

CHAPTER I INTRODUCTION

1.1 Background

Indonesian curriculum has always advanced. Curriculum change has many aims such as improving the quality of the teaching process in the school's teaching layout and developments in IT (Kemendikbud, 2014). Indonesian curriculum will therefore continue to be developed and transformed to meet the needs of society and the demands of the time. It is expected that the current curriculum, Curriculum 2013, will improve the quality of Indonesian education. In UU 20 of 2003 is stated that curriculum is an arrangement of objectives, content, and lesson materials and ways used as a guidelines for organizing learning activities to achieve specific educational.

There are numerous problems and difficulties related to globalization and free market, environmental issues, advancing technology and data, and transformation in the education industry as well as TIMSS and PISA materilas that must be owned by the learner in the creation of Curriculum 2013. The ability of Indonesian learners to face the progress of technology is not really satisfied if the teaching process is based solely on the middle of educators not centered on the middle of learners. This situation was expressed in a research by Wulandari & jailani (2015) showing that Indonesian learners still lack multiple abilities such as problem-solving abilities, proofing and reasoning, communication abilities, representation and relationship. But Indonesian learners, on the other hand, have a excellent memorization compared to the capacity to relate the idea to the real-life issue.

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Based on the outcome of the International Mathematics and Science Study (TIMSS) trend, students in Indonesia have very low rank in the ability to understand some complicated information, theory, analysis, problem solving, use of instruments, and conduct research. Indonesian achievements evaluated by TIMSS is rank 45 from 50 countries (Bernas, 2017). The result from Program for International Students Assessment (PISA) it shows that Indonesian achievement still categorized as low achievement. The achievements of Indonesia based on PISA evaluation for science, reading and math is rank 62, 61, and 63 of 69 countries (Kemendikbud, 2016). This result indicate that the students in indoneisa still low in learning performance and teacher ability in managing learning quality is also still low. The main role of the teache in learning proccess is not only for transferring knowledge but also should fostering the students understanding and other skills.

The topic of physics is one of many science lessons that require the media to supply or clarify the material (Sarofi, 2014). The subject of physics also needs the expertise of the learners. One role of instructional media is for give some experience to student that can not directly obtain but it can be serve well using in the learning media. In physics subject, the main problem of teaching learning process is physicss subject are unattractive in general. It results in learners who lack understanding the notion of physics becoming passive during the learning phase of teaching (Haya, Waskhito & Fauzi, 2014). An interactive media makes learners enjoy learning physics to solve this issue.

During the teaching learning process, motivation also required to be enhanced. Therefore, the lesson will not last transfer through verbal understanding. Motivation can encourage learners to learn or operate independently. Students will be not interesting, enjoying the lesson and serious in the learning science subject if motivation is absence. Highly motivated learners tend to demonstrate more effort in academics and

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accomplishments than learners with low motivation in school activity and their assignments (Uzezi & Jonah, 2017). Based on the observation that doing in the class by the researcher and based on the interview with physics teacher, it found that most of the students in that school have a problem in physic subject. And it is found that students in that school are really closed with technology in their teaching learning process.

The advance of technology is resulting the competition in the life aspects. This competition requires some country to can change their educational system and involves technology in the learning process. Computer simulation as an e-learning (electronic learning) is one type of tool that is often used in teaching learning processes to improve students' knowledge of an uneducated idea at a lower moment than traditional technique (Alsultanny, et al., 2014). The computer simulation is a model that simplifies the model from the true model or can explain the idea, phenomena, or design process consisting of some animation, interactive lab, and visualization (Bell & Smetana, 2015).

According to Khan (2005), he describes e-learning as an innovative strategy to providing well-designed, interactive, learners focused and facilitated a learning atmosphere for anywhere, anybody, anytime using the characteristics and multiple resources of different digital techniques. In the current study the e-learning component is took the form of an asynchronous online classroom. There was an online space where the students could interact with learning materials and with they friends, but then without the physical presence of the instructor. A traditional face-to-face teaching, on the other side, is helping to develop a powerful value system. In traditional or face-to-face teaching, social abilities such as sharing, collaboration, speech and respect for other people are more readily created. And those multiple skills are required to face the 21st century (Dangwal, 2017).

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For combining face to face learning and E-learning known as Blended Learning. Blended Learning can also be described as incorporating face-to-face learning and distance learning or electronic learning, using different learning methods, theories and techniques in the same location, and using different internet technologies to support learners in the classroom learning system (Rossett, 2002). Google Classroom is one kind of learning management system for schools that aims to simplify, creating, distributing and give score for the assignments. Solar system topic is included into a concept in science which need some media to help students understand the concept. The universe can not be seen directly to know all of the planets in our universe, for example like we can not see the planets that farthest from the sun like jupiter, saturn, uranus and neptune directly from the earth. We also can not see the structure of planets directly, So at least we have to find out or make some illustration of solar system. Solar System Scope as one of E-learning tools will be used in this research as a technological media in order to help learning Science. Solar system scope is an application on Android that provide the simulations of our universe. The 3S Encyclopa in Solar system scope will help the user to find out the most interesting fact about every planet by realistic 3D visualizations. In order to encourage the exploration, this application also offers Nightsky observatory, Scientific instruments, and unique maps with the accurate maps are based on NASA elevation and imagery data.

Previous study by Pereira, José A., et al (2012) who measured the academic of the students' by using Moodle for learning management system and also it is found and proven that Blended Learning in their studies indicated the effectiveness of Blended Learning on improving of students' achievement. In other studies, Heba & Nouby (2008 who are already conducting studies to combine the strategy of blending asynchronous and face-to-face operations with learners

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working in collaboration during the teaching process and pair tasks, called the BeLCA (Blended e-Learning Cooperative Approach). It is found that students that learn in BeLCA have higher achievement levels, and attitudes towards e-learning environments.

In another research by Ibrahim Yasar Kuzu and Mehmet Demirkol (2014) this study was analyzed academic performance of the students in Blended Learning environment for biology class. In this research they used flipped classroom as a form of Blended Learning and used blog that made by the researcher. It found that Blended Learning have been more effective than traditional learning. In another research that was done by Yapici & Akbayin (2012) the goals of this research is to determine the effect of the Blended Learning on high school students' biology achievement and on attitudes towards the Internet. In this research the courses were taught based on the Blended Learning via a website and it is found that that the Blended Learning approach give more impact to the students' achievement and students' attitudes towards the Internet developed statistically significantly.

In other research, Saritepeci & Cakir (2015) that using Moodle (Modular Object Oriented Dynamic Learning Environment) as an online classroom to analyzed engagement and academic achievement of the students, they stated that Blended Learning give positive effect on active participation and develop students' motivation towards the course. According to research that was done by Al – Ani (2013) that measured the effect of Blended learning on students' achievement, motivation, collaboration and communication by using moodle, it is found that using Moodle in learning process increased the achievements and self regulated skills of the students. In the another research that conducted by Prof. Dr. Meltem Eryilmaz (2014) In order to assess the efficacy of Blended Learning, it was discovered that there is a substantial distinction between the views of learners in comparison to the Blended Learning setting and

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the teaching environment online and face-to-face. However, in this study the researcher will combine e-learning environment with utilized Google classroom features as a Learning Management System (LMS), solar system scope application as a teaching media, and face to face activities with discovery learning and station rotation as a form of Blended Learning.

There were several study about Blended Learning that already supported by another LMS or using another teaching model. However, the differences between this study and another study is the implementation of discovery learning and combined with station rotation as a form of Blended Learning in the face to face learning, the use of Google Classroom as LMS, and the use of Solar System Scope application as a teaching media and technology support. There were several study that investigate the impact of Blended Learning to students' motivation. Motivation in learning is one of the important thing that should achieve in the teaching learning process and the increasing of students concept mastery is one of the indicator that the teaching learning process it self is conducted good. In another research there is no study that investigate students motivation with six factor, how ever the researcher decide that this study is to investigate the effect of the used of Blended Learning on students' concept mastery and six factor of motivation which are intrinsic motivation and personal relevance, self-efficacy and assessment anxiety, self-determination, career motivation and grade motivation. Therefore, researcher decide to conduct the research entitled “ The effect of Blended Learning on Students' Concept Mastery and Motivation in learning Solar System”.

1.2 Research Problem

Problem that proposed by the researcher in this research problem is “Is there any effect of Blended Learning on students” Concept Mastery and Motivation in Learning Solar System?. Elaborating from the

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research problem, the research try to explore this several following question that will be explore, which are:

- 1) How is the enhancement of Blended Learning on students' Concept Mastery in learning Solar System?.
- 2) How is the profile of Blended Learning on students' Motivation in learning Solar System?.

1.3 Research Objective

The objective of this research is specified as follow :

- 1) To investigate the impact of Blended Learning on students' Concept Mastery in learning Solar System.
- 2) To investigate the profile of Blended Learning on students' motivation in learning Solar System.

1.4 Research Benefit

The result of this study are expected to provide the following benefits:

- 1) For Teachers

Teacher can get many benefits from this research such as that teachers can find out other method to teach science materials, not only by traditional learning or e-learning but combined. Therefore engage students in learning by involve them more to search in internet or other platform. In other hand, teachers would have new ideas of teaching strategies and media to be used in teaching learning process. Teachers also can creating a new classroom environment that the knowledge and idea between students and teachers can be shared each other.

- 2) For Students

Not only teachers that can get some benefits from this research, students gave some benefits as well. Students have a chance to exploring new ideas through setting up connection with their previous knowledge. Also Blended Learning might improve students'

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learning experience by developing their capacity for reflection and they can get new experience to learn in the different way which is combine with technology.

3) For other researchers

Other than teachers and students who can get some benefits from this research. Other researchers might also get some benefits from this research, such that they can do a research on Blended Learning in other subject areas other than science and other topics other than solar system. Other researcher can improve this kind of approach. This study can be used as a reference for the other researcher who has the same research study.

1.5 Organizational Structure of Research Paper

Organizational structure of research papaer is used as a writing guideline. The research paper is divided into five chapter, which are:

1) Chapter I Introduction

This chapter will be the background of the research, research problem, research objective, research benefit, limitation of problem and organizational structure of research paper.

2) Chapter II Literature review

This chapter describes in details and explanation about Blended Learning, students' concept mastery, students' motivation and Solar system topic, and relevant research.

3) Chapter III Reseaarch Method

This chapter gives the explanation about research method, research design, population and sample, assumption, research instrument, research procedure,data collection and analysis.

4) Chapter IV : Results and discussion

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This chapter discuss about the results of the research. The author analyzed and interpreted it based on the needs of answering research questions that has been determined. The results and discussion will be about Implementation of Blended Learning, the result of Students' Concept Mastery, Students' Concept Mastery for each Cognitive domain, The Effect of Blended Learning on Students' Passing Rate in Solar system topic, The Effect of Blended Learning on Students' Academic Improvement per Subtopic in Solar system and the effect of Blended Learning on Students' Motivation.

5) Chapter V : Conclusion and Recommendation

This chapter describes about conclusion and recommendation based on the research.

1.6 Limitation of Problem

In order to make this research more focused, the researcher limit the problem as follow :

- a. Blended Learning Injthis study integrates face-to-face learning and electronic learning, using the ideas, methodologies and techniques of different learning in the same location and promotingthe learning with various online technologies during the learning process in the classroom and outside the classroom.
- b. Concept Mastery in this research is limited to Understanding (C2), Applying (C3), Analyzing (C4) and Evaluating (C5) according to Blooms' Taxonomy of cognitive level (Krathwohl, 2002). The study will be accepted if there is significant difference either positive or negative after implementing Blended Learning.
- c. In this research, for the students' motivation will measure using Science Motivation Questionnaire by Glynn, Shawn, et al (2009).
- d. The topic in this study only focus on the solar system concept. The researcher limited the materials into Solar system, Characteristic of member in solar system, Sun as the star, Effect of rotation and

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revolution of earth to our life on earth, Solar eclipse and lunar eclipse as a subtopics according to solar system topics based on basic competence number 3.11 (*Menganalisis sistem tata surya, rotasi dan revolusi bumi dan bulan, serta dampaknya bagi kehidupan di bumi*) in the 2013 curriculum syllabus of 7 grade.

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