A Study on Improving Students’ Reading Comprehension Using The Numbered Heads Together Technique

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Abstract
This study deals with improving the reading comprehension of junior high school students through the Numbered Heads Together (NHT) technique. The objective is to find out if cooperative learning using NHT can improve the reading comprehension of the students. The data for this research was obtained from a field study using an experimental research design at a middle school in Aceh Besar with a one group time series design. From the study, it was found that the students’ mean scores from the pre-test and the post-test were different. The mean score of the students’ post-test was higher than the pre-test scores. To find out if the two mean scores were significantly different, they were tested using the t-test statistical procedure. The result showed that they were significantly different (df = 8, alpha 0.05, t-table 17.550 > 2.0452). This indicated that $H_0$ was accepted and $H_a$ was rejected as hypothesized. Thus, cooperative learning using the NHT technique can improve the reading comprehension skills of middle school students.

Keywords: Reading comprehension, Numbered Heads Together technique, reading skills.

1. INTRODUCTION

1.1 Background

Reading comprehension is essential to develop the vocabulary of students and to assist students to master Second Language (SL) skills. It is an activity to understand the meaning in a text. As one of the four basic language skills, reading contributes to the success of language learning together with the other skills. Reading enables students to
find information from an array of texts, ranging from textbooks, newspapers, magazines, advertisements, brochures, internet, DVDs, TV to hand phones.

Reading also enables students to know how English is actually used in printed and written formats. According to the School Based Curriculum 2006 (or Kurikulum Tingkat Satuan Pendidikan/KTSP) (BSNP, 2006) for middle school students, one of the objectives of becoming competent in reading should be for students to learn to comprehend the meaning and to respond to rhetorical steps in short functional articles and short essays in genres such as recount, descriptive, narrative and procedural formats. The researchers however, found that most students faced many difficulties in comprehending the meaning of English texts, especially in mastering reading skills such as finding the main idea, making inferences, understanding details and the meaning of vocabulary. About 80% of the students could not answer questions related to the main idea, 75% of the students could not make inferences, 70% faced difficulties in finding details and 80% of the students had poor vocabulary. These were findings from a preliminary study conducted at a middle school in Aceh Besar, which is SMP PKPU. The authors also found that the reading mean score of the students at this school was only 49 out of 100 whilst the KKM (Kriteria Kelulusan Minimal or Passing Grade) was 70. These results showed that from 30 students, only 7 of them could pass.

This low rate of achievement could be related to a number of problems. First, the teachers may have used an ineffective strategy for teaching reading which made the students bored and unmotivated to learn from the English texts used for reading. The teachers usually provided a text and then asked the students to read or translate it into Indonesian. They were rarely taught on how to find the main idea or how to understand inferences and details in the texts. These three skills are important in reading comprehension. Secondly, the teaching and learning activities were not made lively or interesting as the teachers just followed instructions from the textbook without any varied activities. Hence the students were not really involved and were rarely asked to work cooperatively. They tended to engage more in competitive or individual tasks which caused them to give up when dealing with difficult tasks. Thirdly, their vocabulary was poor. If a student did not know the meaning of a word, he should answer questions by guessing or choosing randomly if the comprehension test was given using multiple choice questions.

Considering the realities above, there was an urgent need to implement a better strategy or technique that could help solve these problems by introducing current methods which would involve cooperation and make the learning activities interesting. By engaging students in interesting and cooperative activities, they are more likely to become interested and motivated to participate in the learning process. Now, there are many alternative teaching methods to engage them in reading activities. One of them is cooperative learning. Kagan (1992, p. 65), says that cooperative learning is an instructional method in which students work together in small groups to do a common task. In a nutshell, in cooperative learning, students are asked to work and learn together in a small group. Cooperative learning is a strategy that is now widely recognized as one of the most promising practices in the field of education. He even considers that cooperative learning itself has been declared as a method of teaching English as a Foreign Language that can help students and teachers together by building an intimate learning and social atmosphere in the classroom. This strategy is expected
to become an alternative method when dealing with problems in reading comprehension
and overcoming boredom in reading classroom activities.

The Numbered Hands Together (NHT) technique is generally done by dividing
the class into small heterogeneous learning groups within which the students are
numbered from 1 to 4. The number given to each student is intended to help her
concentrate on doing her task since she could be called upon by the teacher to give the
answer based on her number. Next, the teacher gives the students a text to read and a
sheet of questions based on that text. The students then read the text and put their heads
together in finding the best answer to each question from the teacher; each group has to
make sure that every student in the group knows the answers. Next, the teacher calls a
number at random and then selects a student from those who raise their hands to
respond to one of the questions and further checks with other students for agreement.
Since the students were given time to discuss and decide on the best answers, it is more
likely that everyone, including lower achieving students, will know a correct answer.
Moreover, since the students cannot predict who will be called upon to respond, they
are more likely to ensure that everyone in their group knows the answers.

1.2 The Research Problems

The problems discussed above show that the teaching and learning process in the
classroom was not conducive for better achievements in English from the students,
especially in their performance in reading comprehension. The problems, therefore,
tended to be related to:

- The teaching method(s) that the teacher used in the classroom,
- The texts or work books used as the teaching media,
- The lack of interest and motivation of the students to learn the subject.

However, there are many more variables which can be related to skills in reading
comprehension. Kagan (1992), for instance, relates such skills to sociocultural
variables such as first language, family socioeconomic status and ethnicity. Similarly,
Sanhedrin (2012) relates the ability to comprehend English reading texts to the cultural
background and knowledge of the learners and their pre-knowledge about the material
in the text selected for reading. This is not to mention variables related to the teacher,
such as educational background, age, gender, experience, family life and so on. Each of
these can influence the strategy of a teacher in teaching. Regrettably, such variables
cannot be touched on in this study.

Accordingly, this study was done to only answer the following research question:
To what extent can the Numbered Heads Together NHT technique improve the ESL
reading comprehension of middle school students? Thus, the main purpose of this study
is to investigate whether using the NHT cooperative learning technique at a middle
school in Banda Aceh could improve the competence of the students in reading
comprehension in English.
2. LITERATURE REVIEW

2.1 Understanding Reading Comprehension

Reading with comprehension is concerned with understanding the content of what has been read in a certain text. It is an active thinking process that depends not only on comprehension skills but also on the experiences of the reader and her level of knowledge. Comprehension involves understanding of vocabulary and the relationships between words and concepts, organizing ideas, recognizing the purpose of the author, making judgments, and evaluation. Hence, reading comprehension is the process of understanding the message that the author is trying to convey (Farris, Fuhler & Walther, 2004, p. 321). Very simply stated, it deals with getting meaning from the text in hand.

2.2 Skills in Reading

2.2.1 Main Idea

Finding the main idea in a text is the most important part in a reading piece or text which the author presents in a written text. It is different from the term topic, which refers to the subject under discussion. On the other hand, the term main idea refers to the point or thought being expressed. Thus for example, the topic could be an evaluation of the ability of students, and the main idea could be that multiple choice questions are a poor way of evaluating the ability of students.

2.2.2 Inference

According to Mickulecky and Jeffries (1996, p. 150), quite often the topic of the text may not be stated anywhere directly in the reading. So, the students must look for clues and try to guess what the passage is about. In other words, when you make an inference, you are reading between the lines or just looking carefully at the facts and coming to conclusions or understanding of the text being read.

2.2.3 Detail

It is well known that to recognize details concerning a topic or subject is another language skill that is also important in reading comprehension. Details are features or characteristics related to a subject or a topic being read about. They are usually stated directly in the text. Developing the skills to recognize details at an early stage will allow students to excel at reading comprehension (Mickulecky & Jeffries, 1996, p. 89). In other words, by mastering the skills of noting details, the readers will find it much easier to understand a paragraph or a text.

2.2.4 Vocabulary

Mastering vocabulary is another very important variable in reading comprehension. Mickulecky and Jeffries (1996, p. 89) considered that having a good command of vocabulary is an advantage for all students, particularly in practicing oral
communication or reading a passage. Those with a good command of words will find it much easier to communicate with other students or understand texts when reading them. In reading, vocabulary plays two important roles. First, when the students learn to read, they may have a difficult time to learn the pronunciation of words. This makes it difficult for them to read words aloud. Second, students will not understand what they read without knowing the meaning of most words in the text. Therefore, accumulating a good command of vocabulary is one of the keys to successful reading comprehension.

But, Marti (2002) found in her research that one of the most difficult skills for students to understand was that once they understand one simple core word they can use that word to understand many other words, e.g. from refer comes reference, referee, referential, prefer, preference, preferential and so on. Simple words like hill, state or book in which a reader can learn to understand many other words.

2.3 The Numbered Heads Together Technique

Kagan (1986, p. 13) developed the NHT cooperative learning technique to help teachers to improve the competence of students in reading comprehension. Cooperative learning refers to activities in which students work together in small groups to find out the answers to questions the teacher has provided. Prior to dividing the students into small groups, usually 4 persons, the teacher gives each student a number. After distribution of several questions to each group the teacher asks the students to find the answers and be prepared to report the answers or arguments for their answers. So, what is important in this method is cooperative team work and individual accountability. The process leads to cooperative interactions amongst the participants. During the process of discussions within the group, they usually put their heads together and each student is held accountable for learning the answers. When the time comes, the teacher will call a number at random to be a spokesperson for each group to report the answers or arguments for the answers to each question that each group has discussed. This technique encourages the students to think about each question given and to help their team to find and understand the answers, and to ensure that each member of their team knows the answers and the arguments. NHT gives the chance to students to share ideas and consider the most appropriate answers.

This strategy or model raises new interest for teachers and also for scholars. Lie (2003, p. 58) for instance, conducted an experiment at a junior high school. She concluded that this cooperative learning technique resulted in improved reading understanding or comprehension. In short, the NHT technique not only increased students’ interactions but also their knowledge and motivation in finding the answers to the questions being discussed. Similar findings were found by Hadi (2011) who conducted an experiment to improve the reading ability of eight graders at MTs Al-Islam Mojokerta, East Java.

2.4 The Procedure of the Numbered Heads Together Technique

Richards and Rodgers (2001, p. 199) describes the procedure for using the NHT technique as follows:

1. Numbering: the teacher divides the students into groups of 4 students and each student gets a number from 1 to 4.
2. Reading: the teacher distributes an article or tells the students what they have to read.
3. Questioning: the teacher distributes a question sheet or puts some questions or tasks on the board for the students to find the answers.
4. Heads Together: the groups are asked to put their heads together to find the answers to the questions and to make sure each member of the group knows the answer to each question
5. Answering: the teacher calls a number at random. Those with that number raise their hand and the teacher selects one of them to answer each question starting from the first question to the last one.

3. METHODOLOGY

3.1 Research Design Method

The methodology used in this study was an experimental quantitative research method. For research design, the writers applied a one-group time series design. Moreover, Hatch and Lazaraton (1991, p. 87) assumed that the one group pre-test>>post-test design involves single groups that have a pre-test (X1), treatment (T), and post-test (X2). In addition, this treatment compares pre-test with post-test scores.

3.2 Population and Sample

According to Arikunto (2006), a population is a set (or collection) of all elements possessing one or more attributes of interest. The population of this study was all of the second grade students at SMP PKPU in Aceh Besar. There are two classes of the second grade: Bilal Bin Rabbah class and Zaid bin Tsabit class. The total number in the second grade was 65 students.

A sample is the representative of the population as a whole. The sample for this study was one of the two classes which were selected by using a purposive sampling technique. For this study, the class selected to be the sample was the Zaid Bin Tsabit class. This class was chosen because it fulfilled the criteria for samples needed for this study. The criteria included that the average reading score did not come close to the target score of 70 as required by the KKM when they were tested during the preliminary study. Students participating in the experiment were not sampled individually. Sampling was done only to select one of the two groups available which consisted of 30 students in each group. It was decided that a group which did not achieve the mean score of 70 would be taken as the sample for this study.

3.3 Data Collection and Analysis

The writers used tests as the instrument for this study. This study applied a pre-test>>post-test design to measure the reading comprehension skills of the students before and after each treatment. The test material that was used for both the pre-test and post-test were taken from the English text book that was being used to teach ESL in the second grade at SMP PKPU in Aceh Besar. The tests used narrative texts taken from
the text book used at the school: *Buku PR Bahasa Inggris SMP/MTs Intan Pariwara*. The title of the text for the first pre-test was “A Poor Farmer and A Gull”. The reading test consisted of ten questions which encompassed all four important reading skills: main idea, making inferences, noticing detail, and comprehending vocabulary. The questions following the text were given in a multiple choice format. Each correct answer was scored ten and each wrong answer was not scored.

To analyze the collected data, the writers used statistical formula as suggested by Arikunto (2006: 307). The components of the formula included the mean scores, standard deviation, number of participants, and the t-test.

4. DATA ANALYSIS AND RESULT

4.1 Result of Pre-Test and Post-Test from the Meetings

At the start of the first meeting, the second writer gave the students a pre-test in order to test their basic reading comprehension skills before the first treatment started. After the treatment, the students were given a post-test in order to determine their reading comprehension skills after they had been taught reading comprehension using the NHT technique. The mean (average) score of the students from the first pre-test was 51 while the first post-test average score was much higher at 70.

At the start of the second meeting, the second writer also gave the students a pre-test in order to measure again their reading comprehension skills before the second treatment started. As in the first meeting, the students were given a post-test in order to measure their improvement in reading comprehension after they had studied reading using the NHT technique of cooperative learning for two meetings. The mean score of the students in the second pre-test was 56 while the mean score from the second post-test was 73, so there was a slight increase in both scores.

At the start of the third meeting, the second writer gave the students a pre-test again prior to the third or last treatment. After applying the NHT cooperative technique for the third time, the results of the students in the post-test would be considered as the final result from the experiment on using the NHT cooperative technique for teaching reading comprehension for three treatments. When the pre-test and post-test results were analyzed using the t-test procedure, the calculated results showed that the students had made positive improvements. From the third meeting the pre-test average score was 74, i.e. a substantial increase and a score above the second post-test and above the KKM, while the average score for reading comprehension in the post-test was 82, again, a good increase on the result from the second meeting.

The graph that follows shows the improvement of students from the first to the third treatment using the NHT technique.
From the graph, it can be seen that the results from reading comprehension pre-tests and post-tests from the first meeting were low. This was because the students did not yet comprehend the text well and it was the first time for them to be taught reading comprehension using the NHT technique. They were also still unfamiliar with some of the questions; that is, during the process of doing the pre-tests and the post-tests, some of them seemed confused by the questions. The pre-test and post-test results from the second meeting showed some improvements from the first meeting. This was because they had then been taught reading comprehension twice using the NHT technique.

When the teacher (the second writer) taught reading by using the NHT technique, the students were more motivated to comprehend the text because they could share and discuss the material together within their groups. If there was something that one or more of them did not understand about the material or the questions, they could ask and help each other. Moreover, by sharing many ideas, they could find the most appropriate answer for each question. The pre-test and post-test results from the third meeting were found to be higher. This was probably because the students had learnt how to follow and use the NHT technique for reading comprehension and also because they then appeared to enjoy the learning process and were motivated to comprehend the text. Also, because nobody knew which number would be called by the teacher (the second writer), every one of the students had to prepare themselves by comprehending the text or learning the right answers from their group. When she gave the post-test to the students after the third meeting, it was easier for them to answer the questions because they had already been taught reading using the NHT technique for two previous meetings and through this technique the students’ reading comprehension had increased. In conclusion, the reading comprehension achievements of the students improved continuously when they were taught reading using the NHT technique. This is shown especially in the results of the post-test after the third meeting.

4.2 Analysis of Application of NHT Technique in the Reading Skills

The achievements of the students in the four reading skills based on the results from the pre-tests and post-tests from the three meetings are shown below:
First of all, reviewing main idea skill in pre-test and post-test, the correct answer score in the third meeting was higher than the score of the other previous meetings. Second, in answering detail questions in pre-test, the correct answers score in the second meeting was higher than in the other meetings. While in post-test, the students’ correct answer got higher in the third meeting. Third, in term of vocabulary questions in pre-test, the highest correct answer score was reached by students in the second meeting, while in post-test the highest correct answer score was reached by the students in the third meeting. Finally, in mastering inferential questions, both pre-test and post-test got higher score in the third meeting. In conclusion, the correct answer score of reading skills dominantly achieved higher score in the third meeting.

5. DISCUSSION

After collecting and processing all data taken from the test, it is necessary to discuss the result of the research. After all of the data were analyzed, the writers would like to discuss the findings by using statistical procedure. The purpose of this research is to analyze whether NHT technique can improve the students’ reading comprehension or not.

After calculating the data of t-score, the writers found that t-score is 17.55 and the critical value of t-table for 29 degree of freedom on the level significant of 0.05 is 2.0452. After accumulating and processing the data, the determination on the acceptance or rejection of hypothesis are based on the following criteria (Arikunto, 2006: 69):

- $H_0$ is accepted and $H_a$ is rejected if t-score < t-table
- $H_0$ is rejected and $H_a$ is accepted if t-score > t-table

From the description, it is proved that the t-score of 17.55 was higher than the critical value of t-table which is 2.0452. In other words, the alternative hypothesis ($H_a$) is accepted and null hypothesis ($H_0$) is rejected. The result proves that the students’ reading comprehension is much better after they are taught reading by using NHT technique. In other words, NHT technique can improve the students’ reading comprehension.

The improvement of the students’ ability was shown from the first to the third meeting (the pre-test, treatments, and post-test). There were three meetings conducted...
when the second writer did the experiment. In the first meeting, she came to the class and was introduced by the teacher who teaches English in the class. After greeting the students, she distributed the pre-test to the students. It took about 20 minutes for the students to accomplish the test. She asked the students to answer ten questions related to reading comprehension skills (main idea, inference, detail and vocabulary). Then she began the first treatment which took 80 minutes. She got started by asking some questions to the students related to narrative text such as: have you ever read a fairytale? Have you ever watched a Cinderella movie? It was done to brainstorm the students’ mind about sharing experiences that refers to the function of narrative text. Then she began to teach reading by using NHT technique. She divided students into groups which consisted of four students and gave number to each member of the group from one to four. After that, she distributed a narrative text that consisted of ten questions about narrative text and four important elements in reading comprehension. The title was Bawang Putih and Bawang Merah. The students were asked to notice the structure and language feature of the text. After that, the students asked some questions, and she perceived the questions by giving more explanation about the definitions, function, rhetorical steps, and language feature of narrative text. She also gave the explanation about some skills in reading comprehension (main idea, inference, detail and vocabulary).

Afterwards, the students were given opportunity to ask some questions about the material. Then, the second writer asked the students to think together with their group, discuss the text together, help each other and share ideas to comprehend the text. She controlled the discussion and gave some help if necessary. After they finished their tasks, she called a number randomly from each group to answer the questions. The number she called had the student to raise his/her hand and answer the questions. Finally, she gave post-test to the students in order to know their achievement in reading comprehension after they were taught reading by using NHT technique in this first meeting. In conclusion, most of the students were still confused with the questions and still had difficulties with the aspects of reading such as mean idea, inference, detail and vocabulary.

At the second meeting, it was the time to give the second treatment for the students that was the same as what the writer did during the first meeting. In this meeting, the text given was Two Frogs which Wished to See the Big City. However, in this meeting, the students knew what to do since they had experienced it in the first treatment. In doing their tasks, they finished them quicker since they had much more knowledge about how to do them. When she gave them some questions, they did not seem to have much confusion anymore. At the moment, they did not need much help, and they did their tasks faster and better. The improvement was seen on the result of pre-test and post-test. Most of them were able to answer the questions. However, she still had to control everything they did and gave them some help if needed.

In the last meeting, it was the time to give the third treatment for the students that was the same as what the second writer did during the second meeting. The title of the text given in this meeting was The Frog and The Scorpion. However in this last treatment, they were found to be more enthusiastic and active in doing their tasks in their groups than before in the class.

During the treatments, the writers found that the class climate was livelier from the first meeting to the next. The students enjoyed the teaching and learning process
since they were taught reading by using NHT technique. They knew what to write and how to find out main idea, inference, detail and vocabulary. However, there were a few weaknesses the writers noticed during the treatments, such as the students still being dependent on the teacher in the first two meetings in conducting their tasks. Thus, this situation improved in the third meeting and further improvement was seen in the result of pre-test and post-test in which their reading comprehension got the highest score in the third meeting.

It is undeniable that students in a class have different level of reading ability. Here, the intelligence is involved. Those students taught reading by using NHT technique had the opportunities to work together on reading a text, got feedback from each other, and exchanged experiences throughout the text. These activities let them helped each other and shared ideas to comprehend the text and used such necessary strategies exposed to them; thus, those who understood better helped those who had less comprehension in learning. In addition, the implementation of NHT technique dealing with grouping and sharing made the activity of connecting prior knowledge, the basis on which students acquire new knowledge to the text was easier as they who had rich prior knowledge and shared their ideas to those with less prior knowledge. It results in every one in class engaging in a good discussion about the meaning of the whole text in order to deal with these four reading skills. Therefore, the students with the monitoring of the teacher could together improve the mastery of reading skill.

6. CONCLUSION

After conducting the experiment by implementing NHT technique in teaching reading of narrative texts, the writers found that the students’ reading comprehension could be improved. In addition, t-test was applied in order to know whether the difference between the mean in the pre-test and post-test was significant was shown clearly. The t-score of this research was 17.55 and the critical value of t-score in significant of 0.05 were 2.0452. Based on the t-formula rule, alternative hypothesis (H_a) is accepted because t-score was higher than the critical value of t-score. This indicates that the students’ reading comprehension was improved after they were taught reading by using NHT technique. In conclusion, it is proved that the use of NHT technique improves students’ reading comprehension.

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