



## THE EFFECT OF BLENDED LEARNING USING SCHOOLGY TOWARD STUDENT LEARNING OUTCOMES

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### ABSTRACT

*This study aimed to determine the effect of blended learning using schoology toward student learning outcomes. The type of research is quasi-experiment. The population of this study is all students of class X MIA in MAN 1 Medan in the second semester of A.Y 2019/2020 which consisted of 9 classes. By purposive sampling technique selected class X MIA 1 as the experiment class has given blended learning treatment using schoology and X MIA 4 as the control class has given conventional learning treatment. The total students in both classes are the same, 30 students, the total sample is 60 students. The instrument used is a multiple-choice test of 20 questions with 5 choice answers validated by the validator. The results showed the average value of the experiment class pre-test is 51.83 and the control class is 50.67. In the normality and homogeneity test of the two classes, it is found that the data of both classes distribute normal and homogeneous. By using two tail t-tests can be stated that the initial abilities of students of both classes are the same. After treatment in each class, the average value of the post-test experiment class is 81.67 and the control class is 66.67. In the normality and homogeneity test obtained that the data of both classes are normally distributed and homogeneous. By using one tail t-test can be stated that there is a significant effect of blended learning using schoology toward student learning outcomes.*

**Keywords:** *blended learning, schoology, learning outcomes*

### INTRODUCTION

In this digital era, the development of technology is developing very rapidly. The development of technology and information in the 21<sup>st</sup> century has a significant influence on society. The culture and lifestyle of the people are greatly influenced by electronic devices which make access to information fast (Sani, 2014). This is because the world entered industry 4.0 where technology became the most basic thing in it. Industry 4.0 is a comprehensive

transformation of all aspects of production in the industry through the merger of digital and internet technologies with conventional industries. It can be said that the 4.0 industrial revolution is based on digital (Wan, et al., 2015).

One of the problems faced by the world of education is the problem of the weak learning process. In the learning process in the classroom, students lack the motivation to develop thinking skills, student's brains are forced to remember and hoard a variety of information without being required to

understand information and connect it to everyday life so that their thinking stops until learning is over. One of the subjects that are closely related to technology is physics. Physics is a science that includes knowledge in the form of facts, theories, principles, and laws based on scientific findings and scientific work. The submission of physics teaching materials is closely related to technology because teachers can give factual examples to students. Besides, teachers can also provide assignments through technology as the medium. So, it can make the student more understand with physics teaching materials.

But in reality, if observed directly in the field it shows that students only memorize the formulas in physics that have been conveyed by the teacher so that if they have met with problems related to real life, students are not able to apply the concept of physics. So, make the student learning outcomes less satisfying because cannot apply the concept of physics in everyday life. And also, the use of media is still rarely done by teachers. This is due to the lack of learning innovations from teachers that make students feel bored and lack enthusiasm for learning so that physics learning becomes less meaningful.

Based on the result of the questioner distributed 55 students in MAN 1 Medan, 78.2 % argued physics is just an ordinary lesson. Around 45.5% argued that the score of the test is quite satisfactory (50-70), whereas the Minimum Satisfaction Criteria is 75. Around 78.2% argued the way the teacher teaches in class only explained the material, 67.3% of students argued that the teacher rarely uses supporting media in learning, and 72.8% of students argued that they can use android when learning process.

From the interview of the researcher with physics teacher said that the teaching methods that are often done are lecturing and taking notes, so that they are less varied and students become less active in the learning process. Students also rarely ask questions and answer questions, there are even students who have never asked questions or answered questions given by teachers because of the low interest of students in learning physics. So it is

not surprising that student learning outcomes for physics are quite alarming.

At present, there is a learning model that combines traditional learning (conventional) with electronic learning. That is Blended learning which uses internet networks where there is web-based learning (Dwiyogo, 2018). Blended learning is the most logical and natural evolution of our learning agenda. It suggests an elegant solution to the challenges of tailoring learning and development to the needs of individuals. It represents an opportunity to integrate the innovative and technological advances offered by online learning with the interaction and participation offered in the best of traditional learning (Thorne, 2003).

Blended learning has been studied by several previous researchers, Cobanoglu & Yurdakul (2014) proved that blended learning can improve student learning achievement. In his study indicate the significant effect of blended learning on the course. In line with the research of Alsalhi, et al., (2019) concluded that the results of this study show that the application of blended learning had a positive impact on students' achievement. There was a statistically significant difference between the experimental and the control groups, in favor of the experimental group, who were taught using blended learning.

One of the technology facilities by e-learning that is widely used in physics learning is Schoology. As a learning management tool, it allows teachers to provide teaching materials and to organize and evaluate the learning process. Besides, according to the creators of the platform, one of the most important advantages that this tool can provide is the possibility of knowing the individual needs of the students, in such a way that the teaching-learning process is more fitting to the student's needs (Garcia, et al., 2018).

Seeing the positive result of the previous research on blended learning and school facilities that support, this research was applied blended learning using schoology to see the effect towards student's learning outcomes.

## RESEARCH METHODS

This research was conducted in MAN 1 Medan in the second semester. The population of this study was all students of class X MIA in MAN 1 which consisted of 9 classes totaling 315 students.

Taking and determining the sample class in this study was taken by a purposive sampling technique. According to observation in the study, all students in class X MIA 1 have gadgets, while in class X MIA 4 some students do not have gadgets. So based on it the samples were taken are class X MIA 1 as the experiment class and X MIA 4 as the control class.

In this research, there is an experiment class and control class. In this study the two classes did not get the same treatment, namely in the control class conventional learning would be given only, while in the experiment class blended learning would be given which combines conventional learning and online learning using schoology. The design of the research can be seen in Table 1.

**Table 1.** Nonequivalent control group design

$O_1$	$X_1$	$O_2$
$O_3$	$X_2$	$O_4$

Information:

- $O_1$  : Pre-test result of experiment class
- $O_2$  : Post-test result of experiment class
- $O_3$  : Pre-test result of control class
- $O_4$  : Post-test result of control class
- $X_1$  : Blended learning using schoology
- $X_2$  : Conventional learning

Where in the first and second meetings will be given online line learning schoology. And the third meeting will be given conventional learning. Before being given learning first students are asked to do the pretest problem after that at the end of the lesson students are given the posttest question. The difference in learning outcomes between experiment and control classes is used as an indicator of student learning success using blended learning using schoology in learning.

The instrument used in the study was a learning outcome test consisting of 20 multiple-choice questions. The test of student learning outcomes was standardized using the content

validity test by two lecturers and one teacher according to the experts. In addition to content validity, empirical validity has also been carried out on class XI students in MAN 2 Model Medan. After the pre-test data were obtained, data analysis was carried out with the normality test, namely the Liliefors test, homogeneity test, and variance equality test. After that, the two tail t-test hypothesis was tested to determine the students' initial abilities in the two sample groups, in this case, the initial abilities of the two samples must be the same. Furthermore, the researcher taught the subject matter using the blended learning model in the experimental class and conventional learning in the control class. The difference in the final result can be seen by the posttest using the one tail t-test to determine the effect of blended learning treatment on student learning outcomes.

## RESULT AND DISCUSSION

### a. Research Results

The data described in this study include data on student learning outcomes on impulse and momentum matter, which are given different treatments, namely 1) learning using blended learning, 2) learning using conventional learning. The average student pretest and post-test results are in Table 2.

**Table 2.** The average of the pre-test results of the experimental class and control class

Experiment class		Control class	
Pre-test	Post-test	Pre-test	Post-test
51.83	81.67	50.67	66.67

Based on the research data in Table 2, the average value of student pre-test in the experiment class was obtained before being treated using blended learning using schoology of 51.83. And the average pre-test in the control class is 50.67. With a standard deviation of 13.99 and 11.65. The average value of the student's pre-test in the experiment class and the control class was not much different. This is because the experiment and control class haven't been treated.

The average posttest score of students in the experiment class after being treated with blended learning using schoology is 81.67, while in the control class is 66.67. With a standard deviation of 8.94 and 10.20. It shows that the average post-test value of the experiment class is higher than the average post-test value of the control class. There is an increase in learning outcomes in both classes. The average value of student learning outcomes in the experiment class has reached minimum completeness criteria. While the average value of student learning outcomes in the control class has increased but has not yet reached minimum completeness criteria for all students.

#### **b. Final Product Discussion**

Blended learning is very appropriate when applied to face the challenges of education, especially in learning physics. By using blended learning that is equipped with Schoology, it can minimize the constraints of space and time. Utilization of facilities in schoology applications such as materials, quizzes, and assignments can be used by students to obtain material, do assignments, and practice doing questions in the learning process.

Learning is done by conventionally and online. During e-learning using Schoology in which there are many features. These features can be used by students to increase students' knowledge. Thus, learning to be more fun and students can more easily understand the concept, so that gives the affect student learning outcomes.

In experiment class using blended learning using schoology and the control class using conventional learning. The results showed that there is a significant effect on student learning outcomes using blended learning. This is indicated by the difference in the increase in the average post-test scores that have been carried out in both classes. The result of the pre-test in the experiment class obtained an average value of 51.83. And in the control class obtained the average value of 50.67. And then, the experiment class and control class were given different treatments. After the two classes were treated. Every class was given a post-test to see the difference between the class because it is

given different treatments. From the post-test data of the two classes, the average student learning outcomes in the experiment class amounted to 81.67, while that of the control class was 66.67. The average post-test value or learning outcomes in the experiment class is higher than the average post-test or learning outcomes value of the control class.

The result of this study is supported by several previous research, including: in the research of Izuddin (2012) said that the learning outcomes of students given blended learning were better than those who were not given treatment. Where through learning using blended learning, the learning process will be more effective because the usual teaching and learning process (conventional) will be assisted by e-learning. Learning in this case stands on information technology infrastructure and can be done anytime and anywhere. The other study by Lumban Gaol & Sirait (2019) found that there are differences due to the effect of blended learning using schoology toward student learning outcomes on work and energy topics in SMAN 1 Perbaungan. Sjukur (2012) and Sahin (2010) found that blended learning had a significant effect on vocational school students' learning ability. Blended learning has shown to improve the learning outcome and skills of vocational students in the classroom than students who used the face to face learning. Research conducted by Akkoyunlu & Soylu (2008) found that blended learning was able to improve the provision and development of more theoretical material to students. Students gave positive feedbacks and greatly appreciated the learning process by using blended learning. In research by Surjono, et al., (2017) said that student's achievement in blended instruction was slightly better than traditional instruction and student-centered learning environments can be created because students in the blended courses are proven to be more active and more involved in the learning activity. And the result of his study shows that the implementation of the blended learning courses provides more benefits to students in terms of higher achievement and level of participation compared to traditional face-to-face learning. And also, this study supported by

research Irawan, et al., (2017) said that blended learning was proven to improve learning outcomes better than the models of face to face learning. Blended learning based on Schoology was able to increase the activity of students outside school hours to explore the material individually and independently. Students could follow the online learning on Schoology using a laptop, personal computer, or smartphone. Blended learning based on Schoology was also able to increase interaction associated with learning between peers outside school; this was proven from the increase in group learning and discussion among peers outside of school to learn together in Schoology. The best aspect of combining classroom study and learning on Schoology was to make mastery of concepts students increased due to the material obtained from various sources. As a consequence, the ability of students in the classroom increased.

Based on the comparison of the average value of the pre-test of the experiment class and the control class, it appears that the values obtained by the two classes are not very different. This difference shows that the initial abilities of both classes are normal and homogeneous. And the comparison of the average post-test values of the experiment class and control class showed significant differences, this indicates a significant effect of blended learning using schoology. The result of the normality and homogeneity test for both samples showed that the pre-test and post-test values were normally distributed where  $L_{count} < L_{table}$  and originated from a homogeneous population. Hypothesis test result from post-test using t-test a significant level  $\alpha=0.05$  obtained  $t_{count} > t_{table} = 5.282 > 1.671$  which means that there are differences due to the effect of blended learning using schoology toward student learning outcomes. Improving student learning outcomes using blended learning due to blended learning has advantages than conventional. By using blended learning with schoology can help students in finding the information needed using android without having to focus on what is delivered by the teacher. And also allows interaction between teachers and students and fellow friends wherever and whenever so that

the quality of learning is maximized. The use of blended learning using schoology is very effective to bridge the teaching and learning activities inside and outside the school.

## CONCLUSIONS AND SUGGESTIONS

Based on the research results obtained from the results of data analysis and hypothesis testing, it can be concluded that there is a significant effect of blended learning using schoology toward students learning outcomes.

Based on the conclusions of the research results, the authors suggest the following: (1) For further researchers who want to apply blended learning using schoology, time management is needed so that each stage in blended learning can be carried out well. Both in making practice questions, assignments, and material that will be uploaded on schoology. (2) For further researchers who want to research blended learning using schoology, should do a simulation before trying this learning on students, so students better understand and be trained in the workings of blended learning. So, when doing research can be completed on time. (3) To teachers or prospective teachers who want to use this blended learning to prepare teaching materials and questions that are interesting and related to the subject matter so that students are more interested in following the lessons. (4) For schools, if implementing blended learning would be better if facilitated with wi-fi. Because with the wi-fi will facilitate student learning activities.

## REFERENCES

- Akkoyunlu, B., & Soylu, M. Y. (2008). A Study of Student's Perceptions in A Blended Learning Environment Based on Different Learning Styles. *Educational Technology & Society*, 11(1), 183–193.
- Alsahli, N. R., Eltahir, M. E., & Al-Qatawneh, S. S. (2019). The Effect of Blended Learning on The Achievement of Ninth Grade Students in Science and Their Attitudes Towards Its Use, *Heliyon*, 5(9), 1-11.
- Cobanoglu, A., & Yurdakul, B. (2014). The Effect of Blended Learning on

- Students' Achievement, Perceived Cognitive Flexibility Levels and Self-Regulated Learning Skills. *Journal of Education and Practice*, 5(22), 176–197.
- Dwiyogo, W. (2018). Developing a Blended Learning-Based Method for Problem-Solving in Capability Learning. *Tojet - The Turkish Online Journal of Educational Technology*, 17(1), 51-61.
- Garcia, L. F. S., Sebastia-Amat, S., Garcia, M.N., & Colomina, S. S. (2018). Schoology As an Alternative to Traditional Teaching Tools for University Students. *Proceedings of EDULEARN Conference*. 7514-7520.
- Lumban Gaol, L., & Sirait, M. (2019). The Effect of Blended Learning Using Schoology Toward Student Learning Outcomes on Work and Energy Topic in Sman Perbaungan. *Jurnal Penelitian Bidang Pendidikan*. 25(1), 23–29.
- Irawan, V. T., Sutadji, E., & Widiyanti, E. (2017). Blended learning based on schoology: Effort of improvement learning outcome and practicum chance in vocational high school. *Cogent Education*, 11(1), 1–10.
- Izuddin. (2012). Pengaruh Model Blended Learning Terhadap Motivasi dan Prestasi Belajar Belajar Siswa SMK. *Jurnal Pendidikan Vokasi*, 2(2), 234-239.
- Sahin, M. (2010). Blended Learning In Vocational Education: An Experimental Study. *International Journal of Vocational and Technical Education*, 2, 95–101.
- Sani, R. (2014). *Inovasi Pembelajaran*. Jakarta: Bumi Aksara.
- Sjukur, S. B. (2012). Pengaruh Blended Learning Terhadap Motivasi Belajar Dan Hasil Belajar Siswa Tingkat SMK [The Effect of Blended Learning Toward Learning Motivation And Learning Outcome Of Vocational High School Student]. *Jurnal Pendidikan Vokasi*, 2, 368–378.
- Surjono, H. D., Muhtadi, A., & Wahyuningsih, D. (2017). The Implementation of Blended Learning in Multimedia Courses for Undergraduate Students in Indonesia. *International Journal of Information and Education Technology*, 7(10), 783-786.
- Thorne, K. (2003). *Blended Learning: How to Integrate Online & Traditional Learning*. London: Kagan Page Limited.
- Wan, J., Cai, H., & Zhou, K. (2015). Industrie 4.0: Enabling technologies. *Proceedings of 2015 International Conference on Intelligent Computing and Internet of Things, ICIT 2015*.