

CHAPTER I INTRODUCTION

1.1. Research Background

In this digital era, the development of technology is developing very rapidly (Hennessy et al., 2010). The development of technology and information in the 21st 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).

The development of technology and information has brought the current generation into the world of digital literacy that has been integrated with the current condition of society (Schäffer, 2007). This condition causes a lot of people more easily, quickly and has greater opportunities in finding various information. Besides, one of the benefits of information technology is being able to overcome the limitations of space and time. Workers in all fields in the industrial revolution era 4.0 are required to have digital skills, such as in the fields of development, economics and, education. In the field of education, for example, an educator must understand digital mastery. Various kinds of technology should be applied to classroom learning (Means et al., 2013).

One of the problems faced by the world of education is the problem of the weak learning process (Yeo et al., 2012) . 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. So far, the government has made efforts to improve the quality of education in Indonesia. But there are obstacles, one of the problems

is the weakness of the learning process, lack of competitiveness that can produce quality human resources, and not maximizing the use of technology in learning (Urrea-Solano & Hernández-Amorós, 2017).

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 or props 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. 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 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.

One solution to the problem found at MAN 1 Medan is by using a new learning innovation in learning activities. The presence of a breakthrough or innovation of learning used by the teacher in the learning process can make students become more eager to follow the learning process and will make students increasingly curious about the innovations let alone that will be used by the teacher the next day. Such circumstances may affect the result of a study of students in the learning process and increase education quality.

By utilizing the latest information and communication technology, it is expected to improve the quality of education (Chandio et al., 2017) . Technology in the world of education is called E-learning. The benefit of using e-learning is to facilitate the learning process in learning. E-learning becomes an alternative solution and technology to be used in the learning process following the demands of the industrial revolution 4.0 (Pamfilie et al., 2012).

E-learning is the continuous assimilation of knowledge and skills by adults stimulated by synchronous and asynchronous learning events-and sometimes Knowledge Management outputs-which are authored, delivered, engaged with, supported, and administered using Internet technologies (Morrison, 2003). The use of e-learning also makes students and teachers more interactive, face-to-face online, can visualize and provide authentic areas (Nuangchalem, 2014). Another advantage of e-learning is that it makes the learning process effective and can increase learning motivation (Jethero et al., 2012).

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 such as Cobanoglu and Bunyamin (2014) and Alsalhi (2019). Cobanoglu and Bunyamin (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 (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.

In other research concludes that blended learning can be significantly beneficial as it will improve learning quality and increase students' access to information. Blending technology with face-to-face instruction can stimulate learning and provide more collaborative learning experiences (Okaz, 2015). And also in research of Obiedat et al. (2014) obtained blended-learning has a significant impact on both teachers and students.

Differences previous researchers with researchers who will study are researchers using media that is Schoology. The researcher intends to see whether the use of Blended Learning using Schoology in physics learning can improve student learning outcomes.

One of the technology facilities by e-learning that is widely used in physics learning is Schoology. Schoology as a learning management system (LMS) has been used by various institutions in many countries for online learning and blended learning (Muhtia et al., 2018). The other definition, the Schoology tool is shaping up as a free educational platform for the work of ICTs, also known as LMS (Learning Management System), more friendly and practical, which tries to reinvent the technology applied so far in learning (Danver, 2016). 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).

The use of a schoology application in physics learning must be supported by the availability of media such as computers or mobile phones and especially the internet. Based on observation made by the researcher while in MAN 1 Medan, the use of technology by students in the form of an android mobile phone is no longer familiar there. So, it makes easier for students to access schoology. The fact can be utilized by the teacher in creating a more quality and meaningful learning process in the classroom by applying schoology in learning physics.

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

1.2. Problem Identification

Based on the background that has been outlined above, then that becomes problem identification in this research are:

1. The learning process is always dominated by a teacher (teacher center).
2. Limited time in the teaching and learning process, resulting in a lack of communication between teachers and students in learning.
3. The lack of use of learning media using the internet at school.
4. Students do not still learn independently.
5. Model or learning methods implemented by teachers monotonous.
6. Students are passive in the learning model.
7. The student learning result in physics is low.

1.3 Problem Limitation

Based on the identification of the problem, then the limitation of the problem in this research are:

1. Learning used in this study Blended Learning using Schoology in the experiment class and conventional learning in control class.
2. The topic taught is Momentum and Impulse.
3. Student learning outcomes in this research are limited to the cognitive domain and learning activities.
4. The subject of this research is to grade X MIA in MAN 1 Medan.

1.4. Problem Formulation

Based on the limitation of the problem, the problem formulation in this research are:

1. How are student learning outcomes using blended learning using Schoology and conventional learning?
2. How are student learning activities when implementing blended learning using Schoology?
3. Is there a significant effect of blended learning using Schoology toward student's learning outcomes?

1.5. Research Objectives

Based on the formulation of the problem above, the objectives of this research are:

1. Knowing the student learning outcomes using blended learning using Schoology and conventional learning.
2. Knowing the student learning activities when implementing blended learning using Schoology.
3. Knowing the effect of blended learning using Schoology toward student's learning outcomes.

1.6. Research Benefits

The benefits than can be gained from this research are:

1. For teachers, the input to develop blended learning of learning.

2. For school, improving the quality of learning by improving school outcomes and teacher performance.
3. For researchers, as material information to do further research and provides experience in developing teaching materials when entering the teaching profession.

1.7. Operational Definition

Operational definition of word or terms in these research activities are:

1. Blended learning is the kind of learning that combines teaching in the classroom (face to face) with online teaching.

In this research, the researcher will see a significant effect of blended learning on student learning outcomes. To show that the influence is the effect of the treatment, the researcher uses the experimental class and the control class. Students in the experimental class will receive blended learning and students in the control class will receive conventional learning at impulse and momentum topics.

2. E-learning is the continuous assimilation of knowledge and skills by adults stimulated by synchronous and asynchronous learning events and sometimes Knowledge Management outputs-which are authored, delivered, engaged with, supported, and administered using Internet technologies (Morrison, 2003).

3. Schoology is one of the LSM that helps and supports teachers in managing information and learning materials in the classroom (Putri, 2014).