by effective readers and learners, such as summarizing, asking, clarifying, predicting, and responding to what is being read. Students use four comprehension strategies, either in pairs or in small groups, Reciprocal Learning can be applied to learning material fiction, non-fiction, prose, or poetry [5]. According to Nur and Wikandari in [1] Reverse teaching is an approach to teaching students learning strategies. Inverted teaching is a constructivist approach based on the principles of questioning, where metacognitive skills are taught through direct teaching and modeling by teachers to improve reading performance of students with low reading comprehension. From some of the opinions of the experts above, it can be concluded that reciprocal learning is learning that focuses on reading, and trains students to understand reading texts and exchange information between students.

The RL syntax can be seen as follows: [5]

Step 1 - Initial Demonstration
Guide students to learn by modeling, following, and applying the effective reader strategies above during the reading process.

Step 2 - Role Sharing
In small groups of four students each, assign one role to each member as each member as a summariser, questioner, clarifer, and predictor.

Step 3 - Reading and Recording
Ask students to read a few paragraphs from the selected text. Ask them to use note-taking strategies, such as underlining, coding, and so on.

Step 4 - Conduct the Discussion
Students who act as predictors are tasked with helping their group connect parts of the text by presenting predictions from the previous section and also helping the group to predict what they will read next by using cues or temporary conclusions in the text. The questioner is in charge of helping the group to ask and answer questions about the text and to remind the group to use all types of questions (high level and low level). Summarisers are tasked with reaffirming the main ideas in the text in their own language. Clarifier helps groups find sections of textwho are not clear and find ways to clarify these difficulties.

Step 5 - Role Swapping
The roles in the group must be mutually exclusiveexchanged for one another. Different texts also need to be presented. Students repeat this process with new roles. Keep repeating this process until the selected topic / text has been studied. It can be concluded that the steps of Reciprocal Learning, namely students are developed to help teachers use collaborative dialogues to teach reading comprehension independently and can help other students in the group to find parts of the text that are not clear and find ways to clarify difficulties. -this difficulty.

C. Edmodo

Understanding Edmodo is a personal microblogging platform developed for teachers and students, with student privacy in mind. Teachers and students can share notes, links, documents. The teacher also has the ability to send alerts, events, assignments to students and can decide to post something in the public viewable time frame [10]. Edmodo is an educational medium that uses the internet for its use. Edmodo was first developed at the end of 2008 by Nic Borg and Jeff O'hara and Edmodo itself is arguably an e-learning program that applies a learning system that is easy, efficient and more enjoyable. Edmodo was created as a social networking learning media for teachers / lecturers, students / students, and parents / guardians. According to Pitoy in [8] edmodo is a social network platform for teachers and students to share ideas, files, agendas, activities and assignments. Edmodo aims to help teachers take advantage of social networking in the learning process. Edmodo has been designed in such a way as

to make users (students) excited to learn so that the environment becomes more familiar. Inside edmodo, teacher / lecturer connects teachers / lecturers, students / students, parents / guardians, administrators and publishers / books. Edmodo uses a similar design to Facebook, and provides teachers / faculty and students / students with safe places to connect, collaborate and share content. Teachers / lecturers can also send grades, assignments and quizzes to students / students. Students can submit homework and view their grades and comments the teacher / lecturer may have posted about their assignments. The teacher / lecturer can also create opinion polls and post topics for discussion among students / students. The teacher / lecturer can differentiate and create independent learning through the creation of sub-groups in the course. After each course period is completed, the teacher / lecturer closes out the network and creates a new one for the next course students / students, parents / guardians, administrators and publishers / books.

Edmodo uses a design similar to Facebook's, and provides teachers / faculty and students / students a safe place to connect, collaborate and share content. Teachers / lecturers can also send grades, assignments and quizzes to students / students. Students can submit homework and view their grades and comments the teacher / lecturer may have posted about their assignments. The teacher / lecturer can also create opinion polls and post topics for discussion among students / students. The teacher / lecturer can differentiate and create independent learning through the creation of sub-groups in the course. After each course period is completed, the teacher / lecturer closes out the network and creates a new one for the next course students / students, parents / guardians, administrators and publishers / books. Edmodo uses a design similar to Facebook's, and provides teachers / faculty and students / students a safe place to connect, collaborate and share content. Teachers / lecturers can also send grades, assignments and quizzes to students. Students can submit homework and view their grades and comments the teacher / lecturer may have posted about their assignments. The teacher / lecturer can also create opinion polls and post topics for discussion among students / students. The teacher / lecturer can differentiate and create independent learning through the creation of sub-groups in the course. After each course period is completed, the teacher / lecturer closes out the network and creates a new one for the next course Edmodo uses a design similar to Facebook's, and provides teachers / faculty and students / students a safe place to connect, collaborate and share content. Teachers / lecturers can also send grades, assignments and quizzes to students / students. Students can submit homework and view their grades and comments the teacher / lecturer may have posted about their assignments. The teacher / lecturer can also create opinion polls and post topics for discussion among students / students. The teacher / lecturer can differentiate and create independent learning through the creation of sub-groups in the course. After each course period is completed, the teacher / lecturer closes out the network and creates a new one for the next course.

Edmodo uses a similar design to Facebook, and provides teachers / faculty and students / students with safe places to connect, collaborate and share content. Teachers / lecturers can also send grades, assignments and quizzes to students / students. Students can submit homework and view their grades and comments the teacher / lecturer may have posted about their assignments. The teacher / lecturer can also create opinion polls and post topics for discussion among students / students. The teacher / lecturer can differentiate and create independent learning through the creation of sub-groups in the course. After each course period is completed, the teacher / lecturer closes out the network and creates a new one for the next course and provide teachers / faculty and students / students a safe place to connect, collaborate and share content. Teachers / lecturers can also send grades, assignments and quizzes to students / students. Students can submit homework and view their grades and comments the teacher / lecturer may have posted about their assignments. The teacher / lecturer can also create opinion polls and post topics for discussion among students / students. The teacher / lecturer can differentiate and create independent learning through the creation of sub-groups in the course. After each course period is completed, the teacher / lecturer closes out the network and creates a new one for the next course and provide teachers / faculty and students / students a safe place to connect, collaborate and share content. Teachers / lecturers can also send grades, assignments and quizzes to students / students. Students can submit homework and view their grades and comments the teacher / lecturer may have posted about their assignments. The teacher / lecturer can also create opinion polls and post topics for discussion among students / students. The teacher / lecturer can differentiate and create independent learning through the creation of sub-groups in the course. After each course period is completed, the teacher / lecturer closes out the network and creates a new one for the next course Students can submit homework and view their grades and comments the teacher / lecturer may have posted about their assignments. The teacher / lecturer can also create opinion polls and post topics for discussion among students / students. The teacher / lecturer can differentiate and create independent

learning through the creation of sub-groups in the course. After each course period is completed, the teacher / lecturer closes out the network and creates a new one for the next course Students can submit homework and view their grades and comments the teacher / lecturer may have posted about their assignments. The teacher / lecturer can also create opinion polls and post topics for discussion among students / students. The teacher / lecturer can differentiate and create independent learning through the creation of sub-groups in the course. After each course period is completed, the teacher / lecturer closes out the network and creates a new one for the next course [10].

D. Learning outcomes

To measure whether someone has learned or not, an indicator called learning outcomes is used. Defines learning outcomes as an act of behavior that includes cognitive, affective and psychomotor aspects. According to learning outcomes are patterns of actions, values, understandings, attitudes, appreciations, and skills. Referring to Gagne's thought, learning outcomes are in the form of the following:

1. Verbal information, namely the ability to express knowledge in the form of language, both oral and written. The ability to respond specifically to specific stimuli. This ability does not require manipulating symbols, solving problems, or applying rules.
2. Intellectual skills, namely the ability to present concepts and symbols. Intellectual skills consist of the ability to categorize, the ability to analyze, synthesize facts and concepts, and develop scientific principles. Intellectual skills are the ability to perform unique cognitive activities.
3. Cognitive strategies, namely the ability to channel and exert cognitive activity. This ability includes the use of the concept of rules in solving problems.
4. Motor skills, namely the ability to carry out a series of physical movements in matters and coordination so as to realize the automatism of physical movements.
5. Attitude is the ability to accept or reject an object based on an assessment of that object. Attitudes in the form of the ability to internalize and externalize values. Attitude is the ability to make values as standards of behavior

According to [7] learning outcomes are abilities that children get after going through learning activities. Learning itself is a process of someone trying to obtain a relatively permanent form of behavior change. In learning activities or intural activities, teachers usually set learning goals. Students who succeed in learning are students who have succeeded in achieving learning goals or instructional goals. From some of the opinions above, it can be concluded that learning outcomes are an achievement obtained by students for learning activities and evidence of student success involving cognitive, affective and psychomotor aspects conveyed in symbols, letters or sentences.

RESEARCH METHOD

The research method used in this research is quantitative method. This research is said to be quantitative because the results of this study use a lot of numbers. The type of research used in this research is pre-experiment. This design is said to be an incomplete experiment, because there are external variables that influence the formation of the dependent variable. This is because there is no control variable, and the sample is not randomly selected. In addition, this experiment is said to be not serious because researchers still think that the abilities of the students under study are the same, so there are still external variables that influence. The research design used in the study was one group pre-test post-test design. The pattern of this research design can be illustrated in Figure II. 1 [13].

RESULTS AND DISCUSSION

This research was conducted at SMA Negeri 7 Bekasi which is located on Jl. Circle of City Planning No. 107, Jatisampurna, Bekasi which was held in the even semester of the 2019/2020 academic year, and conducted research starting on May 4, 2020 to June 1, 2020.

This research was conducted in one class, namely X MIPA 5 as an experimental class that was treated with a reciprocal learning model using Edmodo. This research was conducted in 4 meetings with details of the 1st meeting the introduction of the Reciprocal Learning learning model using Edmodo and the introduction of the features in Edmodo, the second meeting was conducted in a pretest, the 3rd meeting

was treated with a Reciprocal Learning learning model using Edmodo and the fourth meeting was carried out by a posstest and filling out a questionnaire.

Prior to the implementation of the test, 25 items were tried out and then analyzed the validity and reliability, and obtained 20 items that were valid for use in this study to obtain student learning outcomes. The test was given in 2 meetings, namely pretest at the beginning before treatment and posttest at the end after being treated with the Reciprocal Learning learning model using Edmodo on momentum and impulse material. The following is data on student learning outcomes before and after being given treatment with the Reciprocal Learning learning model using Edmodo:

Table IV.1: Learning Outcomes of Class X MIPA 5

Data	The highest score	Lowest Value	Average
Pretest	73	16	40.9
Posttest	100	70	89.75

The table above explains that the learning outcomes of students in the experimental class have a very significant difference, for the pretest the highest score is 73 and the lowest score is 16 with a mean of 40.9, while for the posttest the highest score is 100 and the lowest score is 70 with a mean of 89.75. Before and after the treatment there was an increase of 28 at the highest value and at the lowest value there was an increase of 54. At the mean value there was also an increase of 48.85, from 40.9 to 89.75. The level of completeness of student learning outcomes in accordance with the Minimum Completeness Criteria (KKM) has increased. At the time of the pretest, there were no students who had completed or 0%. Meanwhile, at the time of the posttest, there were 20 students who completed or 100% of the total number of students. This means that the level of completeness of student learning outcomes has increased by 100%. From these results it can be concluded that the reciprocal learning model using Edmodo has a very strong influence in improving student learning outcomes.

Based on the results of the data normality trial with a significance of 5% or α=0,05, to test data normality test of student learning outcomes Lcount = 0.0951 <0.190 = L table. Then the data on the results of students' learning tests on the pretest and posttest scores were normally distributed.

After being given the treatment, the results of hypothesis testing were obtained using the t-test t count = 10.95, while the significant level α = 0.05 with 38 degrees of freedom, obtained t table = 1.68. Because tcount = 10.95> ttable = 1.68, it means that it can be concluded that the research hypothesis H1 is accepted and the hypothesis H0 is rejected. Thus it is stated that there is an effect of the Reciprocal Learning learning model using edmodo on the learning outcomes of students of SMAN 7 Bekasi on the subject of momentum and impulse.

Based on the research that has been done, the results of the student response questionnaire can be seen in Figure IV. 1:

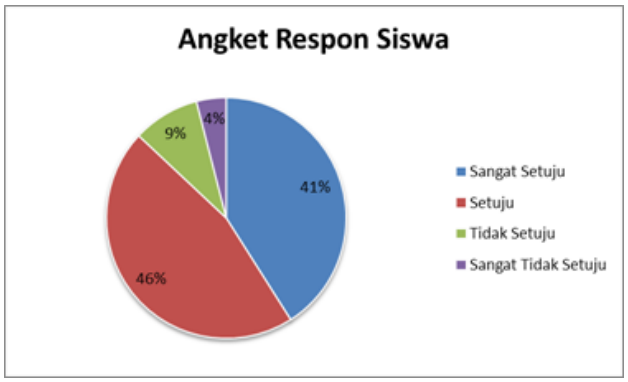

Figure IV.1 Student Response Questionnaire Results

From Figure IV.1 the student response questionnaire is said to be positive. Of the 30 questions, the average percentage questionnaire with very agreeable answers obtained a percentage of 41%, the average percentage with agreed answers obtained a percentage of 46%, the average percentage with

disagreeing answers obtained a percentage of 9%, and the average percentage with the answer strongly disagree, the percentage is 4%. Thus the highest percentage is the average percentage with answers agreeing by 46% and the next highest percentage is the average percentage with very agreeing answers of 41%.

CONCLUSIONS

Based on the research results, it can be concluded that, the average learning outcomes of students using Edmodo after treatment (Posttest) applied to the Reciprocal Learning learning model were higher than the average learning outcomes of students using Edmodo before treatment (Pretest).

From the results calculated using the t-test, the results obtained tcount = 10.95> 1.68 = t table, which means that the research hypothesis H1 is accepted and H0 is rejected. With the rejection of H0 and acceptance of H1 from testing the t-test hypothesis at a significant levelα = 0.05, it can be concluded that there is an effect of the Reciprocal Learning learning model using edmodo on student learning outcomes on the subject of momentum and impulse. This shows that with

REFERENCES

[1] Al-tabany, T.I. Designing Innovative, Progressive and Contextual Learning Models. Jakarta: Prenadamedia Group. 2014.
[2] Arsyad, A. Learning Media. Jakarta: PT. Raja Grafindo Persada. 2015
[3] Dharmawati. The use of e-learning media based on edmodo in learning English for business. Information Systems Journal, p. 43. 2017.
[4] Falahudin, I. Use of Media in Learning. Widyaiswara Circle Journal, 2014. p. 104.
[5] Huda, M. Teaching and learning models. Yogyakarta: Student Library. 2014.
[6] Januardi, & Gustiana. The influence of the reciprocal learning model on learning outcomes in economic subjects in SMA Banti Air Pious Nation. Balance Sheet Journal, p. 58. 2018.
[7] Jihad, A., & Haris, A. Learning Evaluation. Yogyakarta: Multi Pressindo. 2013
[8] Kurniasih, R., Sujadi, I., & Subanti, S. The development of teaching materials using edmodo to increase the level of probabilistic thinking of students in class VII SMP Negeri 12 Surakarta. Journal of Electronic Mathematics Learning, 963. p. 2016.
[9] Kustandi, C., & Sutjipto, B. Manual and Digital Learning Media. Bogor: Ghalia Indonesia. 2011.
[10] Rahman, J. Student interest in using Edmodo e-learning in the teaching and learning process. 2017.
[11] Rimawati, E. Variety of Learning Media. Pen said. 2016.
[12] Shoimin, A.68 innovative learning models in the 2013 curriculum. Yogyakarta: Ar-ruz Media. 2014.
[13] Sugiyono. Educational Research Methods with Quantitative Approaches, Qualitative, and R & D. Bandung: Alfabeta CV. 2015.