CHAPTER I

INTRODUCTION

1.1   Background of the Study

The biblical perspective has an essential belief about human being that human being is *'imago Dei'* which means that human is the image of God. These words explain a little about Christian's belief that in the very beginning, God created man in His own image (Genesis 1:26-27). The human being was created in the likeness of God and they have God's characteristics. Besides, human being was created with the ability to communicate and develop the personal relationship with their Creator (Knight, 2006, pp. 204-205). So, in the beginning, as God created human being, the relationship between God and human was good.

But, since the human fell into sin, human as the image of God was corrupted in all its aspects. Human became alienated and separated from God (Genesis 3:8-10). This condition affected the relation between God as creator and human as creation was broken. As long as this relation is still broken, human will get further from God's way, they will live by their own way, and they will not be able to know the Creator.

Because of God's love for human being, then God had taken the initiative to restore the brokenness. God sent His Son into the world to die and to redeem human from sin. So, through faith in Jesus Christ, human can be redeemed and the relation between God and human can be restored. Knight (2006, p. 207) said that the work of Christ is to reverse the effects of the fall by making it possible for persons to become at-one (in harmony) with God, with others, with their

deceptive selves, and with the natural creation. This redemption clearly showed that how great is God's love to human and how God see the relationship between God and human as an important thing. He as the Creator wants to have a relation with human as creation. When the relation is good, creation can know more about the Creator, and creation can know what God's purpose in their lives. In other words, God sees that a harmonies relation is important and it will result in maximal outcomes.

Van Brummelen (1998, p. 64) said that classroom cannot function as effective communities of learning unless harmonies relationships exist. Meanwhile, McCombs & Pope (1994; as cited in Fletcher, n.d., p. 2) said that relationship is a critical factor of students' engagement. So, it implies that in the context of teaching-learning process, students' engagement is also important. Researchers, educators, and policymakers are focusing more on students' engagement as the key to addressing low achievement, students' boredom and alienation, and high dropout rates. Engaged students are more likely to earn better grades and perform well on standardized tests (Fredricks, Blumenfeld, and Paris 2004; Marks 2000; as cited in Fredricks *et al.*, 2011, p. 2). Moreover, research over the past few decades has increasingly emphasized the importance of students' engagement for achieving many academic learning outcomes. Increased students' engagement improves critical thinking, enhances openness to diversity, and facilitates openness to challenge, among other outcomes (Miller, 2011, p. 2). So, it enhances that students' engagement is critical in creating an effective learning process that gives many outcomes in the classroom.

In fact, the low students' engagement has become one of the problems that are faced and struggled by teacher in the classroom. Some educators consider engaging disengaged pupils to be one of the biggest challenges facing educators, as between 25% (Willms, 2003) and over 66% (Cothran & Ennis, 2000) of students are considered to be disengaged (Harris, 2008; as cited in Parsons & Taylor, 2011, pp. 5-6).

Other fact stated that mathematics is a lesson that is considered as hard to be learned by students. Conservative estimates indicated that 25% to 35% of students struggle with mathematics knowledge and application skills in general education classrooms, indicating the presence of mathematics difficulty (Mazzocco, 2007; as cited in Hott & Isbell, 2014, p. 1). One of the mathematics' topics in senior school grade XI IPA is the probability. In this topic, there are so many important concepts that make the topic probability seemed so complex. Recent research (Shaughnessy & Ciancetta, 2002; Watson & Kelly, 2003; as cited in Jones, 2006, p. 2) has revealed a great deal of instability and misunderstanding in students' conceptions of variation in both statistical and probabilistic environments. Thus, it is a struggle for students to learn it.

One big problem appears when mathematics topic that is full of concept and hard to be learned by students is delivered to students that have low engagement. Moreover, this problem also will not be solved well as teachers apply only usual method like direct instruction in teaching mathematics. Nonesuch (2006, p. 9) tells that teaching math by applying direct instruction makes students bored and frustrated because they lack of activity, lack of understanding, and lack of engagement. That is why this problem is necessary to

be solved. This problem agrees with statement of Skilling, Bobis & Martin (2015, p.1) in their conference paper that student disengagement in mathematics is a significant issue for education.

Based on the problem stated above, it should be the challenge for the teacher to design learning environments that engage the students (Reading, 2007, p. 2). Students are active beings rather than passive. They are not students who are just waiting for the teacher to stuff their minds full of information. They naturally want to learn (Knight, 2006, p. 107). It should aware teacher that teacher needs to afford something that helps students to be active or engaged in teaching-learning process. Evelyn Battell, (as cited in Nonesuch, 2006, p. 9) stated in the context for mathematics teacher that, "*If you truly respect students, you will honor their resistance. You have to set aside that niggling belief that they'll learn it if you can only force them to take part*". So, from the statement above, it means that teacher has an important role to increase students' engagement.

In this research, the researcher believes that christian teacher is the agent of reconciliation that brings students to relate with God (Knight, 2006, p. 212). So, the problem about students' engagement is a great opportunity for the teacher to design a learning environment that engages students and there must be many chances for the teacher to always direct students toward God.

Dunleavy & Milton (2009; as cited in Parsons & Taylor, 2011, pp.8-9) have asked students what their ideal school would look like and what learning environment will increase engagement. Students listed three criteria that correlate with the concept of interaction: (1) learn from and with each other and people in their community, (2) connect with experts and expertise, and (3) have more

opportunities for dialogue and conversation. Therefore, the researcher considered doing a research by applying brainstorming in the class. Brainstorming is a technique in which people are encouraged to come up with creative ideas in a group, play off each other's ideas, and say practically whatever comes to mind that seems relevant to a particular issue. Participants are usually told to hold off from criticizing others' ideas at least until the end of the brainstorming session to encourage the free flow of ideas (Santrock, 2011, p. 314).

Based on the description of the problem above, the researcher is interested to do an experiment research by applying brainstorming method and seeing the effect on students'engagement. The research title is "**THE EFFECT OF BRAINSTORMING IMPLEMENTATION ON STUDENTS' ENGAGEMENT IN LEARNING ABOUT PROBABILITY IN MATH CLASSES GRADE XI IPA AT SMA ABC CIKARANG**".

1.2   Statements of the Problem

The problems of this research could be formulated into three ideas as follows:

1) Is there any difference on students' engagement between before and after treatment in the group that is taught without brainstorming?

2) Is there any difference on students' engagement between before and after treatment in the group that is taught with brainstorming?

3) Is there any difference on students' engagement between the group that is taught with brainstorming and the group that is taught without brainstorming?

1.3   Purposes of the Study

The research study was held to:

1) discover the difference on students' engagement between before and after treatment in the group that is taught without brainstorming;

2) discover the difference on students' engagement between before and after treatment in the group that is taught with brainstorming;

3) discover the difference on students' engagement between the group that is taught with brainstorming and the group that is taught without brainstorming.

1.4   Benefits of the Study

1.4.1   Theoretically Benefits

This study is expected to be able to give a framework about the effect of brainstorming implementation on the students' engagement in learning about probability in math classes.

1.4.2   For Students

It is expected that the research will provide a positive learning environment that helps the students to:

1) realize that they are part of the class that can contribute and participate in the class;

2) have a good mental to contribute and participate in the class;

3) strengthen their communication skills that can be applied everywhere; and

4) have a creative thinking and creative problem solving.

1.4.3 For Teacher

It is expected that the research will enrich the teacher to:

1) realize that students' engagement is important for an effective learning process for students;

2) know about brainstorming as one of the alternatives that is able to increase students' engagement in the classroom;

3) have an alternative way to build a communicative relation with students in the classroom; and

4) know the role of the teacher as facilitator in the implementation of brainstorming.

1.4.4 For School

It is expected that the research will:

1) motivate the school to appeal teachers to think more about innovative methods for students and apply it in the classroom; and

2) be information for the school about the engagement of students in learning probability.

1.4.5 For Researcher

It is expected that the research will:

1) train the researcher to be able to apply brainstorming which increases students' engagement; and

2) become a worthy experience as a teacher.

1.5   Limitation of the Study

The problem of this research is limited only to the discussion about the effect of brainstorming implementation on students' engagement in learning about probability in math classes grade XI IPA at SMA ABC Cikarang. In this research, students' engagement covers behavioral, cognitive, and emotional areas which are considered as students' respond toward brainstorming implementation.

1.6   Definition of Terms

1.6.1   Effect

The effect is the result of a particular influence (Walter, 2005, p. 399).

1.6.2   Brainstorming

Brainstorming is a technique in which people are encouraged to come up with creative ideas in a group, play off each other's ideas, and say practically whatever comes to mind that seems relevant to a particular issue. Participants are usually told to hold off from criticizing others' ideas at least until the end of the brainstorming session to encourage the free flow of ideas (Santrock, 2011, p. 314). The main characteristics of brainstorming in this research are teacher gives statement or question to students, students discuss about it, students deliver their ideas, no criticism, and teacher guides students to get conclusion.

1.6.3   Students' Engagement

Students' engagement is the level of participation and intrinsic interest that a student shows in school. Engaged students seek out activities, inside and outside

the classroom, that lead to success or learning. They also display curiosity, a desire to know more and positive emotional responses to learning and school (Theresa Akey, 2006; as cited in Winter & Foster, n.d., p. 1).

1.6.4   Probability

Pierre-Simon Laplace (Laplace, 1814/1995, p. ix; as cited in Jones, 2005, p. 22) defined probability in his *Essai Philosophique sur les Probabilitb* that, *"probability is thus simply a fraction whose numerator is the number of favorable cases and whose denominator is the number of all cases possible"*.