

CHAPTER I INTRODUCTION

1.1 Background

Learning process contain activities interaction between teachers and students in order to achieve the learning objectives (Hamdani, 2011). The interactions in the form of communication effectively, support in competition, and motivate their future to be better. By interaction, the teacher is not going to understand every problem for each of student, but will acquire enough information for those students who are struggling with specific tasks. The research indicates that learning outcome and student behavior are influenced by the quality of the teacher and student interaction (Hamdani, 2011).

Biology is one of subject that contains activity interaction, because learning biology is part of learning process. The interaction in learning biology for senior high school had a lot of difficult experiences. Difficult experiences namely, difficult to remember the concept, understand the mechanism, memorize the latin name, and to know part of picture. Based on Lazarowitz (1992) thought many students have difficult experiences in physiological abstract concepts. Because to study about physiology, the students must know about organ or structure and its function.

Many concepts or topics in biology especially in human nervous system topic can be perceived as difficult to learn by students Senior High School (Tekkaya *et al*, 2001). The difficult of Human Nervous System Topic usually in this topic contain abstract mechanism. Because the students is hard to imagine the organ or structure in human nervous system detailly. If the students cannot imagine its organ or structure, they get confused to understand relation between structure or organ with its function. Beside that, this topic is fully complex either physical and chemical mechanism (Ibayati, 2011) Human nervous system topic is one of the important materials for students in order to mastering the concepts, especially in human physiology. Usually mechanism topic is one of principle on human nervous system that lead to difficulties in understanding this material. For

example it is closely related to physiological mechanisms of formation and delivery of nerve impulses.

Human nervous system is one of important topic but difficult, so the students did not reach minimum completeness (score 75) which is about 65% for human nervous system from their daily test. Based on observation in SMAN 8 Medan, researcher found low of student's learning outcome of Biology subject in grade XI IPA 3. Beside that, the researcher get information based on interview to one of teacher in SMAN 8 Medan, Ratna Tarigan, on January 14th 2015, said that the some teachers in SMAN 8 still use direct learning model. Direct learning model is learning model that was applied in teaching learning process in biological class was less of variety. This condition caused the class was looked monotone, so the students are not active in learning process. When the teacher was explaining the learning material verbally, students are listening to the teacher's explanation but the others did not listen at all. The teacher relies on the handbook was teaching. According to her, the students show less enthusiasm to the handbook content. This condition is as if focusing to the student's cognitive without stimulating the student's scientific attitude and psychomotor improvement.

The student's retention rate is low in biology learning. This case be prove by score their mid semester test. When do mid semester test, student's score to be worse.

Based on the above problems, the researcher want to know the effect of 5E (Engagement, Exploration, Explanation, Elaboration, Evaluation) model learning to improve student's cognitive learning outcome. This research carried as part of alternative solutions. The 5E model is a constructivist model which provides learning a newly concept to comprehend deeply a known concept. The 5E model sequences will gave some experiences to students to have opportunity constructed their understanding of a concept. The model leads students through five phases of learning that are easily described using words that begin with the letter E: Engage, Explore, Explain, Elaborate, and Evaluate. 5E model also motivates and increase student's retention rate to be included into a topic by several phases of learning, to

explore a subject, to be given a definition for their experiences, to obtain more detailed information about their learning and to evaluate it in diffusion and osmosis learning material (Wilder and Shuttleworth, 2005).

Based on the background described above, the author is interested to conduct research with title **the effect of implementing 5E (engagement, exploration, explanation, elaboration, evaluation) oriented learning model of human nervous system toward student's learning outcome for grade XI in science program SMA Negeri 8 Medan academic year 2014/2015.**

1.2 Problem Identification

Based on background above, then the problem identifications of this study are as follows:

1. The teachers still teach use direct learning model, so the students are not active in learning process.
2. Student's cognitive learning outcome of Biology subject especially human nervous system topic is low, which is not reaching minimum criteria of completeness for daily test of human nervous system is about 65%.
3. Student's retention rate still low in remembering learning biology

1.3 The Scope of Study

By regarding the extent identified problems so in this research, the scope of study limited in:

1. The effect of implementing 5E (Engagement, Exploration, Explanation, Elaboration, Evaluation) learning model in Human Nervous System for grade XI in Science Program SMA NEGERI 8 Medan Academic Year 2014/2015.
2. Comparison of student's cognitive learning outcome in Human Nervous System for grade XI in Science Program SMA NEGERI 8 Medan Academic Year 2014/2015.

3. Comparison of student's retention rate in Human Nervous System for grade XI in Science Program SMA Negeri 8 Medan Academic Year 2014/2015

1.4 Research Questions

In this study, the research questions are as follows:

1. How the effect on implementation of 5E (Engagement, Exploration, Explanation, Elaboration, Evaluation) learning model in Human Nervous System for Grade XI in Science Program SMA NEGERI 8 Medan Academic Year 2014/2015?
2. How the increase of learning outcome that using 5E (Engagement, Exploration, Explanation, Elaboration, Evaluation) learning model in Human Nervous System for Grade XI in Science Program SMA NEGERI 8 Medan Academic Year 2014/2015?
3. How the effect of implementation of 5E (Engagement, Exploration, Explanation, Elaboration, Evaluation) learning model toward student's retention rate in Human Nervous System for Grade XI in Science Program SMA NEGERI 8 Medan Academic Year 2014/2015?

1.5 Research Objectives

The objectives of this study are:

1. Knowing the effect of implementation of 5E (Engagement, Exploration, Explanation, Elaboration, Evaluation) learning model in Human Nervous System for Grade XI in Science Program SMA NEGERI 8 Medan Academic Year 2014/2015?
2. Knowing the percentage from the increase of learning outcome that using 5E (Engagement, Exploration, Explanation, Elaboration, Evaluation) learning model in Human Nervous System for Grade XI in Science Program SMA NEGERI 8 Medan Academic Year 2014/2015?
3. Knowing the effect of implementation of 5E (Engagement, Exploration, Explanation, Elaboration, Evaluation) learning model

toward student's retention rate in Human Nervous System for Grade XI in Science Program SMA NEGERI 8 Medan Academic Year 2014/2015?

1.6 Significances of Research

Practically, the significance of the research namely, for the learner in order to using 5E oriented model learning then they can master the concepts easier and also to increase efficiency and quality of biology learning materials as example human nervous system in high school for grade XI in Science Program. For educators, in order to apply more innovative learning model such as 5E learning model that able to overcomes student's difficulties problem in understanding biology concept. For educational researcher, in order to know the devastating impact lack of mastery concepts for prospective students, especially on nervous system topic that studied by Grade XI in Science of senior high school.