

The Implementation of Blended Learning Mediated by Edmodo to Learn about Work and Energy at Advent Nusra High School Kupang

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Abstract: Blended learning is considered as a relevant learning method to be applied today where technology is being and will continue to grow rapidly, but also does not eliminate the interactions that are supposed to be built between teachers and students. In this study researchers chose to use Edmodo media because Edmodo is a social networking-based educational platform that is rich in learning features for the sake of learning activities that better support the fulfillment of student learning needs.

This study aims to find out: (1) Effectiveness of the application of blended learning methods that utilize Edmodo media in terms of student involvement in the topic work and energy for class X MIA Nusra Kupang Advent High School Academic Year 2018/2019. (2) Effectiveness of applying blended learning methods that utilize Edmodo media in terms of learning achievement on work and energy material in class X MIA Nusra Kupang Advent High School Academic Year 2018/2019.

The type of research used in this study is descriptive research using a quantitative approach. The subjects of this study were 18 X grade students of MIA Nusra Kupang Advent High School 2018/2019 academic year. The object of this research is physics learning with blended learning method that uses Edmodo media on work and energy. Data in this study include student involvement data, student learning outcomes test data, and student response data. Data in this study were collected through questionnaires and written tests based online.

The results of the research obtained are: (1) The application of blended learning methods that utilize Edmodo media is effective in terms of student involvement. Student involvement obtained through questionnaires is very high with a percentage of 67%. (2) The application of blended learning methods that utilize Edmodo media is effective in terms of student learning outcomes. Student learning outcomes show a good category, with a percentage of 72% where the average value is 81.

Keywords: Blended learning, Edmodo, effort and energy, learning methods, student involvement, student learning outcomes, student responses.

Introduction

The challenge of today's physics teacher is to present interesting physics learning so as to increase student involvement and learning outcomes in learning physics. The use of information and communication technology media (Information and Communication Technology [ICT]) is one way to overcome the above challenges. In this ICT media learning pattern, learners can choose learning materials based on their own interests, so learning becomes fun, not boring, full of motivation, enthusiasm, attract attention and so on (Husamah, 2014).

Unfortunately, in many schools the use of technology in learning is still not optimal. One of them is in Nusra Kupang Advent High School where the use of technology in learning is still rare. Teachers still feel comfortable with conventional learning methods that tend to rely on the lecture method. Based on the interview of the researcher with one of the students at Nusra Advent High School, it was said that almost all students in the school already had smartphone or smartphone technology. According to them smartphones (which are connected online) really help them in their daily lives, including those related to learning. For example, working on a task by utilizing the internet or discussing a material by utilizing an online group. So, this is actually a good opportunity to present interesting and fun physics learning, using the smartphone that students have.



Although the ease of accessing information can be done using a smartphone, students still need guidance from the teacher so that student learning remains focused and in accordance with the learning objectives. For this reason, direct guidance and supervision by the teacher in a face-to-face manner is still needed. So, the best solution does have to combine face-to-face learning with learning using technology media that is connected online. This mixed learning is called blended learning. According to Faizal (in Husamah, 2014), the benefits of blended learning are not only face to face, but there are additional learning times by utilizing online media, facilitating and accelerating the communication process between instructors and students (learning partners), and helping the process of accelerating teaching, help motivate students to be involved in the learning process.

By paying attention to the things described above, the teacher must see this as an opportunity to increase student involvement and learning outcomes by utilizing blended learning methods that utilize Edmodo media in learning. It is on this basis that the researcher decided to conduct a study entitled "Learning About Work and Energy at Nusra Kupang Advent High School with Blended Learning Method that Utilizes Edmodo Media."

The purpose of this study was to find out: (1) Effectiveness of the application of blended learning methods that utilize Edmodo media in terms of student involvement in work and energy in class X MIA Nusra Kupang Advent High School Academic Year 2018/2019. (2) Effectiveness of applying blended learning methods that utilize Edmodo media in terms of learning achievement on work and energy material in class X MIA Nusra Kupang Advent High School Academic Year 2018/2019.

Literature Review

According to Bielawski and Metcalf (in Husamah, 2014) blended learning is a relatively new concept in learning where teaching is delivered through a combination of online and traditional learning which is carried out by instructors or instructors. According to Dwiyoogo (2011), blended-based learning has at least 6 elements, namely: (a) face-to-face (b) independent learning, (c) application, (d) tutorial, (e) collaboration, and (f) evaluation.

The application of the blended learning method to the topic of work and energy is supported by Edmodo application which is a social networking-based educational platform that is rich in learning features for the sake of learning activities that better support the fulfillment of student learning needs.

Student engagement is a manifestation of motivation seen through actions, cognitive, and emotions displayed by students, referring to energetic, directed, and persistent actions when getting students' difficulties or qualities in their interactions with academic tasks (Connell & Wellborn, in Handelsman, 2005)

According to Fredircks et al., (2004) student engagement consists of three dimensions. Student engagement is a multidimensional construct that consists of three dimensions, namely behavioral engagement, emotional engagement, and cognitive engagement.

Learning outcomes, according to Mulyasa (2008) are overall student learning achievement which is an indicator of competence and the degree of change in behavior in question. Competencies that must be mastered by students need to be expressed in such a way that they can be assessed as a manifestation of student learning outcomes that refer to direct experience. Meanwhile, the object of assessment of learning outcomes according to Sudjana (2013) can be divided into three domains, namely the cognitive, affective, and psychomotor domains. The object of research learning outcomes used in this study focused on the cognitive domain of knowledge, understanding, application, analysis, synthesis, and evaluation.

Indicators of achievement of competency (GPA) on work material and energy in this study are: (1) Analyzing the relationship between effort, style, and displacement; (2) Calculating the amount of work based on the graph; (3) Calculating negative efforts; (4) Calculating total effort by many styles; (5) Calculating the amount of kinetic energy and potential energy; (6) Analyzing the relationship between work and kinetic energy; (7) Analyzing the relationship between work and potential energy; (8) Formulate the legal form of conservation of mechanical energy.

Research Method

The research was conducted in class X MIA Nusra Kupang Advent High School 2018/2019 academic year. The object to be measured of this research was the involvement, and student learning outcomes in the application of the blended learning method by using Edmodo's media on work material and energy.

Learning instruments in the form of Lesson Plan (RPP) and Student Worksheets (LKS). RPP about work and energy was prepared by researchers using the 2013 curriculum in accordance with the curriculum used by Nusra Kupang Advent High School.

The instruments to collect data was consisted of two types, namely involvement instruments, and student learning outcomes instruments. The instrument of student involvement and was a questionnaire filled out by students after following a series of learning processes. While the instrument of student learning outcomes in the form of questions about the test of work material and energy.

The analysis of the results of the student involvement questionnaires was done by summing the scores according to the students' answers. The questionnaire uses a Likert scale with the score assessment as follows (Riduwan, 2012).

Table 1. Questioner Scoring Guidelines

Statement	Positive	Negative
Strongly Agree (SS)	4	1
Agree(S)	3	2
Disagree (TS)	2	3
Strongly Disagree (STS)	1	4

The percentage score of each student was obtained by:

$$P_s = \frac{s_s}{s_t} \times 100\%$$

P_s = Percentage of each student

s_s = Student real score

s_t = Maximum score

The student's respond the classified into five groups (Suharsimi, 2009):

Table 2. Classification of Student's Score

Student's Score Percentage	Classification
0% - 20%	Very Low
21% - 40%	Low
41% - 60%	Fair
61% - 80%	High
81% - 100%	Very High

The total students' learning achievement was obtained by using formula:

$$P_k = \frac{s_t}{s} \times 100\%$$

P_k = Total percentage

s_t = Number of students that meet the minimum score

S = Total students number

Student learning outcomes were analyzed quantitatively to determine the predicate achievement of student learning outcomes by referring to the following table (Kartika Budi, 2001):

Table 3. Norm Criteria of Student's Learning Achievement

Norm Criteria	Interval
Very Good (VG)	$B+4C < X \leq B+5C$
Good (G)	$B+3C < X \leq B+4C$
Fair (F)	$B+2C < X \leq B+3C$
Lass Good (LG)	$B+C < X \leq B+2C$
Bad (B)	$B < X \leq B+C$

X = Student's final score

A = Student's highest score

B = Student's lowest score

C = The difference i.e. $\frac{A-B}{5}$

Table 4. Classification of Student's Learning Achievement (Kartika Budi, 2001)

Norm Criteria					Accumulative Criteria
VG	VG + G	VG + G + F	VG + G + F + LG	VG + G + F + LG + B	
$\geq 75\%$					Very Good (VG)
	$\geq 75\%$				Good (G)
		$\geq 65\%$			Fair GB
			$\geq 65\%$		Less Good (LG)
				$\geq 65\%$	Bad (B)

The Effectiveness Criteria

In this case the effectiveness is seen from the involvement and learning outcomes of students. The following explanation:

1. Learning Involvement

The results of the questionnaire that have been filled out by students will be analyzed later Table 3.5. The application of the blended learning method that utilizes Edmodo media is said to be effective in terms of student involvement if at least 75% of students have an involvement with a high minimum category.

2. Learning outcomes

The value of learning outcomes is the value obtained through written tests. The final values obtained are then compared with Table 3.7. The application of the blended learning method that utilizes Edmodo media is said to be effective in terms of student learning outcomes if at least 75% of students have learning outcomes with a minimal good category.

Student's Involvement

The following is a summary of questionnaire data as a result of student involvement in the blended learning method that utilizes Edmodo's media on work material and energy after going through the scoring process, which has been categorized as referring to Table 2:

Table 7. Student's Involvement in Learning

Student's Code	Student's Score	Percentage	Classification
1	60	100%	VH
2	57	95%	VH
3	58	97%	VH
4	60	100%	VH
5	59	98%	VH
6	59	98%	VH
7	59	98%	VH
8	54	90%	VH
9	49	82%	VH
10	31	52%	F
11	59	98%	VH
12	49	82%	VH
13	51	85%	VH
14	57	95%	VH
15	55	92%	VH
16	60	100%	VH
17	32	53%	F
18	53	88%	VH

F = Fair

VH = Very High

Following are the qualities of student responses related to the use of blended learning methods that utilize Edmodo media based on Table 7 which are analyzed by using classification in Table 2.

Table 8. Quality of Student's Involvement

Classification	Frequency
Very Low (VL)	0
Low (L)	0
Fair (F)	2
High(H)	0
Very High (VH)	16

Following is the chart representing the student's involvement

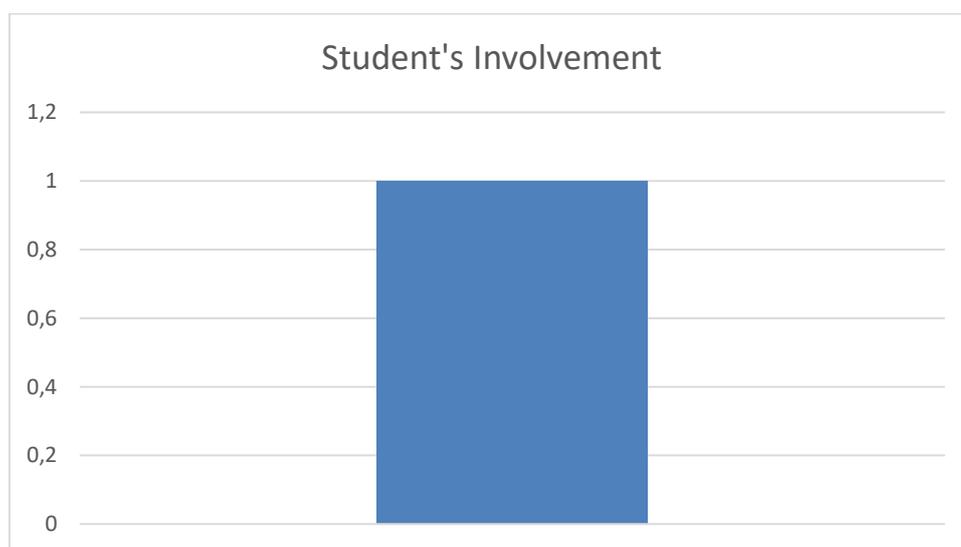


Figure 1. Percentage of Student's Involvement

Table 8 and Chart 2 show that 16 students reached the target with a very high category. So as a whole, based on the grouping in Table 2, it was found that the involvement of students in the XIA class of Nusra Kupang Advent High School towards the use of blended learning methods that utilize Edmodo media was included in the very high category with a percentage of 89%.

Student's Learning Achievement

The following is a summary of the student learning outcomes test that has gone through the scoring process and has been converted into a value:

Table 9. Students Learning Achievement

Student's Code	Final Score
1	79
2	82
3	52
4	85
5	88
6	69
7	80
8	47
9	62
10	42
11	72
12	72
13	62
14	80
15	37
16	71
17	47
18	75

Maximum score: 100

Student learning outcomes test data that have been obtained in Table 9 shows that the highest value of students is 88 and the lowest value of students is 37. For the class average value is 67. Referring to Table III can be obtained achievement of all students' learning outcomes as follows:

Table 10. Students Learning Achievement Classification

Classification	Percentage	Frequency
Very Good (VG)	33%	6
Good (G)	28%	5
Fair (F)	11%	2
Lass Good (LG)	6%	1
Bad (B)	22%	4

After obtaining these percentages, by referring to Table IV, the achievement of student learning outcomes tests is as follows:

Table 11. Norm Classification of Student's Learning achievement

Norm Classification					
VG	VG + G	VG + G + F	VG + G + F + LG	VG + G + F + LG + B	Accumulative Classification
33%					Very Good (VG)
	61%				Good (G)
		72%			Fair GB)
			78%		Less Good (LG)
				100%	Bad (B)

Following chart representing the proportion of student's learning achievement.

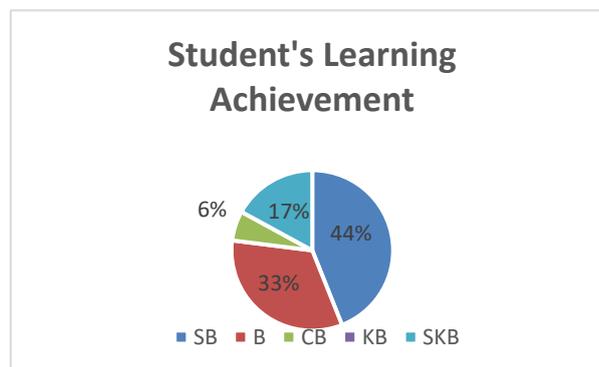


Figure 2. Percentage of Student's Learning Achievement

The results of the analysis of student learning outcomes test data Table 11, with reference to Table 4, it was found that the achievement of learning outcomes of all students of class X MIA Nusra Kupang Advent High School included in the good category with a percentage of 77%.

Results and Discussion

Student involvement in learning is very important to provide a better learning experience for students, it makes students rich in learning experiences. Students who are more often involved in learning are expected to be able to achieve the success of the learning itself. This is evident in this study that students who have a high percentage of involvement tend to have high learning outcomes.

Students also give a good response to the use of Edmodo as a learning medium in the blended learning method. This is also evident in learning where students do not have significant difficulties in operating Edmodo or utilizing Edmodo for learning purposes. Like sending assignments, looking for material, to working on online tests, and find learning resources. Throughout class learning many students use Edmodo as a reference to do the assigned tasks. This means that students enjoy the use of Edmodo media in learning.

The following is a description of the data outlined from the results of the study, which includes data on response, involvement, and student learning outcomes.

Conclusion

The results of this research revealed that:

1. The involvement of students in class X MIA Advent Nusra Kupang High School in learning about business and energy using blended learning methods that use Edmodo media can be said to be effective. This is evident from the results of the questionnaire analysis of student involvement which is included in the very high category with a percentage of 89% which already meets the effectiveness criteria of at least 75% of students included in the minimal high category.
2. Achievement of student class X MIA Advent Nusra Kupang learning outcomes in learning about business and energy using blended learning methods that utilize Edmodo media can be said to be ineffective. This is evident from the results of the analysis of student learning outcomes tests where only 61% achieved effectiveness criteria with a minimal good category. This result does not meet the effectiveness criteria, which is that at least 75% of students fall into the high minimum category. Overall the percentage of this class is quite good with a percentage of 72%.

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