IMPLEMENTATION OF THE SEMANTIC MAPPING STRATEGY FOR TEACHING READING COMPREHENSION

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ABSTRACT

This research studies the implementation of Semantic Mapping Strategy (SMS) in teaching reading comprehension to second year students from a junior high school in Aceh Besar. The objectives were to find out whether students taught reading comprehension through SMS would get better results than those who were taught using the Grammar Translation Method (GTM), the types of reading sub-skills that they would master better by using the SMS, and their responses towards the use of the SMS in reading comprehension classes. The sample for this research was two classes, one as the control group (CG) and another as the experimental group (EG). The classes were selected using a random sampling technique. The research instruments used to collect the data for this research were reading comprehension tests (pre-tests and post-tests) and a questionnaire. The result of this research showed that the students in the EG who were taught reading comprehension using the SMS got better results than the students in the CG who were taught using the GTM. Furthermore, the reading sub-skills where the students got better results through using SMS were 'main idea', and 'specific information'. Finally, the students responded positively to the implementation of SMS in their reading comprehension classes. Thus, it can be said that the SMS was proven an effective strategy to be used for teaching reading comprehension to the second year students of the school.

Key Words: *Semantic Mapping, Reading Comprehension.*

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INTRODUCTION

The main purpose of reading is to understand the meaning of what is read. Comprehension is a central part in the process of reading. Reading is successful if the reader can comprehend the meaning and understand the messages contained in what they read. In accordance with the School Based Curriculum for Junior High School issued by Depdiknas (2006), the National Department of Education in Indonesia, the goal of teaching reading to junior high school students is to enable them to comprehend the meaning of short, functional and simple essays in the form of recount, descriptive, procedural, and narrative written texts. Through comprehending such texts, they are expected to be able to answer questions about essential reading skills such as main idea, specific information, word meanings and word references. But in fact, many of them still have problems in understanding reading texts due to their lack of vocabulary, lack of grammatical knowledge, and lack of general knowledge. These problems can be due to poor strategies used by the teacher for teaching reading and/or to the use of boring teaching materials which fail to motivate the students or make them interested in reading comprehension.

The strategy of a teacher is an important factor in presenting the reading material in order to raise the interest of the students to improve their ability to read. The teacher needs to find an appropriate strategy in order to help their students become competent in reading. The Semantic Mapping Strategy (SMS) is known as a strategy that can activate the prior knowledge of students; the aim of SMS is to assist the students to develop their background knowledge (schemata) by mapping words related to the given topic. According to Gibbons (2002:149) semantic mapping is one way of collecting and organizing information using brainstorming whereby the students recall what they already know about a topic, find words or concepts related to the topic and display the relationships of the words using a mental map. Through these activities, they are expected to be able to improve their vocabulary and their knowledge and find the meaning of words based on their context.

Antonnaci (1991) suggests that teachers can use SMS in *pre-reading* activities to determine how much knowledge building is required before the students start to read a given text. *Whilst during reading* activities, SMS can help the students to record the information obtained from the text, and finally in *post-reading activities*, teachers can use SMS to help students recall and organize information that they

have learned from reading the text as they discuss and make connections between words or concepts from the topic.

Zaid (1995) explains that this strategy motivates and involves the students in thinking about and learning to read. It also enhances their development of vocabulary by helping them link new information with previous experiences. In addition, SMS maximizes their interaction in English. It is a student centered strategy because it makes the students more active, interactive and creative. They work in groups to create a mind-map before and after reading the text. Zaid (1995) further elaborates that semantic mapping is a Communicative Language Teaching (CLT) strategy which includes many aspects of CLT such as active, interactive, student-centered and integrative activities. Thus the possible relationship of SMS with reading comprehension was the main concern of this research.

A number of studies have been conducted on the use of semantic mapping in teaching reading comprehension. A study by Siriphanich, (2010) showed that after the implementation of mind mapping techniques, the majority of his students improved their reading ability. Then, based on the data from the questionnaires, most students felt satisfied with their improvement in reading comprehension and enjoyed working in groups. However, a large number of the students still had problems with vocabulary and could not construct sentences to complete the mind maps by themselves. In another study conducted by Agustina, Ngadiso and Rochsantiningsih (2013), they found that the SMS was an effective strategy for improving the reading comprehension of students. The improvement could be seen from the increases in the mean score attained by the students. This meant that the SMS was efficient in helping students in terms of improving reading comprehension ability.

Based on the success of the previous studies, this study also intends to try out the SMS implementation in teaching reading to EFL students. The research questions to be answered by this research are as follows:

1. Can students taught reading comprehension using the Semantic Mapping Strategy (SMS) get better results than those taught reading comprehension using the Grammar Translation Method (GTM)?
2. Using SMS, in what types of reading comprehension sub-skills can students get better results?
3. What are the students' responses towards the implementation of SMS in the reading classroom?

It is expected that the result of this study can be beneficial to English teachers who are searching for ways to the comprehension that the students need in reading in English.

LITERATURE REVIEW

Reading Comprehension

Reading comprehension is derived from the words reading and comprehension. There are some definitions of reading proposed by some experts. Nuttal (1992) defines reading as the meaningful interpretation of printed or written verbal symbols. It is a result of interaction between the perception of graphic symbols that represent language and the language skills, cognitive skills and knowledge of the world of the readers. Richards and Schmidt (2010:483) define reading as the processes by which the meaning of a written text is understood. This uses many different cognitive skills, including letter and word recognition, knowledge of syntax, and recognition of text types and text structures. Barchers (1998:14) further explains that the reading process begins with the registration of the printed words in the brain by visual and perceptual processes, with the brain converting the written symbols to language, and with cognitive and comprehension processes, adding meaning by relating the symbols to the prior knowledge of the readers.

Based on the previous definitions of reading, we can conclude that reading is a construction of meaning derived from written texts. It involves the connection between the previous knowledge of the readers and the information gained from the written text in order to obtain the meaning or the messages in the text. Readers use many things during the process of reading including prior knowledge, knowledge of text structure and an active search for information as well. The degree by which they understand what they have read is called reading comprehension. McKay (2006:224) notes that comprehension is a product of reading. It is the ability to understand the information contained in a written text. Additionally, Day and Bamford (1998:14) define comprehension as the process by which a person understands the meaning of written or spoken language. It is a process of constructing sense from words, sentences and connected text. Barchers (1998:14) further sees comprehension as thinking on the highest level. It is a cognitive process that requires inference, verifying, correcting and confirming of expectancies within the text.

Thus, readers employ many things during the process of reading: prior knowledge, world knowledge, knowledge of text structure and an active search for information as well. Hancock (1995:61) has explained that comprehension involves understanding the vocabulary, seeing the relationships between words and concepts, organizing ideas, recognizing the purpose of the author, making evaluations and making judgments. Moreover, Hancock (1995) divides reading comprehension into three levels of skill, namely: literal, inferential and critical. *Literal reading* refers to the ideas and facts that are directly stated in the text. Readers could underline this information if they so desire it. *Inference* means placing facts and ideas together to draw conclusions and make generalizations. C*ritical reading* requires a higher degree of skill development and perception involving the processes of questioning, comparing, and evaluating.

However, strategy serves to make the reading process more effective. Students need strategy in reading to achieve the goal of learning reading. Strategy means the type of activities used in reading. Richards and Schmidt (2010:485) define strategy as the way of accessing the meanings in texts, which can be employed selectively in the course of reading and which are often under the conscious control of the reader. There are many strategies or reading techniques. Brown (2004:306) suggests several strategies for reading comprehension, which include identify the purpose in reading, skim the text for main ideas, scan the text for specific information, use semantic mapping or clustering, and analyze vocabulary, among others.

Semantic Mapping

Semantic Mapping is derived from the words semantic and mapping. There are various definitions of semantic mapping that have been proposed by different experts. Silberstein (1994:49) defines semantic map as a technique that allows students to demonstrate their understanding of the relationships between ideas within a text by drawing a semantic (mental) map. Duffy (2009:77) defines it as one way to explain how to categorize word meanings. It can help students to distinguish one word from another. Vaughn and Edmonds (2006), as cited in Manoli and Papadopoulou (2012:350), explain that semantic mapping offers an overview of key vocabulary and concepts providing a link between what students know and what they will learn when they read. In addition, according to Bouchard (2005:69), semantic mapping serves as a means to give students a partial and visual venue in which

to organize ideas, show relationships and retain important information. Therefore, Semantic Mapping Strategy (SMS) allows students to explore their knowledge of a new word by creating a map using other related words or phrases similar in meaning to the new word. It can be done before, during and after reading by using whole group instruction or by using co-operative learning groups, or by individual students.

Moreover, Graney (1992:164) defined semantic mappings as diagrams that can be used to represent words, ideas, or other items linked to and arranged around a central key word or idea from the text and to depict relationships between the different components of an idea to the main idea, i.e. the relationships of the parts to the whole. Pittelman and Johnson (1985), as cited in Saeidi and Atmani (2010:52), argued that semantic maps can help teachers assess the prior knowledge of their students and can help make students ready to encounter a text.

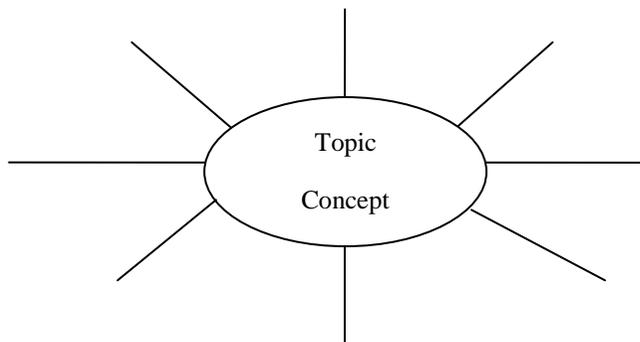Figure 1 shows the concept of semantic mapping from Graney (1992).

Figure 1. Semantic Mapping (source: Graney, 1992).

From the previous definition, it may be concluded that semantic mapping is a map of knowledge or an organized arrangement of vocabulary which exposes what students already know about the topic (brainstorming) and what they find from the text in order to be able to easily comprehend the text. Zaid (1995:05) addressed some procedures for the implementation of semantic mapping. They are as follows:

1. *Introducing the topic*
   In this stage, Zaid (1995) explains that the teacher announces the topic of the reading by drawing a large oval on the board and writing the topic inside it. He may display a picture relating to the topic to

stimulate thinking by the students and to refresh their knowledge about the given topic.

2. *Brainstorming*

Zaid (1995) says that the brainstorming phase allows students to use their prior knowledge or experiences. The teacher requests them to think of ideas that might be related to the topic. He lists these words on the board as they are identified. In the brainstorming phase, it is crucial that all responses are accepted as long as they relate to the topic.

3. *Categorization*

The teacher encourages the students to realize the relationships among the words suggested. Zaid (1995) points out that the teacher can use different colored markers and record the words in a circle or connect them to the central circle. Wh- questions, (who, what, when, where, why?) can be used to encourage them to be involved in this process.

   Richards and Rodgers (1986) further propose three components of an SMS, they are:

- Main concept, this is a key word or phrase that is the main focus of the map.
- Strands, subordinate ideas that help explain or clarify the main concept. These can be generated by the students.
- Supports, details, inferences, and generalizations that are related to each strand. Supports clarify the strands and distinguish one strand from another.

4. *Personalizing the map*

Zaid (1995) further adds that after each student has made a copy of the pre-assignment map, the class is provided with a reading passage relating to the topic, which typically contains more information and a vocabulary list with more words than the students had brainstormed during the pre-reading activities. As they read, they are allowed to decide what to add to or eliminate from the pre-assignment map. New information is thereby integrated with prior knowledge.

5. *Post-assignment synthesis*

Zaid (1995) describes this part of the classroom activity as to integrate the personalized semantic map produced by the learners after the reading material has been read and discussed with the one that was brainstormed pre-assignment. This can be done through a discussion on what information they have learned from reading the

text and how it has changed or added to the ideas shown in their original map.

In conclusion, as a strategy for reading comprehension, semantic mapping assists the students to focus on ideas and events within a text, and allows them to express their understanding about those ideas. Once they are familiar with the nature of the semantic maps, they can create their own maps for pre-reading, during-reading or post-reading activities.

RESEACH METHODOLOGY

This research was conducted at Madrasah Tsanawiyah Negeri (MTsN) (similar to junior high level) Kuta Baro in Aceh Besar. This research used an experimental research study design. The population for this study was the second year students of the school which is divided into five classes. Two classes were taken as the samples, the experimental group (EG) and the control group (CG). They were selected by using a random sampling technique. Each group or class had 19 students.

Based on true experimental design, the design of this research study can be illustrated as in Table 1.

Table 1. True Experimental Design (source: Sudijono, 2008:76).

Sample	Pre-test	Treatment	Post-test
Experimental Group (EG)	O_1	X	O_2
Control Group (CG)	O_1	-	O_2

Notes:
O_1 = Pre-test
O_2 = Post-test
X = Treatment

Tests were done for normality and variance from a homogenous population. After the tests were given, the scores obtained were analyzed by using the t-test.

Furthermore, statistical analyses were used in this study to evaluate the results of the tests. These include frequency distribution, range (R), class of data (K), class of interval (I), means, standard deviations and t-tests (refer to Sudjana, 2002).

RESEARCH FINDINGS AND DISCUSSION

Table 2 shows the summary of the normality test on the pre-test results from both groups.

Table 2. Summary of the Normality Test on the Pre-test Results from Both Groups.

Group	x_{count}	Df	A	x_{table}
EG	3.81			
CG	8.53	5	0.05	9.49

Based on the data from the pre-tests from the EG, with a level of significance (α=0.05) and (df=k-1=6-1=5), it was found that $x^2_{table} = x^2{}_{(0.95)(5)}$=11.07. Thus, $x^2_{count} < x^2_{table}$ (3.81<11.07). This means that the EG results were normally distributed. Meanwhile, the result for the pre-tests from the CG as shown above is $x^2_{count} < x^2_{table}$ (8.53<11.07) which leads to the conclusion that the CG results also showed normal distribution. Hence the pre-test results from both groups had normal distribution.

Table 3 shows the results of homogeneity test from the pre-tests from both groups.

Table 3. Results of Homogeneity Test from the Pre-tests from Both Groups.

Group	F_{count}	(n_1-1, n_2-1)	$\propto$	F_{table}
EG				
CG	1.15	(18.18)	0.05	2.10

Table 3 clearly shows that F_{count} is lower than F_{table}, that is 1.15<2.10. This means that the variances from the pre-tests from both the EG and the CG are homogenous. There was no significant difference between the results from the pre-tests of both groups. Thus it can be concluded that both of the groups had the same level of competence at the pre-test stage.

Table 4 shows the statistical summary from the pre-test results from both the EG and the CG.

Table 4. Statistical Summary from the Pre-test Results from Both Groups.

No	EG		t-test	Df		t-table	CG
N	19						19
	45	8.86	0.96	36	0.05	2.042	42
	73.09						84.14
S	8.54						9.17

Table 4 above shows that the means of the pre-test scores from the EG and from the CG are 45 and 42. Next, the resulting variance for both groups is 8.86. According to the level of significance for degree $\propto$ = 0.05 and df = $(n_1 + n_2$ - 2) = (19 + 19 − 2) = 36, the result of t-table is 2.042 ($t_{0.95(36)}$= 2.042). Furthermore, by using the formula for the t-test, it was found that the result of the t-test from both groups was 0.96.

In this case, the score from the t-test is lower than the score from the t-table; $t_{test} < t_{table}$ (0.96 < 2.042). Hence it can be interpreted that there was no significant difference between the pre-test results from the EG with that from the CG. This means that both groups had similar ability in reading comprehension for the pre-test.

Table 5 displays the statistical summary from the post-tests from both groups.

Table 5. Statistical Summary from the Post-tests from Both Groups.

No	EG		t-test	Df		t-table	CG
N	19						19
	71	10.39	4.7	24	0.05	2.042	55
	127.22						88.76
S	11.26						9.42

From Table 5 above, the means of the post-test scores from the EG and the CG were 71 and 55. Based on the level of significance for degree $\propto$ = 0.05 and df = $(n_1 + n_2$ - 2) = (19 + 19 − 2) = 36, the result of t-table is 2.042 ($t_{0.95(36)}$= 2.042). The score from the t-test is higher than the score from the t-table: $t_{test} > t_{table}$ (4.7 > 2.042). This means that there was a significant difference between the reading comprehension achievements of the students who were taught using the SMS and those who were taught using the GTM. This answers the first research question of this study.

To answer the second research question, Figure 1 presents the results of the students reading comprehension achievement before the implementation of the SMS (pre-test) and after its implementation (post-test).
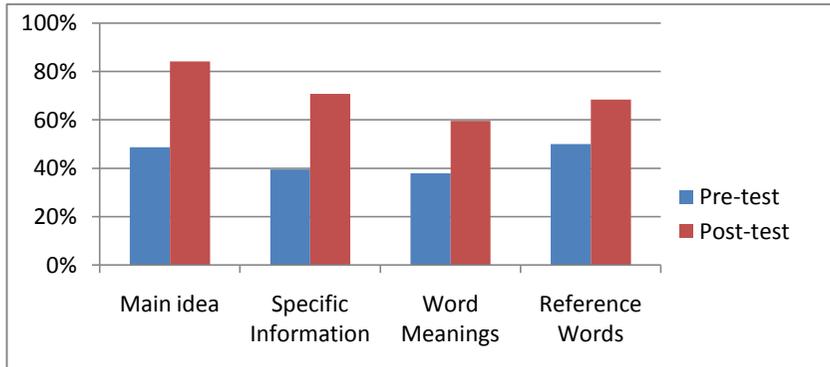

Figure 1. Correct Answers from the EG Students in the Tests of Reading Sub-Skills.

Based on the result from the post-tests, generally the students from the EG had good scores in all reading sub-skills after the implementation of the SMS compared to their pre-test scores. In particular, the *main idea* had the highest correct answer scores. Then, *specific information* followed in second position, *word meaning* in third position and the lowest number of correct answers was for *reference words*. For the *main idea* questions, the EG students got 48% in the pre-test, while in the post-test their scores increased to 84%. For *specific information,* they got 39% pre-test which increased to 71% in the post-test. Then, *word meaning* increased from 38% to 68%, and finally w*ord reference* increased from 50% to 68%.

The data from the questionnaire mainly dealt with the third research question which was the responses of the students towards the implementation of SMS for teaching reading comprehension. Here the responses from the students were categorized under four variables via: strategy, motivation, material and media. Regarding to the strategy used during teaching of reading comprehension, 89% of the students agreed that the SMS helped improve their reading comprehension abilities. The SMS helped them to understand the content of the text, to improve their background knowledge and to improve their vocabulary. In terms of motivation, all the EG students agreed that SMS motivated

them to comprehend the meanings in their reading texts. It stimulated their thoughts to find ideas or information related to the reading topic and motivated them to be more careful and focused during reading comprehension. In addition, this strategy also motivated them to be more active as a group. Concerning the materials given during the treatment, 89% of the students wrote that they were interested in the topic of the reading material but the rest felt that the material used did not attract them. All students liked the media used during the SMS treatment. The media used had pictures that helped them dig into their background knowledge so that they found it easier to complete their semantic mapping tasks.

The research findings above are similar with the findings from other researchers who have conducted studies concerned with using the SMS for teaching reading comprehension (see Siriphanich, 2010; Agustina, Ngadiso & Rochsantiningsih, 2013). They also found that the SMS was an effective strategy for improving the reading comprehension of their students. Regarding to the theories about SMS, the writers also found similarities during the teaching-learning activities. Some similarities are as stated by Richardson and Morgan (2003:159) that the primary purpose of the SMS is to describe the relationships between major and supporting ideas visually. It can be applied to introduce a topic of reading and to help reading reflections, because after the map is made, it becomes a study helper. Therefore, during the process of teaching reading comprehension, the teacher will find it easier to present the reading material topic in the form of a semantic map since she can explore what the students know about the topic of the text; as a result they are more ready to encounter the reading text. This is also stated by Zaid (1995) who confirmed that the SMS is a strategy for activating the prior knowledge of students so that they are more ready to comprehend the given text. Also, during the classroom activities, the students were given chances to express themselves and to share their ideas related to the topic of the text. The SMS made the students more aware of information in the text, thus they found it easier to get meanings from the text.

CONCLUSIONS AND SUGGESTIONS

There are some conclusions from this study. First, the SMS was effective as a better strategy for teaching reading comprehension to the second year students of the junior high school under study. The use of

the SMS resulted in significant improvement in the reading comprehension achievement of the EG students. By comparing the average scores from the pre-test and the post-test of the EG, it was found that the percentage improvement in reading comprehension for those students was about 28%. Whilst for the CG the improvement was only 13%.

Secondly, it was found that the students in the EG had better scores in all reading sub-skills compared to the students in the CG. Those were *main idea* (84%), *specific information* (71%), *word references* (68%) and w*ord meanings* (60%). This was a positive result by comparison with the CG whose scores were about 20% lower via: *main idea* (59%), *specific information* (52%), *word references* (46%) and w*ord meanings* (61%).

Third, related to the responses of the EG students toward the implementation of SMS for teaching reading comprehension, it was found that most of the students gave positive responses. It was found that the use of the SMS in reading activities can be a very useful way to motivate and to involve students in the lessons, and finally encourage them to comprehend the texts well. Preparing the semantic maps before answering the reading task helped the students to find the information from the text; as a result they found it easier to complete the reading comprehension tasks.

Based on these research findings, it is suggested that other teachers should try to use the SMS in their reading comprehension classes. Teachers should ensure that every student gets involved in every stage of the learning process. They should stimulate the thinking of the students and get the students to use discussions to help them to recall and organize information that they have learned from the reading text. Then, teachers should also give reading materials to the students and train them to develop their reading sub-skills such as finding the main idea, getting specific information, getting the meanings of words and getting word references so that they would be able to identify them in the texts. It is also suggested that other researchers can also focus on reading strategies that can enhance the reading comprehension skills of students. By doing this research, it was hoped that the results from this study can enrich and update teachers of English with an interesting new strategy for improving teaching of reading comprehension which can also possibly be extended in the future for teaching creative writing in English.

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