

## CHAPTER I INTRODUCTION

### 1.1. Background

Learning media has an increasingly important role in learning. This resulted from educational betterment endeavor where the learning process no longer carried in one directional and teacher-centered but dynamically by promoting student participation and two-way communication between teachers and students. In another words, students are required to construct their understanding and teacher need to situate the students within supportive resource to allow this occurrence. This lead to a teaching-learning environment where teachers expected to guide students actively explore and find the information needed in the learning process facilitated by the learning media and guided by teacher. The remaining questions are how teacher can present adequate support of learning media and how learners are supported in the process of constructing knowledge using the learning media.

These challenges are no exception for Biology learning. Both students and Biology teachers cope with the access and fulfillment of Biology learning media. In Biology context, learnings are related to subject ranging from microscopic to macroscopic object, scientific processes occur within the human body that enormously non-observable, objects that are too distant— such as the solar system, is non-observable as well. From student spectacles, in many instances Biology learning is often coping with contextualizing the abstraction which students are required to learn and understand Biology learning by imagining, digging information, experimenting, understanding and building their perceptions. Inability to understand the Biology topic due to the underrepresented matter can also higher possibility of less motivated students. In addition, with different learning styles and abilities in each student, it is highly possible for the occurrence of misconception in Biology learning due to non-presentable learning object. Thus, Biology teacher need to ensure representation of Biology matter is no longer a barrier, and able to accommodate students' difference in learning by varying the method and media in Biology learning.

Diverse factors are affecting media provision in Biology learning. Creation of learning media needs creativity, as stated by Surachman & Suyitno (2006) there are 6 approaches used by Teacher in providing learning media such as *Buy, Imitate, Simplify, Manipulate, Modify, Create New (by Teacher himself), and Create it with students*. Although numbers of approach can be adapted by Teacher, practical facts from previous observation by Postgraduate Student at State University of Medan notable amount of learning activities didn't follow with learning media. Challenges in learning media provision, besides coming from perception towards its importance in learning, is also coming from access of information about alternatives Teacher can use in 6 aforementioned approaches. In this context, Learning media formerly created by Student Teacher and Postgraduate Student in Biology Department at State University of Medan can support teacher in accessing this necessary alternatives.

As integral part of Education system, Biology learning and curriculum has becoming concomitant. The implementation of all aspects in Biology learning, including the provision of learning media, need to meet the characteristic of learning in coherent Curriculum. The currently implemented Indonesia curriculum, Curriculum 2013 (K-13) has demanded learners to explore their own knowledge from various resources. This constructive portrait of learners in K-13 required student to construct their knowledge through various media of learning so that learning can be more meaningful. On Learning Process in K-13, the learning pressure on constructive strategy where teacher plays role as facilitator by providing resource for the student to actively explore the knowledge.

In order to meet the aforementioned challenges, the presence of learning media plays critical role as rigor assistance for Biology teacher in interpreting objects needed for Biology learning by modeling Biological subjects to visualize the learning by allowing conversion from abstract object into concrete object, distant object to close object, and galvanize the size of microscopic object becoming more macros and observable. This also related to pedagogic competence, where teachers are required to be capable in designing and implementing the Teaching-learning settings including the mastery and use of learning media. However, given

the responsibility to develop learning media solely on teachers' hands, with intensive period of teaching activities, likely to be challenging.

As educational institution for future educator, specifically for Biology, Biology Department at State University of Medan has initiated numbers of Biology learning media creation bear by student teacher on diverse subject of Biology learning. With the purpose on training for Biology student teacher to teach their future student with dynamic, attractive, yet applicable learning media, massive numbers of Non-ICT Biology learning media has been created.

Non-ICT Learning media has special characteristic compared to ICT media. Non-ICT learning media is beneficiary by its characteristic that is relatively low cost compared to high-maintenance ICT learning. In special occasion, Non-ICT learning media is benefitted to teaching circumstance with limited access to electronic-based learning. Non-ICT learning media is non-electronic base media made from printed materials, paper-based, or physical substance such as wood, iron, carton paper, reused materials, that created to model Biology object, visualized Biology process into drawings or diagram to allow media user, in this case the student, gain hands-on and direct observation experience.

From preliminary study conducted by researcher, despite of plethora of good practices from this Biology learning media, there is paucity of information about how the currently presented Biology learning media can fit into real school teaching and learning activities, how the learning media meet the needs of students, and how this media reviewed on Biology teacher who is directly dealing with demand of learning media fulfillment on routine basis from biology learning is still lacking though this factor is beyond necessary. Continuous development of learning media with adequate information about how this media expected in accord to student and Biology Teacher experience in school is embodiment of betterment support for both Non-ICT learning media development as well as channeling the media reflected by students and teacher into substantial recommendation.

In real terms, from a preliminary interview with 3 High School Biology Teachers in Medan, several challenges are found correlated to this context. Biology Teacher copes with challenges in fulfilling student difference in learning that

affects their consideration in choosing teaching method. Although Biology Teacher had varied method of teaching, students who demonstrated less interest to actively participate are still notable. In addition, biology learning need to be equipped with supportive learning media. From this preliminary observation researcher find that further study in supporting the resources for fulfillment of learning media that is supportive to teacher role as learning facilitator is favorably helpful for teacher in ensuring any limitation may presence during teaching and learning activities will no longer be a barrier.

In line to this aspect, resolving the challenges in teaching and learning activities, including the fulfilment of learning media to support teacher in learning activities, is also favourable to excavate student meaningful learning by enabling student to obtain better learning experience. Edgar Dale on Cone of Learning Experience also theorized that learners retain more information by what they “do” as opposed to what is “heard”, “read” or “observed”. According to this theory, the least effective method involves learning originated from limited information input such as through using verbal communication or listening to teacher. To excavate the teaching and learning activity, teacher need to involve student by maximizing the involvements of student sensory that help boosting their ability in visualizing learning matter specifically when dealing with abstract object. Thereby, learning can be meaningful and the goal of teaching-learning is achievable. Using learning media can also increase student participation as well as allow them to construct understanding in accord to their preferable exploration way.

Related to the usage of Non-ICT media, numbers of study have stated the positive influence of Non-ICT Biology learning media on student achievement such as; Nugraha (2016) conducted research on usage of *Biology Domino Card* to improve student achievement. This study resulted that average cognitive aspect in cycle I 47,53 increased to 71,78 in cycle II, while affective aspect at cycle I and cycle II reached 100%, and psychomotor aspect in cycle I 82,14% increased to 100 % in cycle II. Based on the results of this study can be concluded that the application of the use of educational media domino game can improve student learning outcomes XE grade SMA Taruna Nusa Harapan Mojokerto on Plantae subject. Another study conducted by Rohima (2012) aimed to analyse the result of

application *poster-assisted Flow Card* on student retention. This study has shown that average retention of students in the experimental group (using poster-assisted Flow Card) was 58.00%, while the retention of students in the control group was 77.90%. Although both groups demonstrated good retention, using poster-assisted Flow Card on Biology learning has excelled the experiment group on retention by 19,9%.

Considering the information and studies stated above, this study intended to analyse how the present available Biology learning media, in this case Biology learning media created by Undergraduate and Postgraduate student in Biology Department at State University of Medan at Learning Media Development course, reviewed base on Biology Teachers' and Students perception and how the current Biology learning media can reflect the desired role of learning media in Curriculum 2013 (K-13). This study will be a milestone for Biology student teacher in developing richer Biology learning media and also platform for Students and Biology Teacher to deliver their consideration of how Biology learning media can support the teaching and learning activities in school.

With focus on Biology learning media created in Biology Department at State University of Medan, Biology Teacher and Student Perception on Biology Learning Media, and suitability overview of the Biology learning media with learning in Curriculum 2013, thus the title of this research is **Analysis of Learning Media : Media Usage in Biology Learning and Perception on Non-ICT Biology Learning Media from Biology Department at State University of Medan with Its Suitability Overview on Curriculum 2013.**

## **1.2. Problem Identification**

Based on the above background, the problem can be identified as follows:

1. Although diverse method of teaching Biology has been implemented by Biology Teacher, notable amount of student still indicate less attention on several teaching and learning activities.
2. Limited number and less varied Biology learning media as well as improbability in providing real objects on several Biology learning subject.

3. Large number of Biology learning media has been formerly created by Undergraduate and Postgraduate student teacher in Biology Department at State University of Medan not fully excavated for further analysis specifically from Biology Teacher and Student perspective who cope with Biology Teaching and Learning at School on regular basis.
4. Need of continuous development for Biology Teacher in teaching Biology especially in media usage variability and references.
5. Need of continuous development for Student Teacher who envisioned to be teacher in near future especially in creating Biology learning media.

### **1.3. Research Limitation**

Based on the above identification, this study is limited as follow;

1. Learning media as aforementioned in this chapter originated from currently present Biology Learning Media created on Learning Media Development course in Undergraduate and Postgraduate Biology Student at State University of Medan ranging on High School Biology topic.
2. This research is focused to overview the Biology Learning Media in point 1 (one) based on High School Biology Teacher and Student perspective.
3. The analysis in this study does not aim to individually analyze the feasibility from each of the represented Biology learning media in this study rather to collect information, comparison, as well as perception from High School students and Biology teachers regarding the Non-ICT Biology learning media.
4. The output of this study is to give conclusive statement in form of comparison between the currently created Biology learning media, Biology teachers and student perception, and its suitability overview towards learning in Curriculum 2013.

### **1.4. Research Question**

The questions will be analysed from the research are as follow:

1. What are the perceptions of High School Biology teachers and students at school in Medan towards Biology learning media created by Undergraduate and Postgraduate students in Biology Department at State University of Medan at Learning Media Development course?
2. Are the Biology learning media created by Undergraduate and Postgraduate students in Biology Department at State University of Medan at Learning Media Development course supportive to the need of active and scientific Biology learning as in Curriculum 2013 (K-13) ?

### **1.5. Research Objective**

The objectives of the research are as follow:

1. To overview the perception of students and Biology teachers about the Biology learning media created by Undergraduate and Postgraduate students in Biology Department at State University of Medan at Learning Media Development course.
2. To review suitability of the Biology learning media created by Undergraduate and Postgraduate students in Biology Department at State University of Medan at Learning Media Development course to learning characteristic in Curriculum 2013 (K-13).
3. To provide a substantial recommendation for further Biology learning media development, specifically based on evaluation from High School students' and Biology teachers' perception at High School in Medan.

### **1.6. Research Significance**

Theoretically, the results of this study are expected to be useful as a reference or study material in the development of subsequent research in education, especially in the field but not limited to Non-ICT Biology learning media and its suitability to learning process in Curriculum 2013 (K-13). This research is also aimed to provide substantial recommendation for educator, Biology student teacher, Biology learning media developer, and regarding evaluation criteria needed to improve Biology learning media that is favorable to support Biology

teaching and learning activities, specifically in accord to learning in Curriculum 2013 (K-13).

### 1.7. Research Terminology

To prevent misconception in understanding this research, related terminologies in this study are described as follow:

- a. *Learning Media* : Learning Media in this research is object or component that occupies significant role in teaching and learning activities, used to channel the message/knowledge from the sender/teacher to the recipient/student in order to stimulate learning process through thoughts, feelings, attention and interest of students.
- b. *Non-ICT Biology Learning Media* : Non-ICT learning media is non-electronic base learning media made from printed materials, paper-based, or physical substance such as wood, iron, carton paper, reused materials, that created to model Biology object, visualized Biology process into drawings or diagram to allow media user, in this case the student, gain hands-on and direct observation experience.