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ONLINE LEARNING IN PANDEMIC ERA WITH EDMODO APPLICATION ON EXCRETORY SYSTEM MATERIAL

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ABSTRACT

This research aims to describe the influence of Problem-Based Learning (PBL) with Edmodo on students' learning outcomes. The research design was Matching Pretest-Posttest Control Group Design. The research samples were the students of class XI MIA 3 and MIA 4 of SMAN 1 Pagerbarang Tegal. The researchers collected the data using tests and questionnaires. The analysis revealed that the PBL model with Edmodo In the excretory system material obtained an average percentage of 88% in meeting 1, 86% in meeting 2, and 88% in meeting 3. Furthermore, the average value of syntax 1 was 87%, syntax 2 was 98%, syntax 3 was 87%, syntax 4 was 86%, and syntax 5 was 88%. All syntaxes were in the moderate category except for the second syntax. There was an increase in the learning outcome between the experimental and control classes, where the experimental class scored higher than the control class.

Pembelajaran Daring di Era Pandemi dengan Aplikasi Edmodo pada Materi Sistem Eksresi

ABSTRAK: *Tujuan dari penelitian ini adalah mendeskripsikan penerapan Problem Based Learning (PBL) Berbasis Edmodo terhadap hasil belajar siswa. Desain penelitian yang digunakan adalah Matching Pretest Postest Control Group Design, dimana sampelnya adalah kelas XI MIA 3 dan MIA 4 di SMAN 1 Pagerbarang Tegal. Teknik pengumpulan data dengan tes dan angket. Hasil penelitian menunjukkan Problem Based Learning (PBL) Berbasis Edmodo Pada Materi Sistem Eksresi didapatkan rata-rata pertemuan 1 sebesar 88%, pertemuan 2 sebesar 86% dan pertemuan 3 88%, dengan rata-rata nilai sintak 1 sebesar 87%, sintak 2 sebesar 98%, sintak 3 sebesar 87%, sintak 4 sebesar 86% dan sintak 5 sebesar 88%. Semua sintak berada pada kategori sedang kecuali pada sintak kedua. Peningkatan antara kelas eksperimen dan kelas kontrol didapatkan peningkatan hasil belajar kelas eksperimen lebih tinggi atau berbeda signifikan dengan kelas kontrol.*

INTRODUCTION

The learning process is a system that involves unified and interrelated components that interact with each other to achieve an optimal result based on predetermined goals (Hanafy, 2014). The teaching and learning

process is usually performed at schools (Anugraheni, 2017; Sari et al., 2021; Wahyuni et al., 2019), where teachers become an important part of the teaching process (Komarudin et al., 2020; Pambudi et al., 2019). However, in the last few months, the teaching and learning process could not be carried out directly because of the pandemic occurring worldwide, including in Indonesia.

The outbreak of the COVID-19 pandemic (coronavirus outbreak 2019) has resulted in many countries implementing Lockdown status, including Indonesia (Cahyati & Kusumah, 2020; Nurhalimah, 2020; Supriatna, 2020). Education is one of those affected by COVID-19 (Atsani, 2020; Khasanah et al., 2020; Siahaan, 2020). The lockdown policy affects the learning process, where every school must perform online learning.

Online learning requires an E-Learning application (Hasanah, 2020; Indrayana & Sadikin, 2020) since the learning is not performed directly or face-to-face. Online learning utilizes smartphones or PC and internet bandwidth as the medium (Ridha et al., 2021; Syafrin & Muslimah, 2021). However, this phenomenon can also balance the knowledge, science, and technology in the 4.0 era (Thahir et al., 2019).

Online learning emphasizes students' accuracy and foresight in processing the information presented online (Fitra et al., n.d.; Putra & Irayanti, 2020). The concept of learning is the same as e-learning, but some teachers, especially the elderly, could not adapt to using the new applications. Therefore, many teachers only tell students to do assignments on the worksheet or printed books without guiding or delivering material (Kusumawati & Noorliani, n.d.). As a result, students complain about the piled-up assignments given by the teachers. It is hard for them to understand the material because the teacher only gives assignments (Ardila & Hartanto, 2017; Pujiasih, 2020).

Based on this background, the researchers were interested in researching online learning in the pandemic era with Edmodo application on excretory system materials. The research aimed to describe the influence of PBL with Edmodo, analyze the learning outcomes, and analyze students' responses. This research referred to several previous similar research as references. one of which is research by Kurniawati, who analyzed the Edmodo at the vocational high schools on optical equipment (Kurniawati, 2015; Sudibyo, 2013). Also, research by Nugraha, who applied the PBL model (Nugraha et al., 2017) and research on the excretory system by Ami (Ami, 2012; Nisak, 2013). However, those research did not implement e-learning.

METHOD

This research was carried out at SMA Negeri 1 Pagerbarang Tegal from April to May of the 2019/2020 academic year. This research was quantitative research with Matching Pretest-Posttest Control Group Design. The subjects were all students of class XI MIA 3 as the experimental class and XI MIA 4 as the control class. The data were collected using tests (Pretest and Posttest). Besides, the researchers also distributed questionnaires that had previously been validated and tested. The data analysis techniques consisted of prerequisite tests (normality and homogeneity tests) and hypothesis tests (independent sample t-test) assisted by SPSS.

RESULTS AND DISCUSSION

The first research objective investigated students' learning outcomes within three meetings which consisted of five syntaxes. The syntaxes consisted of orientation to problems, learning organization, individual or group investigations, work presentation, and problem-solving process evaluation. The problem-solving were categorized into a low category if the average score was lower than 85. Furthermore, the average score between 85 and 91 is categorized as moderate, and the average score higher than 92 is categorized as high. The PBL model application is displayed in Figure 1.

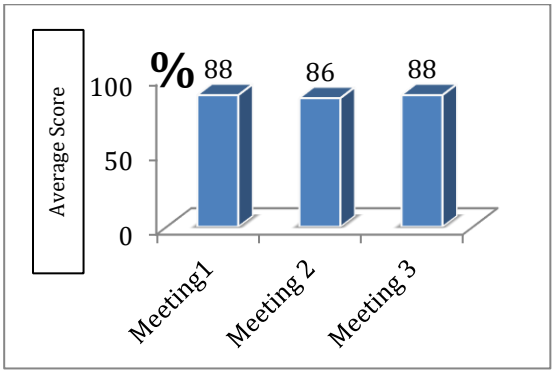

Figure 1. The Application Graph of PBL Model in the Experimental Class in Each Meeting

Figure 1 displays the scores of PBL model implementation in the experimental class assisted by student worksheets at first to third meetings. The results were the same even though the scores decreased at the second meeting. The first to the third meetings were included in the moderate category based on the mean score and standard deviation criteria. However, the second meeting was also in the moderate category, although the average score was lower than the other meetings. Therefore, the students could study well in the first to the third meetings.

The student worksheet was constructed based on the current problems. At the first meeting, they discussed the issue was kidney failure experienced by children. The issue discussed at the second meeting was liver failure and pneumonia caused by the coronavirus. Furthermore, at the last meeting, the discussed issue was the detachment of a teenager's scalp due to a boat's propeller. The students did the worksheet individually because the learning was done at home. The experimental class tried to solve problems or find solutions based on news portals or articles. On the other hand, the control class looked for information from various sources. The average syntax gain from the first to the third meeting is presented in Table 1.

Table 1. Syntax Value of Each Meeting

Syntax	Meeting 1	Meeting 2	Meeting 3	Average
1	80	84	96	87
2	100	97	100	98
3	86	85	91	87
4	88	84	87	86
5	95	96	78	88

Based on table 1, the first syntax increased throughout the meetings. However, the second, third, and fourth syntaxes decreased at the second meeting and rose again at the third meeting. At the last meeting, the average score went up every meeting but decreased at the third meeting. Based on the table, the highest average syntax value is in the second syntax, and the lowest is in the fourth syntax.

The decrease in average scores was caused by several factors, including the difficulty of finding a stable internet signal and running out of internet bandwidth. Besides, the students were often asked by their parents to help with housework during the learning process. They also did not

read the assignments' deadlines. Since only a few students submitted their works, the average syntax score in the second meeting decreased.

Imelda (Imelda, 2021) states that Edmodo has several disadvantages: time-consuming, hard to follow procedures, and internet access problems. Besides, the lack of supervision in conducting online learning causes students to procrastinate. Related to the second objectives of the research, the pretest and posttest scores are presented as follows:

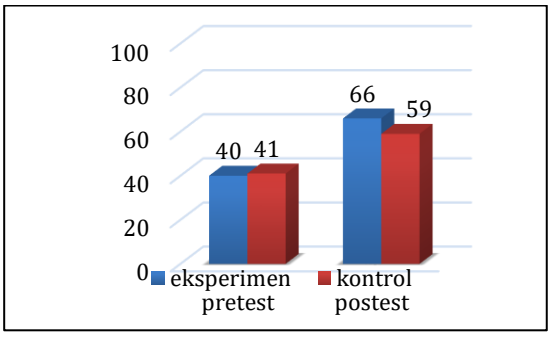

Figure 2. The Pretest and Posttest Scores in the Experimental Class and Control Class

Figure 2 reveals that the pretest score of the control class was higher than the experimental class, although the difference was not too significant. Then, the average posttest score in the experimental and control classes increased compared to the pretest score. However, the average posttest score in the experimental class was higher than in the control class. In short, the experimental class and the control class increased, and the experimental class scored higher than the control class. Figure 3 displays the difference between the experimental and control classes.

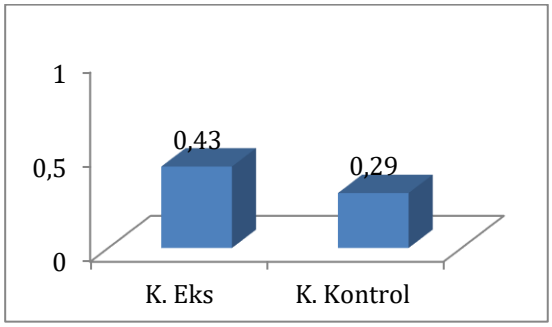

Figure 3. The Average N-Gain Value of the Experiment Class and Control Class

Learning outcomes improvement can be seen from the average N-Gain value. The average N-Gain value in the experimental class was higher than in the control class. It means that the increase in the experimental class was higher than in the control class. The researchers performed the prerequisite tests and also hypothesis testing using SPSS software. The results of the prerequisite tests show that the data obtained were normally distributed and homogeneous. Before looking at the results of the independent sample t-test, the researchers performed the group statistics independent sample t-test.

Table 2. Group Statistics Independent Sample $t - test$

Classes	N	Mean	Std Deviation	Std error mean
Experimental	26	41.1749	23,64876	4,63790
Control	26	29.7025	24,60023	4.82450

Based on the N-gain interpretation, the experimental class that implemented the PBL model with Edmodo was less effective to improve learning outcomes. Moreover, the conventional model in the control class was not effective for improving students' learning outcomes. However,

based on the descriptive statistic analysis, there were effectiveness differences between the PBL model with Edmodo and the conventional model in improving students' learning outcomes. Next, the independent sample t-test's result is shown in Table 3.

Table 3. Independent Sample $t-test$ with SPS

Data	Statistic test	Homogeneity Test	
		Sig.	Note.
N-Gain	Independent Sample $t-test$	0.047	Significant Difference

Table 3 shows the results of hypothesis testing for N-Gain data. The significance value of N-Gain based on the t-test was 0.047 < 0.05. Therefore, H_0 was rejected. So, the result showed that there were significant learning outcome differences between the experimental class and the control class. PBL model improves students' learning outcomes. The Edmodo-assisted PBL model makes students more active in finding new information and integrating it into learning materials so that they can think critically to solve problems (Prilyta et al., 2016).

The analysis of the student response questionnaire was aimed at answering the third research question. The questionnaire provided responses and opinions during learning activities. The questionnaire's indicators were divided into five, covering students' responses, interests, and insights on Emodo-based PBL. Each indicator was divided into four statements: two positive statements and two negative statements. The results of the questionnaire analysis can be seen in Figure 4.

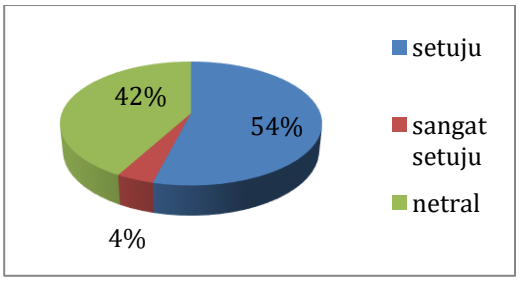

Figure 4. Questionnaire Analysis Results

The analysis indicated that Edmodo-based PBL obtained positive responses and improved students' learning outcomes. Edmodo-based e-learning was appropriate to be used in the learning process on the excretory system material.

Before the treatment, the students did a pretest to determine their initial abilities. After the treatments, the students' cognitive scores increased compared to before the treatment. The increase proves that Edmodo-based e-learning can help students to increase their cognitive scores. Previous studies also found that Edmodo is appropriate and feasible to be used to increase students' interest in learning (Kurniawati, 2015; Prilyta et al., 2016; Sudibyo, 2013).

CONCLUSIONS AND SUGGESTIONS

Problem-Based Learning (PBL) Based on Edmodo, the excretory system material obtained an average percentage of 88% in meeting 1, 86% in meeting 2, and 88% in meeting 3. Furthermore, the average value of syntax 1 was 87%, syntax 2 was 98%, syntax 3 was 87%, syntax 4 was 86%, and syntax 5 was 88%. All syntaxes were in the moderate category except for the second syntax. There was an increase in the learning outcome between the experimental and control classes, where the experimental class scored higher than the control class. Students' positive responses indicated that the students accepted the

treatment. Learning using e-learning applications should pay attention to students' device availability and internet access.

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