

CHAPTER I

INTRODUCTION

1.1. Background

Experiment is meant to help students to practice what they're learning in the classroom. It helps them fully understand the concept by letting them do the experiments hands-on. Insight that comes from exploration and discovery leads to a stronger grasp of the lessons-learned. It can also stimulate the understanding, discovery ability and experience directly to the matters being studied (Hastuti, 2013). Therefore, learning science in senior high school is also being emphasized by the government that science must be taught by providing direct learning experience through the use and development of science process skills and attitudes (Depdiknas, 2007).

Biology as one field in science study many matters that ask students to think, find out and know the phenomenon and process of science therefore need a method that facilitate student in this learning process. In learning process students play an active role to find the knowledge, concepts, theories and conclusions, not to find the information or facts (Astuti, 2013). Therefore one of activity that can stimulate student to find them in learning process is experiment.

Experiment in Biology use worksheet for a variety of learning needs. It can provide students ways to pull together key data points to evaluate a situation and guide decision-making (Afriyanti, 2011). Worksheets are found useful and practical materials for conceptual understanding if they were effectively used in learning environments (Kurt & Akdeniz, 2002). In mathematics, worksheet is commonly used to give students the chance to practice mathematical operations under a variety of conditions. They may also be used to provide a framework for students to identify key events after reading a historical text and then to learn how those events lead to eventual outcome.

The worksheet of SMA in Binjai has been suspected to have several limitations to help both teachers and students to achieve in learning's goal. Generally students in SMA Negeri 2 Binjai are still less active in the learning

process especially in practical, so that there are many students who failed the examinations. In assesment of daily exam Grade X IPA SMA Negeri 2 Binjai that not achieve KKM totally 53% students and 47% students not yet to achieve KKM in score 75. Students with learning outcome score achieve in 76-100 around 33% and score in 30-75 around 67%. That why that learning process in X IPA SMA Negeri 2 Binjai still not be effective yet.

Interviews have been conducted, teachers of biology in SMA in Binjai were asked to give their opinion about student's worksheet. There was a similar understanding among teachers that the language used in most worksheets doesnot promote intellectual challenges. Most of the verbs used fall into C1-C3 category. The Bloom's Taxonomy suggests that the development of cognitive ability is hierarchical, progressing from simple understanding to application and synthesis of that knowledge, and that performance tasks undertaken by students should reflect the range of cognitive skills (Reed & Bergemann, 2001). This led us to reconsider how the worksheet was developed. We want to increase the challenge through modification of questions in the worksheet into critical question and hoped that increased challenge would result in deeper learning, and would correlate to an increase in student learning and performance. And also, the worksheets are developed to meet needs in the learning environment and also used for different purposes according to researchers' needs or aims (Kurtz in Fethiye, 2009). Based on problems above, the writer is interested to do research with the title **The Effect of Higher Order Thinking Question in Biology Practical Worksheet to Students Learning Outcome on Ecosystem Topic of Grade X SMA Negeri 2 Binjai Academic Year 2015/2016.**

1.2. Problem Identification

Based on the background some problem can be identified as follows:

1. Students' biology learning outcomes is still low.
2. Generally in SMA N 2 Binjai, there are many students who failed the examination.
3. Students in SMA N 2 Binjai are still less active when doing practical.

4. The language used in practical worksheet does not promote intellectual challenges.
5. Biology practical worksheet uses lower level of Bloom taxonomy (C1 – C3).

1.3. Problem Limitation

Problem is best described to be more focused and it is limited to analyze the effect of higher order thinking question in the biology practical worksheet of student to student's learning achievement in SMA N 2 Binjai.

1.4. Problem Formulation

The problem in this research can be formulated as: Are higher order thinking question in the biology practical worksheet of SMA N 2 Binjai promote intellectual challenging?

1.5. Purpose of study

The purpose of this research is to explore the effect of higher order thinking question in the biology practicum worksheet Grade X in SMA N 2 Binjai Academic Year 2015/2016.

1.6. Benefits of Study

The result of this study is expected:

1. To increase knowledge about the higher order thinking question in the student's biology practical worksheet in order to improve the level of intellectual challenge according to Bloom's Taxonomy in the lab activities.
2. To produce more intellectual challenging through using biology practical worksheet in SMA.