THE EFFECTS OF JIGSAW READING TECHNIQUE UPON THE ACHIEVEMENT OF READING COMPREHENSION

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Abstract

This is an experimental study that has significances of research as follow: (1) to get an empirical data and analyze the achievement of reading comprehension using jigsaw reading technique, (2) to get an empirical data and analyze the achievement of reading comprehension using conventional technique, (3) to analyze the different effects from teaching using jigsaw reading technique to conventional technique upon the achievement of reading comprehension. Jigsaw reading technique is technique of cooperative learning that assigned the students in groups to put pieces of material together. They first form home-team, and then join expert-team, after that return to home-team to discuss the material given.

Keywords: Jigsaw reading technique, achievement of reading comprehension

Pengaruh Teknik Membaca Jigsaw Terhadap Prestasi Membaca

Abstrak

Penelitian ini merupakan jenis penelitian komparatif eksperimental yang memiliki tujuan sebagai berikut; (1) untuk mendapatkan dan menganalisa data empirik hasil prestasi belajar membaca melalui teknik membaca jigsaw, (2) untuk mendapatkan dan menganalisa data empirik hasil prestasi membaca melalui teknik konvensional, (3) untuk menganalisa perbedaan pengaruh antara pengajaran membaca melalui teknik membaca jigsaw dengan teknik konvensional terhadap hasil prestasi membaca. Teknik membaca jigsaw adalah bagian dari pendekatan Cooperative Learning yang menempatkan siswa dalam kelompok untuk menyatukan bagian-bagian materi yang diberikan menjadi satu kesatuan.

Kata kunci: teknik membaca jigsaw, prestasi membaca

A. INTRODUCTION

1. Background of the Problem

    English, as an international language, has a vital role in the world at these present days. In Indonesia, English is the first foreign language taught at schools formally, from kindergarten up to university. It is ruled by

government to increase national competition in global society. Lim Kiat Boey explained, *"One of the main reasons why English is taught in South-East Asia because it delivers to science and technology."* (Pengantar Linguistik Untuk Guru Bahasa. 1982: 131). And Jeremy Harmer (The Practice of English Language Teaching. 1991: 16) revealed there are any 4 language skills including: *"Speaking and writing involve language production and are therefore often referred to as productive skills. Listening and reading, on the other hand involve receiving messages and are therefore often referred to as receptive skills."*

Based on Kurikulum Tingkat Satuan Pendidikan 2006, English subject in SMP/MTs has an objective that students are able to improve their communicative competence especially in spoken and written expressions to reach functional literacy level, using English in daily life such as reading newspapers, manual, or signs. To put more simply, teaching English in Indonesia requires reading ability to comprehend textbooks and other reference materials. Generally, reading is the most significant and worth skill in learning either English subject or the others.

2. Statements of the Problems

   In this thesis, the writer tries to formulate problems of the research as follows:

   a. How effective is jigsaw reading technique upon the achievement of reading comprehension?

   b. How effective is conventional technique upon the achievement of reading comprehension?

   c. Is there any significant different effect from teaching using jigsaw reading techniques to conventional technique upon the achievement of reading comprehension?

B. DISCUSSION

1. Nature of Learning

   Learning theories have been stated a long time a go until twentieth-century by many experts either linguists or educational psychologists. Some different theories that follow are presented:

   For Behaviorists (S-R Conditioning Theorist) stated that "Learning is a change of in observable behavior, which occurs through stimuli and responses becoming related according to mechanistic principles." (Learning Theories for teacher.1982: 9) Thus, it is involved the formulation of relations of some sort between series of stimuli and responses. Stimuli, the cause of learning, are environmental agents that act upon an organism so as either to cause it to respond or to increase the probability of a response of a certain kind.

   For Gestalt-Field theorists (Learning Theories for teacher.1982: 9) said that "Learning is a process of gaining or changing insight, outlook, expectations, or thought patterns." In thinking about the learning process of the students, these theorists prefer the term person to organism, psychological environment to physical or biological environment, and interaction to either action or reaction.

   Whereas Professor Robert Gagne (Learning Theories for teacher.1982: 141) thought that "Learning is a change in human disposition or capability, which can be retained, and which is not simply ascribable to the process of growth." It exhibits learning itself as change in observable behavior that happens under certain observable condition. Learning is something that takes place inside an individual's head named brain. Learning is called a process because it is alternation from a simple manner to the complex one.

According to Cognitive Code theorist (English for Specific Purposes. 1987: 43), learning is noted that:

> *"Learning is a process in which the learner actively tries to make a sense of data, and learning can be said to have taken place when the learner has managed to impose some sort of meaningful interpretation or pattern on the data."*

The Cognitive Code view takes the students to be an active processor in information. This may be sound complex, but in simple term what it means is that we learn by thinking about trying to make sense of what we see, feel and hear.

The following are breaking down the component of definitions of learning by Douglas Brown (Principles of Language learning and teaching. 1987: 6):

a. Learning is acquisition or "getting."

b. Learning is retention of information or skill.

c. Retention implies storage systems, memory, cognitive organization.

d. Learning involves active, conscious focus on and acting upon events outside or inside the organism.

e. Learning is relatively permanent, but subject to forgetting.

f. Learning involves some form of practice, perhaps reinforced practice.

g. Learning is change in behavior.

A more specific definition might come from Kimble and Garmezy (Principles of Language Learning and Teaching. 1987: 6) that revealed, "*Learning is a relatively permanent change in a behavioral tendency and is a result of reinforced practice.*" It means learning is a process commonly called "attitude" remains in the same state for a long time as an outcome of practical strengthening that is repeatedly act.

Based on the theories above, it can be drawn a general conclusion that learning is related to acquisition process, perception, memory systems,

recall, and consciousness signed by a perpetual change. This change refers to attitude, expertise, knowledge, and skills.

2. Types of Learning

Generally the types of learning are affected by content materials, ages, and other external factors. But Robert Gagne (Principles of Language Learning and Teaching. 1987: 79) identified eight types of learning as follow:

a. Signal Learning

This is the basic type of learning. The individual learn to make a general diffuse response to a signal. No requirements, but the students involve emotionally and involuntary in the learning process together.

b. Stimulus-response

The students acquire a precise response to a discriminated stimulus. What is learned is a connection, or a discriminated operant, sometimes called an instrumental response.

c. Chaining

What is acquired is a chain of two or more stimulus-response connections. By chaining is meant the connection of individual stimulus-response in a sequence.

d. Verbal Association

Verbal association is the learning of chains that are verbal. Basically, the conditions resemble those for other (motor) chains. However, the presence of language in the human being makes this a special type because internal links may be selected from the individual's previously learned repertoire of language.

e. Multiple-Discrimination

The students learn to make a number of different identifying responses to many different stimuli, which may resemble each other in physical appearance to a greater or lesser degree. Although the learning of each stimuli-response connection is a simple occurrence, the connections tend to interfere with one another.

f. Concept Learning

The students acquire the ability to make a common response to a class of stimuli even though the individual members of that class may differ widely from each other. The students are able to make a response that identifies an entire class of object or events.

g. Principle Learning

In simplest term, a principle is a chain of two or more concepts. It functions to organize behavior and experience. A principle is a cluster of related concepts.

h. Problem Solving

Problem solving is a kind of learning that requires the internal events usually referred to as "thinking." Previously acquired concepts and principles are combined in a conscious focus on an unresolved or ambiguous set of events.

To sum up, types of learning are a hierarchical series of learning process where they are stated from simple signal learning to complex problem-solving.

3. Nature of Achievement

Much of the human behavior is motivated by a need of achievement. The achievement motive may be characterized by simply as a need to accomplish rather than a need for specific accomplishment. Achievement here is associated with term "assessment" and "accomplishment". Those are often discussed in teaching and learning books. And achievement is also usually called as "learning outcomes". They have similar meaning, as follows Norman E. Gronlud (Measurement and Evaluation. 1985: 193) stated that:

> "*Complex achievement including those learning outcomes based on the higher mental process, such as ...understanding ... thinking skills and various problem-solving abilities. ..Many aspects of complex achievement can be measured objectively.*"

It means the category of achievement requiring more than mere retention of factual knowledge. Achievement can only be measured after it has some experiences in teaching learning process. And in measuring complex achievement, it can be attained by using complex forms of test.

A variety of learning outcomes are included in complex achievement. Following are some typical examples:

a. Ability to apply principle.
b. Ability to interpret relationships.
c. Ability to recognize and state inferences.
d. Ability to recognize and relevance of information.
e. Ability to develop and recognize tenable hypotheses.
f. Ability to formulate and recognize valid conclusions.
g. Ability to recognize assumptions underlying conclusions.
h. Ability to recognize the limitation of data.
i. Ability to recognize and state significant problems.
j. Ability to design experimental procedures.

And the conclusion is achievement is factual and can be measured directly by the use of the test. Achievement here is dealing with student's academic performance at school which can be scored and functioned to measure student's competence after experiencing a learning process for a certain time. It is usually in test both oral and written.

4. Nature of Reading

Reading gives a large influence upon one's learning process in any field. Almost every learning activity is reading written symbols, hence reading ability is an important skill to be mastered. Now in the new paradigm of education, curriculum of education emphasizes an intense relationship between literacy and competence. Some experts have stated their statement about definitions of reading as follow:

a. Tinker and McCullough (The Teaching of reading. 1973: 15) said that,

> *"Reading involves the recognition of printed or written symbols which serve as stimuli for recall of meaning built up through past experience, and the construction of new meanings through manipulation of concepts already possessed by the reader."*

b. Harris-Smith (Reading Instruction, Diagnostic Teaching in The Classroom. 1980: 7) revealed that, "Reading is the reader's interaction wit a printed message across a range thinking a guided by a purpose for reading."

c. Jeremy Harmer (The Practice of English Language Teaching. 1991: 153) stated that, "Reading is an exercise, dominated by eyes and the brain. The eyes receive the message and the brain has to work out the significance of these messages."

Those experts above considered some similar views. Reading is recognition of written symbols by eyes and brain to interpret messages by the reader and so having nearly the same perception between the readers and the writers. On the other hand, Eddie C. Kennedy (Method in Teaching Developmental Reading. 1981: 5) expressed that,

> *"Reading is the ability of an individual to recognize a visual form, associate the form with a sound and/or meaning acquired in the past, and, on the basis of the past experience, understand and interpret its meaning"*

It is usually necessary to recognize, understand, and interpret several words in a series. The interpretation process by the readers involves experience, information, and knowledge possessed by the readers.

Meanwhile, Klein et al (1996) said that the definitions of reading involve: (1) Reading refers to a process; (2) Reading is a strategy; and (3) Reading is an interaction. Reading is a process to get information from the text and the reader's knowledge has a main role to form meaning.

It can be concluded from the theories above, reading is the ability to have knowledge, thought and feeling of another mind via the medium text by decoding meaning from written symbols. Reading is also considered as a process of constructing meaning in the text through the dynamic interaction among the reader's previous knowledge and experience with certain purposes.

5. Nature of Jigsaw Reading technique

   Here terminologically, jigsaw technique, development and tested by Elliot Aronson in 1978, is one of technique that use cooperative learning. Aronson explained in nearly the same words that in jigsaw, students are assigned to five-or-six-member heterogeneous study team. Academic materials are presented to the students in the text, and each student has the responsibility to learn a portion of the material.

   For Kagan (1989), jigsaw can be used to develop a concept, master content for discussion and group project. Each student on a team is given specific content to read and understand. Students do within teams to share the new knowledge with their teammates. There may be an assessment of all of the students on the materials. A variation is that team experts can share what they know with members of another team.

   It can be concluded that jigsaw reading technique is a cooperative learning technique particularly for reading activity that grouped the students into 3-6 members. Each group member is assigned some unique material to learn and then to each to his/her group members. Just as in jigsaw, each piece in each student's part is essential for the completion and full understanding of final goal. If each student's portion is essential, then each student is essential; and that is precisely what makes this technique so effective because it reduces racial conflict and increase positive educational outcomes.

6. Steps of Jigsaw Reading Technique

    Before investigating the steps of jigsaw reading technique, there are two groups familiar used in this technique namely:

    a. Home-group: Number in home-group will vary depending on size of group and number of reading material. Home-group is shared by number of section of reading material differently. Home-groups are mixed group.

    b. Expert-group: Expert-groups are formed by all number 1's home-group gather in an area of the classroom, all number 2's home-group gather, etc. Each expert-group is to read and discuss the assigned section of same material, and prepare to teach the assigned to the member of their home-groups.

Table.1 **Jigsaw Technique Schema**
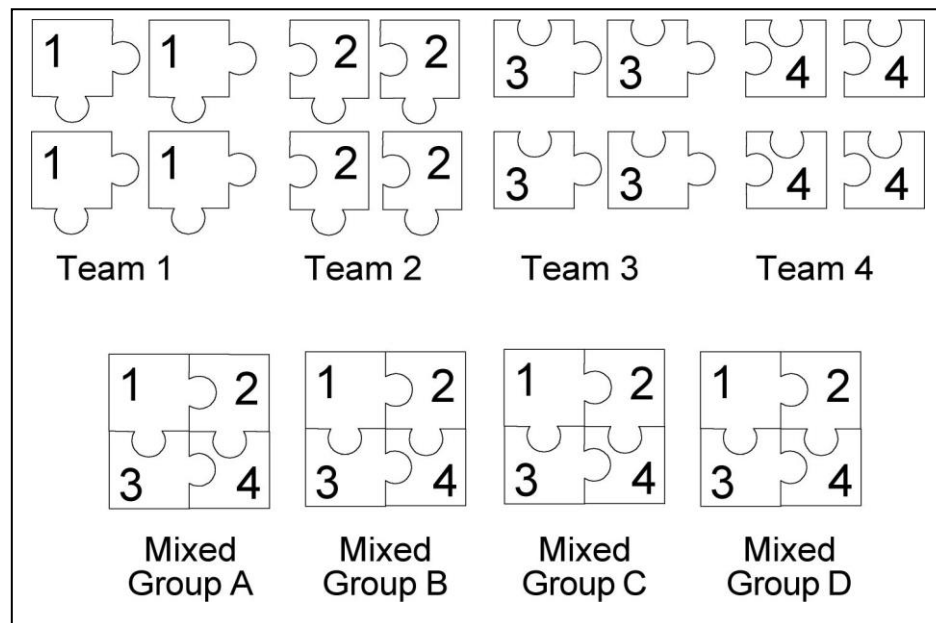
Now detailed steps of jigsaw reading technique is very simple to use, just following these steps nearly the same as Professor Aronson noted:

a. Divide students into 3-6 person jigsaw-groups. The groups should be diverse in terms of gender, ethnicity, race, and ability. And it is called Home-group.

b. Appoint one student from each Home-group as the leader. Initially, this person should be the most mature student in the group.

c. Divide the day's lesson/material in text into several segments according to number of the each member group.

d. Assign each student from home-group to learn one segment gather in one place, called expert-group. Making sure students have direct access only to their own segment.

e. Give students time to read over their segment at least twice and become familiar with it. There is no need for them to memorize it.

f. Form temporary "expert-group", also known as mixed-group, by having one student from each home-group join other students assigned to the same segment. Give students in these expert-groups time to discuss the main points of their segment and to practice the presentations they will make to their home-group.

g. Bring the students back into their home-group.

h. Ask each student to present her/his segment to the group. Encourage others in the group to ask questions for clarification.

i. Spread out from group to group, observing the process. If any group is having any trouble, make an appropriate intervention.

j. At the end of the session, give a quiz on the material so that students quickly come to realize that these sessions are not just fun and games but really count.

7. Research Design

This research, however, conducted to discover how effective Jigsaw reading technique is upon the achievement of reading comprehension. Hence, the writer employed experimental research approach. Experimental-class is a class conducted by Jigsaw reading technique. On the contrary, controlled-class is treated by conventional technique. And then, the writer set up treatment to those classes for a period time. After that, reading test is given to both classes to get empirical data of

achievement of reading comprehension. The treatment can be seen on table 2.

Table. 2 Treatment Schema

Two classes, Randomized Subjects, Postest-Only Design				
Class		Treatment		Measuremant
Experimental-Class	▶▶	X_1	▶▶	Y_1
Controlled-Class	▶▶	X_2	▶▶	Y_2

Where: X_1: Treatment with Jigsaw Reading Technique
X_2: Treatment with Conventional Technique
Y_1: Test score with Jigsaw reading technique
Y_2: Test score with conventional technique

And then, the writer sets up the treatment both controlled-class and experimental-class for about one month. After that, reading comprehension test is given to both of them to get empirical data of the achievement. The procedures can be seen below:

Table. 8 Treatment Procedures

Jigsaw Reading Technique (Experimental-Class)	**Conventional Technique (Controlled-Class)**
1. The Students are divided into 10 groups where each group consists of 4-5 students. 2. The material in text is divided into several segment/pieces. 3. One student gets one piece for each group and so on. 4. Students who get same pieces come together to learn and discuss the text. 5. Then the students come back to their Home-group and present the text to others. 6. The teacher delivers quizzes to the students where the points are sent to the group. 7. The students complete the reading comprehension test after several weeks.	1. The students study individually. 2. The material in text given to the students is in one piece. 3. One text for one student. 4. Students try to read, learn and master the text given individually. 5. Student does the task and quizzes given by the teacher. 6. The teacher delivers the task and quizzes to the students where the point/mark is sent to each student. 7. The students complete the reading comprehension test after several weeks.

In this study, total population is the first year students semester two 2006/2007 academic year in Madrasah Tsanawiyah Negeri 14 Jakarta. There are 162 students divided into 4 classes that are VII D, VII E, VII F, and VII G. the writer selected *a Simple-Cluster Random Sampling*. It is kind of sampling where the students on the population in class (cluster) selected randomly two of them to be samples. Then, we can be seen that Class VII E, 40 students is experiment-class and Class VII F, 39 students is controlled-class. And so the sample is 79 students, or to put more simply it is more than 25-percent samples. The writer expects those samples representative enough to the whole population so that the writer gets the data accurately.

8. Research Findings

Based on the calculation of experimental-class, it can be seen that the data or scores often appearing either on the test scores or on the frequency table are 53 and 57; so that the Modus of the experimental-class is 53 and 57. And the mid-score in the arrayed data from the frequency table is 60; thus the Median of the experimental-class is 60. Then, the Variance in this class is 88. Therefore, the Mean score of the experimental-class is 60.75. The graph can be seen below:

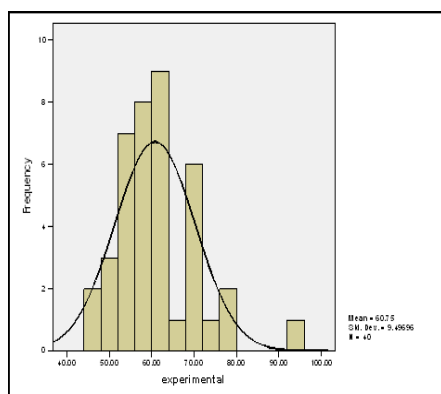Table.3 **The Experimental-Class Graph**
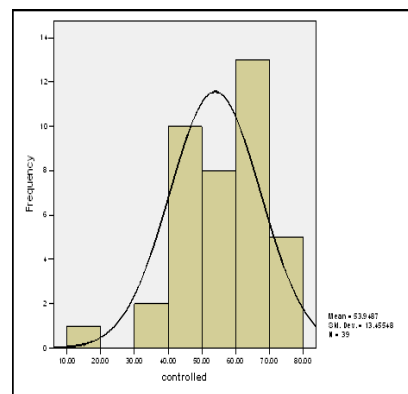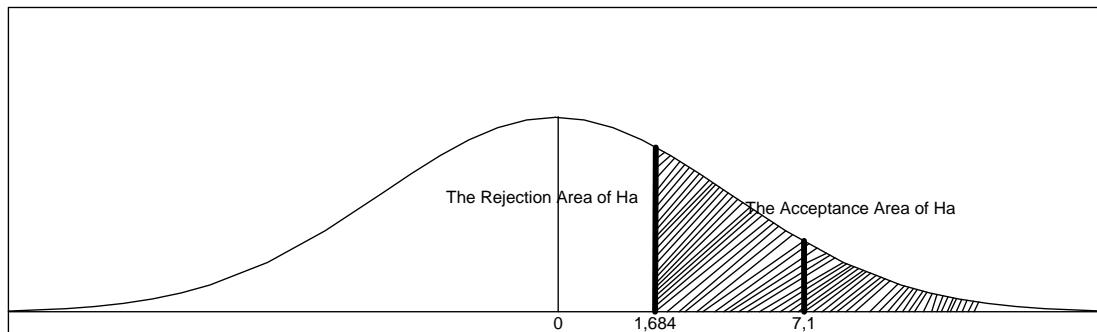
Table. 4 **The Controlled-Class Graph**

Table 5.**The Curve of Right-Tail Test**

On the other hand, based on the calculation of controlled-class, it seems that the score often appearing either on the test scores or on the frequency table is 60; so that the Modus of this class is 60. And the mid-score in the arrayed data from the frequency table is 57; consequently the Median of the controlled-class is 57. Later, the Variance is 176. 41. Then the Mean score of the controlled-class is 53.9. It can be seen on the graph above

Related to the analyzing data in the previous section, the distribution of data either experimental class or controlled class is normal and is included to heterogeneous data. Thus in the test of hypotheses, it is able to select the T-Test formula for descriptive and comparative hypotheses. And to test the descriptive hypothesis (right-tail test), the writer has to determine the T-Test, as follow:

$$t_{o1} = \frac{M_1 - \pi_o}{\frac{\delta_1}{\sqrt{n_1}}}$$

$$t_{o1} = \frac{60,75 - 50}{\frac{9,4}{\sqrt{40}}} = \frac{10,75}{9,4 / 6,3} = \frac{10,75}{1,5} = 7,16$$

In the significance degree of 5% and degree of freedom (n-1) = 40-1 = 39, the writer finds that T_{table} for these qualification was 1,684. Hence, $T_{observe}$, 7,16 is more than T_{table}, 1,684 or $T_{observe} > T_{table}$. It can be concluded the

point (T$_{observe}$) is on the acceptance area of H$_a$. Accordingly, the H$_a$ is accepted.

And so the descriptive hypothesis (H$_a$) which state:*"The achievement of reading comprehension using jigsaw reading technique is equal or more than 50 points (SKBM)"* is accepted. It means that teaching reading using jigsaw reading technique gives equal or more than 50 points (SKBM) upon the achievement of reading comprehension.

The other descriptive hypothesis for left-tail test statistically is: H$_o$:μb ≥ 50
    H$_a$: μa < 50. And same as the previous hypothesis, T-Test is used to calculate the T$_{observe}$ below:

$$t_{o2} = \frac{M_2 - \pi_o}{\frac{\delta_2}{\sqrt{n_2}}}$$

$$t_{o2} = \frac{53,9 - 50}{\frac{13,45}{\sqrt{39}}} = \frac{3,9}{13,45 / 6,2} = \frac{3,9}{2,16} = 1,8$$

In the degree of significance 5% and the degree of freedom (n-1) = 39-1 = 38, the writer also finds the T$_{table}$ 1,684. Then the writer compares both T$_{observe}$ and T$_{table}$. It is obtained that T$_{observe}$, 1,8 is more than T$_{table}$ 1,684 or T$_{observe}$ > T$_{table}$. As a summary, the T$_{observe}$ point is on the acceptance area of H$_a$. Thus, H$_a$ is also accepted.

Table 6. **The Curve of Left-Tail Test**

The Rejection Area of Ha   The Acceptance Area of Ha
0   1,684 1,8
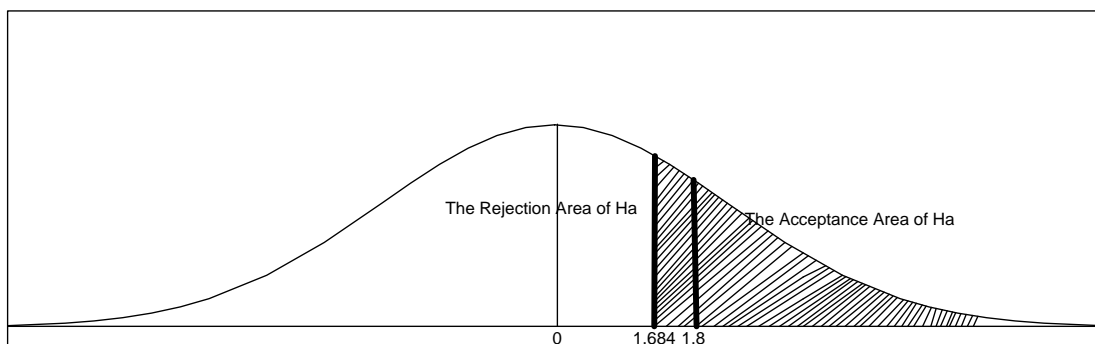
Finally, the descriptive hypothesis (H_a) which stated: *"The achievement of reading comprehension using conventional technique is less than 50 points (SKBM)"* is accepted too. It means that teaching reading using conventional technique gives less than 50 points (SKBM) upon the achievement of reading comprehension.

Statistically, the comparative hypothesis is: H_o: $\mu a = \mu b$ and H_a: $\mu a \neq \mu b$. Using T-test formula, the writer finds the result as follow:

$$t_o = \frac{M_1 - M_2}{\sqrt{\dfrac{\delta_1^2}{n_1} + \dfrac{\delta_2^2}{n_2}}}$$

$$t_o = \frac{60,75 - 53,9}{\sqrt{\dfrac{88}{40} + \dfrac{176,41}{39}}} = \frac{6,85}{\sqrt{2,2 + 4,5}} = \frac{6,85}{2,5} = 2,6$$

In the degree of significance 5% and the degree of freedom ($n_1 + n_2 - 2$) = 40+39-22 = 77, the writer consults to the Distribution of T Scores Table and finds that T_{table} is 2,00. After that, the writer compares between $T_{observe}$ and T_{table}. It can be seen that $T_{observe}$, 2,6 is more than T_{table} 2,00 or $T_{observe}$ > T_{table}. Based on the criteria on chapter III, the H_a is accepted. And so the comparative hypothesis (H_a) which stated: *"There is any significant different effect between teaching reading using jigsaw reading technique and conventional technique upon the achievement of reading comprehension"* is also accepted. It means that between jigsaw reading technique and conventional technique differ significantly in their effectiveness upon the achievement of reading comprehension. It can be shown from the Mean scores where jigsaw reading technique is 60,75 and conventional technique is 54, so that teaching reading using jigsaw reading technique gives much more effective than the conventional one.

Table 6. **The Curve of Two-Tail Test**
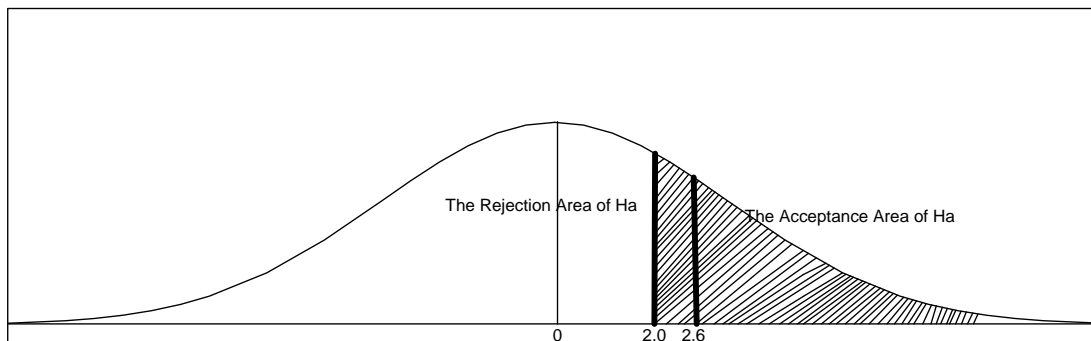
C. CONCLUSION

From the calculating in the previous sections: analyzing data and testing the hypothesis, there are three important points as interpretation of data shown before, as follow:

1. From the test of hypothesis, it is shown that teaching reading using jigsaw reading technique gives equal or more than 50 points (SKBM) upon the achievement of reading comprehension. It is caused by the positive points of jigsaw reading technique itself. It employs the students in group in order they are able to socialize, discuss and share among the member both Home-group and Expert-group. As a result, they seem positive interdependence among them; on the other hand, individual accountability by them is also occurred. The advantages stated previously of the jigsaw reading technique carry the students into the positive situation either socially or individually. Thus, the students gain a positive outcome through a high score on reading comprehension test.

2. On the other side, the achievement of reading comprehension using conventional technique is less than 50 points (SKBM). It is probably caused that this technique is unable to provide positive atmosphere to the students in teaching learning process especially in reading activity. In conventional situation, the students put in competition in the classroom with no social skills are taught directly. Each student has a chance to be

the top of all by defeating his/her classmates. Those situations make them in a gap either social or intelligent. Thus, they gain low score on reading comprehension test.

3. To compare jigsaw reading technique with conventional one in their effectiveness upon the achievement of reading comprehension, it is obviously seemed that the Mean score on jigsaw reading is higher than the conventional where the Mean score of jigsaw is 60,75; but on the other score, it is 53,9. And the different looks significant between them. Having known those data, the writer tries to interpret that on reading activity, jigsaw reading provides the students a great chance for improving their skills socially and individually. Furthermore, in jigsaw they feel comfort and secure in teaching learning process especially to comprehend the reading text. It is because of no foe but friends. On the contrary, using conventional technique pushes them to bite each other. And so they focus on defeating their class-mates not mastering their subject. Therefore, between jigsaw and conventional differ in their Mean score on reading comprehension test because of different in their effectiveness of teaching in the classroom. Finally, there is any significant different effect between teaching reading using jigsaw reading technique and conventional technique upon the achievement of reading comprehension.

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