

CHAPTER I

INTRODUCTION

1.1 Problem Background

Mathematics is very important for given to all levels of education, including in Junior High School to equip learners with the ability to think logically, analytical, systematic, critical, creative, and have a good personality, so that students will be able to solve problems in almost all fields of life. And be able to face the challenges of life ahead.

Learning mathematics is a conscious effort to gain understanding, relationships and symbols, and then apply the concepts generated into a real situation. The one of purpose of learning mathematics in Junior High School is the concepts understanding. Because algebra is one of part from mathematics then understanding of algebra concepts is one of purpose that will achieved in mathematics learning for Junior High School and the same level. Introduction of concepts algebra need given to students, because its concepts will useful in various mathematics fields that will be learned by students.

“Algebra is languages of symbol and relation”.(Johnson and Rising, 1972:3). This thing also stated by Krismanto (2009:1) about algebra, he said that:

Aljabar digunakan untuk memecahkan masalah sehari-hari. Dengan bahasa symbol, dari relasi-relasi yang muncul, masalah-masalah dipecahkan secara sederhana. Bahkan untuk hal-hal tertentu ada algoritma-algoritma yang mudah diikuti dalam rangka memecahkan masalah simbolik itu, yang pada saatnya nanti dikembalikan kepada masalah sehari-hari. Jadi belajar aljabar bukan semata-mata belajar tentang symbol atau keabstrakannya, melainkan belajar tentang masalah sehari-hari.

And the other definition of algebra namely algebra is a generalize form of arithmetic, and for the purpose of generalization of arithmetic, letters and signs are used. No doubt, the use of letters and signs that makes an abstract subject. Because of the nature of generalization and abstraction, algebra is considered to be the mathematics subject whom is difficult to understand.

Students experiences difficulty in learning mathematics, namely because strategies or teaching methods are less appropriate to the material being taught and students is not understanding the mathematical concepts well, the one of them is algebraic concepts.

The use of conventional learning makes students can't develop their creativity, make students tend to get bored and this method makes the student activities is low because in here teacher actively involved in the learning process, the students just sitting, listening, taking notes and doing solve the problems. This is the reason why the students lack of respect to the teacher when the teacher was explained, they tend not to pay attention, and preoccupied with their own activities, such as talking with their friends, or doing work that is not relate to the lesson.

Selection of good method of teaching and appropriate for students is important because in addition to realizing the objectives of the study also can increase the activity and students learning achievement.

Based on the diagnostic test that conducted in grade VIII-3 of SMP Negeri 1 Binjai in topic of algebraic operations obtained that many students couldn't show which one is coefficient, constant and like terms from algebraic expression. Like the picture below.

$$\begin{aligned}
 & 6x^2 + 10x - 12 - x^2 + 8y \\
 &= 6x^2 - x^2 + 10x - 12 + 8y \\
 &= 6 + 10x - 12 + 8y \\
 &= 6 - 12 + 10 + 8y \\
 &= 6 + 10 + 8y
 \end{aligned}$$

Figure 1.1 Student Mistake in Diagnostic Test Item 1

By looking the answer of student above, student solve the problem by doing operation of addition and subtraction to get the simply form of the algebraic expression but it's not a solution of that question. Students often do mistakes in calculation the integer numbers. Like the picture below.

$$\begin{aligned}
 & (3x^2 + 4x - 2) - (-4x^2 + 2x + 7) \\
 & = 3x^2 + 4x - 2 + 4x^2 - 2x - 7 \\
 & = (3x^2 + 4x^2) + (4x - 2x) + (2 - 7) \\
 & = 7x^2 + 6x - 9
 \end{aligned}$$

Figure 1.2 Student Mistake in Diagnostic Test Item 2

In the picture above student still false in calculate $4x - 2x$ is $2x$, but the student wrote $6x$ and it's not true. Students don't know multiplication signs like negative time's negative is positive, positive time's negative is negative and so on. Like the picture below.

$$\begin{aligned}
 & (3x^2 + 4x - 2) - (-4x^2 + 2x + 7) \\
 & = 3x^2 + 4x - 2 - 4x^2 + 2x + 7 \\
 & = 3x^2 + 4x^2 - 4x - 2x - 2 + 7 \\
 & = 7x^2 - 2x - 5
 \end{aligned}$$

Figure 1.3 Student Mistake in Diagnostic Test Item 2

From the answer of student above, appear that student didn't know product of $(-) \times (-4x^2 + 2x + 7)$ and student appear still confuse to how solve the problem because there are mistakes in every step of solve the problem. And also students couldn't solve the multiplication of algebraic expression. Like the picture below.

$$\begin{aligned}
 & L \square = p.f. \\
 & = x+2 \cdot 4x-1 \\
 & = x+4x \cdot 2-1 \\
 & = 5x \cdot 1 \\
 & = 5x
 \end{aligned}$$

Figure 1.4 Student Mistake in Diagnostic Test Item 3

Based on the answer of student above appear student couldn't multiply the algebraic expression, student conduct addition to solve multiplication in the algebraic expressions. Student should use distributive law in the multiplication that ever learned in grade VII to solve that problem.

If the basic knowledge of this algebraic expressions they don't master, then they will be difficult to understand about other material in mathematics

namely one of them is algebraic operations and this things will impact to their learning achievement in mathematics. Certainly, the learning achievement will be low.

This is consistent with the results of interviews conducted with one of the mathematics teacher in SMP Negeri 1 Binjai, obtained information that students learning achievement in mathematics about algebraic operations are low. There are students who didn't understand the material well. This is due to the lack of students participate actively in the learning process. Students also didn't understand well about definition of variables, constants, term, coefficients of term, like term and unlike term. And students didn't master the material prerequisite of algebraic operation namely integer operations, fractions and algebraic expression that have learned in grade VII. So, the students in grade VIII-3 still are having difficulty for solve the problem of algebraic operations.

Thus, it can be concluded that the low of student activities is influenced by the learning model used, certainly students learning achievement also will be low. If the learning model used does not match then it will affect the student activity and the learning achievement. To overcome all of that, the role of teachers in creating innovative and effective learning is very required.

The creation of effective teaching and learning need to pay attention of the learning strategy that exact in order to achieve the maximum results. To overcome the problem difficulty to students in grade of VIII-3 SMP Negeri 1 Binjai in learning algebraic operations, researcher will implement the learning strategy to improve student activities. Learning strategy that applied in this study is Relating, Experiencing, Applying, Cooperating, and Transferring (REACT).

Steps of REACT learning strategies reflected from its acronym. These steps are Relating, Experiencing, Applying, Cooperating, and Transferring.

According to Crawford (2008:3-14) states that:

Relating is learning in the context of one's life experiences or preexisting knowledge. Experiencing is learning by doing through exploration, discovery, and invention. Applying is learning by putting the concepts to use. Cooperating is learning in the context of sharing, responding, and communicating with other learners. Transferring is a teaching strategy that

we define as using knowledge in a new context or novel situation-one that has not been covered in class.

The learning process in the Education Unit Level Curriculum requires the active participation of all students. Thus, student-centered learning, the teacher as a motivator and facilitator in it so that the classroom atmosphere more lively. In this study the researchers will use learning media such as power point about algebraic operations that will attract students to learn actively and also student worksheet that will become a guide for students to do group activities, so that the working group focused and can achieve the learning that desired.

Based on the background that has been described above, the researcher is interested in doing research with the title: "**Implementation of REACT Strategy to Improve Student Activities in Grade VIII-3 of SMP Negeri 1 Binjai**".

1.2 Problem Identification

Based on the background of the problems described above, can be identifying a number of problems:

1. The low of student activities caused by teacher often use the conventional learning model that makes students become bored during the learning takes place so that its impact to students learning achievement.
2. The low of student learning achievement in mathematics subject because mathematics is still considered as a difficult subject.
3. Students have difficulty in understanding algebraic concepts.
4. In learning mathematics teacher still dominate the class.
5. Implementation of the learning model used in teaching mathematics is still less precise.

1.3 Problem Restriction

In accordance with the background and the identification of the problems above, so need for make a problem restriction to more be focus and be directional. The problem restriction in this study is implementation of REACT strategy to

improve student learning activities in the topic of algebraic operations in grade VIII-3 of SMP Negeri 1 Binjai.

1.4 Problem Formulation

Based on the background of the above problems can be formulated as follows:

1. Is there increasing of the student learning activities during learning mathematics with the implementation of REACT strategy?
2. Is there the relationship between student learning activities with student learning achievement after implement REACT strategy in the topic of algebraic operation?
3. How does student respond to the implementation of REACT Strategy in the topic of algebraic operation?

1.5 Research Objective

The objective of this research is:

1. To know the increasing of the student learning activities during learning mathematics with the implementation of REACT strategy.
2. To know the relationship between student learning activities with student learning achievement after implement REACT strategy in the topic of algebraic operation.
3. To know the student respond to the implementation of REACT strategy in the topic of algebraic operations.

1.6 Benefits of Research

The benefits in this research are:

1. For teachers, it can broaden the knowledge of learning strategies to help students to improve the activities.

2. For students, through learning with REACT strategy can help student improve activities during teaching and learning process in the topic of algebraic operations.
3. For schools, to be material consideration in take innovation policy of learning mathematics in school.
4. For researchers, as an information and as a material grip for researchers in carrying out the teaching duty as prospective teachers in the future.
5. As a matter of information to readers or other researchers who want to conduct the similar research.

