**The Comparison of Mind Mapping and Semantic Mapping**

**To Enhance Reading Comprehension of Second Graders**

**of SMAN 5 Makassar**

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**ABSTRACT**

This research aimed at comparing mind mapping technique and semantic mapping technique in teaching reading comprehension. It was intended to find out which technique (mind mapping or semantic mapping) was more effective to enhance the reading comprehension and which technique was more interesting in learning process to the second graders of SMAN 5 Makassar, South Sulawesi, Indonesia. It was an experimental research. There are two classes taken as sample, XI IPA1as experimental 1 class, and XI IPA2 as experimental 2 class. Researcher collected the data through reading test and questionnaire as research instrument. The result revealed that (1) students obtained higher score after being taught under mind mapping technique as opposed to those who studied under semantic mapping technique (2) students who studied narrative text under mind mapping technique showed great reading interest.

**Keywords:** mind mapping, semantic mapping, reading comprehension, students interest.

**INTRODUCTION**

Reading is a way of comprehending or understanding text that needs detail attention and concentration. It is one of particular abilities which helps people comprehends and gets the information of the text. William (1984) state that reading is a process whereby one looks at and understands what has been read. Moreover, reading is one of working processes that transfers particular arrangement from the eye into the brain for produce the information. Harmer (1985) states that reading as an exercise dominated by the eyes and the brain.

Based on the preliminary observation on the teaching-learning process in SMAN 5 Makassar, the researcher found that there are some problems that arise in students’ reading comprehension. It can be seen from the result of previous test given by the English teacher and the researcher, the observation, and the interview with the English teacher. The students encountered some difficulties in comprehending English texts. In the interview with some students, they said that they gain difficulties in the implicit and explicit information of the text.

Besides, many students have low interests in the reading class. In the daily classroom activity, the students had difficulties in doing their reading assignment. They also found it difficult to work using dictionaries, since a word may have two or more meanings. They took a relatively long time to comprehend a text. The worse thing was that students sometimes could not get the intended meaning of a text, so when they were asked to answer reading comprehension test they often got wrong answers. The condition indicated that the students had low proficiency in understanding a text.

Considering the facts above, the researcher believed that some efforts are needed to solve the problem in the English teaching and learning process especially in the teaching reading comprehension. In order to solve the problem, the researcher is motivated to conduct comparative research in comparing two techniques; mind mapping and semantic mapping to know which one the best technique that suitable to enhance reading comprehension of the student of SMA Negeri 5 Makassar.

Mind mapping and semantic mapping will be used during the study as a technique to facilitate the students in comprehending texts properly. Mind mapping helps students see connections between prior knowledge and new information, which helps them transfer what they learn and apply it to new situations. Siriphanic *et.al*  (2010) point out that mind-maps are effective in teaching and learning. They are helpful in terms of helping communicate information because complex concepts can be easily clarified into simple ones. The semantic mapping technique is a schematic diagram of the major concepts of a text. Semantic mapping helps the students to activate their background knowledge before reading, monitor their comprehension when they are reading, and evaluate their comprehension after reading.

In brief, the researcher simplifies that in order to solve the problem of teaching English reading, the researcher will be compared the mind mapping and semantic mapping to examined which one the best technique that can enhance the reading comprehension of the second graders of SMAN 5 Makassar.

**LITERATURE REVIEW**

**The Concept of Reading Comprehension**

Reading can be defined simply as the ability to get comprehension from the written text. By reading, the reader will know what they read and challenged to response the ideas of the author. In order to make the messages or information that comes from the author can be understood and comprehended easily by the reader. The purpose of reading depends on the reader. The readers read based on the information their need. Souvignier, *et.al* (2006) defines reading comprehension as the reader’s ability “to read and remember, reproduce, learn from, and find deeper meaning in text for later use”. Moreover, in the process of reading the reader not only needs to comprehend the direct meaning of what he/she is reading, but, he/she also needs to understand the implied meaning of the text.

According to Tierney*, et.al* (2005), “Learning to read is not only learning to recognize words; it is also learning to make sense of texts”. Pressley (2002) stated that reading involves a lot of cognitive capacity which is available for understanding the reading materials. Block,*et.al*(2002) states that reading comprehension is usually considered as a process in which several elements are integrated. These elements are the ability to decode written materials, reader’s prior knowledge of the text, his/her vocabulary knowledge, and the reading strategies to comprehend the text.

**The concept of Mind Mapping**

Mind mapping was developed as an effective method for generating ideas by association in the 1960s (Murley, 2007). A mind map is a graphic organizer in which the major categories radiate from a central idea and sub-categories are represented as branches of larger branches. It is a visual tool that can be used to generate ideas, take notes, organize thinking, and develop concepts (Budd, 2003). In other words, it is a tool for language teaching that helps the teacher introduce or bring together multiple words that are linked to one subject or theme.

As with a traditional outline, a mind-map is based on organizing information via hierarchies and categories. However, in a mind-map, the hierarchies and associations flow out from a central image in a free-flowing, yet organized and coherent, manner. Major topics or categories associated with the central topic are captured by branches flowing from the central image. Each branch is labeled with a key word or image. Murley (2007) explains that mind-maps graphically show ideas in a relational context, with the main topic at the center of the map, major subtopics on branches radiating from the main topic, and sub-subtopics around each subtopic that can be created with paper and pens or with one of several computer applications.

Mind-mapping is a good technique for brainstorming because ideas can be captured as they are suggested, without worrying about where they fit in a hierarchy. Once all the ideas have been captured, they can be grouped and prioritized. Compared with traditional outlines and presentations, mind-maps offer more convenient advantages. Murley (2007) explain that the radiating design of a mind-map keeps the main topic or idea central, with all its major subtopics close to it. Similarly, sub-subtopics stay close to their topics. This arrangement keeps the big picture in focus and makes relationships and connections easier to see. Al-Jarf (2011) also adds that mind-mapping enables students to better organize, prioritize, and integrate material presented in a course.

**The Concept of Semantic Mapping**

Semantic mapping is a visual representation of knowledge (Antonacci, 1991). Semantic mapping strategies are valuable instructional tools. Unlike many tools that just have one purpose, semantic mapping is flexible and endless in application. One common trait found among semantic mapping strategy is that they show the order and completeness of a student's thought process - strengths and weaknesses of understanding become clearly evident. Svenconic, *et.al* (2002) noted the implication of semantic mapping in classroom instruction which requires a variety of basic memory and comprehension techniques (such as marking associations, grouping, and using visual memory of the semantic map) that associate relevant previous knowledge to the new.

Semantic map exercises facilitate students work as a group to gather their own resources simultaneously; they prepare students to understand, assimilate and evaluate the information to be read. Bringing this knowledge to the conscious level helps students make sense of the topic of an article to be read. Ajideh (2006) mentions that pre-teaching vocabulary probably requires that the words be taught in semantically and topically related sites so that word meaning and background knowledge improve concurrently. Zaid (1995) advocated the introduction of semantic mapping in reading classrooms which had been proven to be a beneficial reading technique even for the native speakers of all educational levels. It was found that learners had shown an impressive improvement in such areas as vocabulary development, written ability and most importantly reading comprehension.

Semantic mapping can be used before, during, or after the reading activity. Semantic mapping activities that are carried out during the pre-reading phase of a lesson is to activate learners’ schemata and to introduce them to the main point of the text. As a pre-reading activity, teachers can use core questions to enhance the comprehension, main ideas, supporting details, pattern of textual organization, as well as character and plot development. In this phase, a semantic map is developed by placing the central idea in a circle in the center of a sheet of paper. Students then brainstorm words and phrases that relate to the topic.

**The Concept of Interest**

Interest is being one of the important factors in order to increase the students’ comprehension achievement in reading. If one has interest to read, it means that he or she will get a good achievement. On the other side, if the reader has no any interest to read, it can influence his or her achievement. Interest usually refers to an activity that a person prefers to engage in, would not avoid and would choose in preferences to many others activities. Interest also refers to the kinds of thing we appreciate and enjoy. Thus, the selection of any occupation and satisfaction we get from our work usually depend more on our interest than our ability. They further state that interest and ability are closely related but our interest gives us motivation to use our ability. If we are strong in doing something, we will work hard at it than if we are not interested in.

Harmer (1991) states that there are two factors can affect students' motivation as well as their interest in learning namely; extrinsic and intrinsic motivation. Extrinsic motivations are concerned with factors outside the learner while intrinsic motivations are concerned what taken place inside the learner. Extrinsic motivation consists of two main types. First, integrative motivation when the students need to be attracted by the culture of target language community. Second, instrumental motivation which describe situation in which students believe that mastery of the target language is needed.

The relationship between interest and learning is further fleshed out by the observation that new learning is depending upon interest. Learning cannot occur unless the organism is interested in learning. The study of interest is complex and diverse because when we really think about it, we found that our interest, or the determinants of our actions are complex and diverse the problem with the term interest is that it encompasses so much. Especially when we speak of interest we refers to factors we initiate and direct behaviour and to those that determine the intensity and the persistence. Thus interest gets up and going to energize us.

**METHOD**

**Design and Samples**

The researcher applied an experimental research. The basic causal-comparative design involved selecting two groups differing on some independent variables and compared them on some dependent variables.The population of the research was the second graders of SMA Negeri 5 Makassar. It consisted of 12 classes and each class consisted of 36 students, so the total of population was 432 students. The researcher used cluster random sampling to take the sample. XI IPA1as experimental 1 class, and XI IPA2 as experimental 2 class. Each class had 36 students, so the amount of sample was 72 students.

In this research, the researcher collected the data through reading test and questionnaire as research instrument. The enhancement of the students in reading comprehension by using Mind Mapping Technique and Semantic Mapping Technique was measured by giving reading test to the students that was applied in pretest and posttest. The tests consisted of multiple choice as much as 30 items. The questionnaire was given to find out the students’ interest in learning English by using Mind Mapping Technique and Semantic Mapping Technique. The questionnaire consisted of 20 items.

**Instruments and Procedures**

This research collected the data through reading test and questionnaire as research instrument. The enhancement of the students in reading comprehension by using Mind Mapping Technique and Semantic Mapping Technique was measured by giving reading test to the students that was applied in pretest and posttest. The tests consisted of multiple choice as much as 30 items. The questionnaire was given to find out the students’ interest in learning English by using Mind Mapping Technique and Semantic Mapping Technique. The questionnaire consisted of 20 items.

The treatment was conducted for 6 meetings. Mind Mapping Technique and Semantic Mapping Technique were used in teaching for experimental group.

*Experimental group 1*

1. At the first meeting, the researcher explained about Mind Mapping Technique and explained about the text that will be learned. In this case, the type of texts learned was based on the curriculum, narrative text.
2. In the second, third, fourth, fifth meeting the students did the same activity but the difference was the text used in the learning process. The researcher implemented Mind Mapping Technique in learning and comprehended a narrative text. The activities in this meeting were:
3. The teacher divided the students into six group
4. The teacher provided narrative text
5. Each group read the narrative text carefully approximately 15 minutes.
6. The teacher asked the students to write the topic of the text and draw a circle around it
7. The teacher asked the students to draw branches from the topic.
8. The teacher asked the student students to write the keywords or phrases from the text which represent the storyline on the branches.
9. The teacher asked the students to discuss the questions related to the text using their mind map through discussion, elicit generic structures and supporting details.

*Experimental group 2*

* + 1. At the first meeting, the researcher explained about Semantic Mapping Technique and explained about the text that would be learned. In this case, the type of texts learned was based on the curriculum, narrative text.
		2. In the second, third, fourth, fifth meeting the students did the same activity but the difference was the text that was used in the learning process. The researcher implemented Semantic Mapping Technique in learning and comprehends a narrative text. The activities in this meeting were:

*Pre Reading*

1. The teacher asked the students to write the text and draw a circle around it.
2. The teacher asked the students to think about the topic and share as many words as they can, relate to the topic.
3. The teacher asked the students to discuss and record on the map information and words that students suggested.
4. The teacher asked the students to write the information in the clusters
5. The teacher asked the students to discuss or categories of words and determine appropriate labels or headings.

*While Reading*

1. The teacher has the students read the text
2. The teacher has the students use their notes during a discussion in which they share the information about the topic through their independent reading.
3. The teacher has the students to discuss and answer the questions of the text.

 *Post Reading*

1. After students have finished reading the text, they added new information about the topic to the map suggested.

**Data Analysis**

The data calculated trough quantitative analysis. To find out the score, the researcher applied the conversion of students’ score in reading comprehension. To calculate the mean score and standard deviation of the students’ achievement by using SPSS 20.0. The data of questionnaire were analyzed using likert scale. It intended to find out the students’ interest in mind mapping and semantic mapping technique.

* + - 1. **Reading comprehension test**
				1. Scoring the students’ answers of pretest and posttest. Each of students’ correct answer would get 1 and wrong answer would get 0. The formula for indicating the students’ score as follows:

 Obtained scores

Score = X 100 (interval of the score level)

 Maximum scores

 (Depdiknas, 2006)

Table 1. The Conversion of Students’ Score in Reading Comprehension

|  |  |  |
| --- | --- | --- |
| No | The Number of the Students’ correct answer | Score |
| 12345678101112131415161718192021222324252627282930 | *30**29**28**27**26**25**24**23**22**21**20**19**18**17**16**15**14**13**12**11**10**9**8**7**6**5**4**3**2**1* | 10097939087838077737067636057535047434037333027232017131073 |

1. Classifying the scores of the students’ answer. The scores would be classified into seven level classifications which were adapted to the scoring system from Depdiknas (2006:38) as follows:

Table 2. Scoring Classification of Students’ Reading Achievement

|  |  |  |
| --- | --- | --- |
| No | Interval Score | Classification |
| 1234567 | *96-100**86-95**76-85**66-75**56-65**36-55**0-35* | ExcellentVery GoodGoodFairly GoodFairPoorVery Poor |

 (Depdiknas, 2006)

c. Calculating the mean score of the students’ answer. To find out the mean score, standard deviation and the t-test value between the pre-test and the post-test of both experimental and control group by using *Statistical Package for Social Sciences* (SPSS) program version 20.0 (Gay et al, 2006:378).

**2. Questionnaire**

The questionnaire was given to the students by using Likert scale. It aimed at asking the sample to respond to a series of statements by indicating whether one strongly agrees (SA), agrees (A), undecided (U), disagrees (D), or strongly disagrees (SD) with the statements given.

Each response was associated with a point value and an individual’s score was determined by summing the point values for each statements. The point values were assigned to response to the positive statements. For the negative statements, the point values will be reversed. Where SA=5, A=4, U=3, D=2, and SD=1 for positive statement. For negative statements, the point values were reserved. The data were analysed as follows:

Table 3.Likert Scale

|  |  |  |
| --- | --- | --- |
| Positive statement  Score | Category | Negative statement score |
| 54321 | *Strongly Agree**Agree**Undecided**Disagree**Strongly Disagree* | 12345 |

 (Sugiyono, 2008:135)

To interpret the students’ interest, the researcher used classification system. The questionnaire employed 5 categories and the rating score ranged from 20 to 100 in determining the level of students’ interest. The interval rating score of the students’ responses can be shown in the table as follows:

Table 4. Scoring Classification of The Students’ Interest

|  |  |  |
| --- | --- | --- |
| No. | Interval score | Classification |
| 12345 | *85-100**69-84**52-68**36-51**20-35* | *Very high**High**Moderate**Low*Very low |

(Sugiyono, 2008:137)

The researcher calculated the percentage and means score of the students’ interest by using descriptive statistic through SPSS 20.0.

**FINDINGS**

The students’ research achievement both pretest and posttest for the research subjects are tabulated in the table below:

Table 5 Frequency and Percentage of Pretest Score for Both Groups

|  |  |  |  |
| --- | --- | --- | --- |
| Classification | Score | Mind Mapping /E1 | Semantic Mapping/ E2 |
| Pretest | Pretest |
| F | P (%) | F | P (%) |
| Excellent | 96-100 | 0 | 0 | 0 | 0 |
| Very Good | 86-95 | 0 | 0 | 0 | 0 |
| Good | 76-85 | 6 | 17 | 9 | 25 |
| Fairly Good | 66-75 | 21 | 58 | 16 | 44 |
| Fair | 56-65 | 7 | 19 | 7 | 19 |
| Poor | 36-55 | 2 | 6 | 4 | 11 |
| Very Poor | 0-36 | 0 | 0 | 0 | 0 |
| Total | 36 | 100 | 36 | 100 |

Based on Table 1 above, it is known that the students’ pretest score result for good, fairly good, fair and poor categories. In E1 class, the data of pretest shows that 6 (17%) students gained good score, 21(58%) students gained fairly good score, 7 (19%) students gained fair score and 2 (6%) students gained poor score. In E1 class most of students gained fairly good scores in pretest. While in E2 class, there were 9(25%) students gained good score, 16 (44%) students gained fairly good score, 7(19%) students gained fair score and 4 (11%) students gained poor score. In E2 class most of students gained fairly good score in pretest. So, it can be concluded the mean score of students for both groups is almost same.

Table 6 Frequency and Percentage of Posttest Score for Both Groups

|  |  |  |  |
| --- | --- | --- | --- |
| Classification | Score | Mind Mapping Technique/E1 | Semantic Mapping Technique/ E2 |
| Posttest | Posttest |
| F | P (%) | F | P (%) |
| Excellent | 96-100 | 0 | 0 | 0 | 0 |
| Very Good | 86-95 | 15 | 42 | 4 | 11 |
| Good | 76-85 | 21 | 58 | 20 | 56  |
| Fairly Good | 66-75 | 0 | 0 | 11 | 31 |
| Fair | 56-65 | 0 | 0 | 1 | 3 |
| Poor | 36-55 | 0 | 0 | 0 | 0 |
| Very Poor | 0-36 | 0 | 0 | 0 | 0 |
| Total | 36 | 100 | 36 | 100 |

Based on Table 2 above, it is known that the students’ posttest scores are for very good, good, fairly good, and fair category. In E1 class, the data of posttest showed that there are 15 (42%) students gained very good score and 21 (58%) students gained good score. In E1 class most of students gained very good score in posttest. While in E2 class, 4 (11%) students gained very good score, 20 (56%) students gained good score, 11 (31 %) students gained fairly good score and 1 (3%) students gained fair score. In E2 class most of students gained good score in posttest.

From the description of the reading in pretest and posttest result as shown in Table 1 and 2, it gave clear classification as well on the students’ achievement on their reading after conducting the treatment by applying Mind Mapping for E1 and Semantic Mapping for E2.

The findings presented here deal with the students’ interest in learning English by using Mind Mapping. It can be seen in the following table:

Table 7 Percentage of Students’ Interest in Mind Mapping

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. | Interval | Categories | Frequency | Percentage (%) |
| 12345 | 85-10068-8452-6836-5120-35 | Very highHighModerateLowVery low | 14184 0 0 | 38.9 5011.1 0 0 |
| Total | 36 | 100 |

The result indicated that 14 (38.9%) students were “very high interest”, 18 (50%) students were “high interest”, 4 (11.1%) students were “moderate interest”, none “uninterested” and none “very uninterested”. It means that all of the students were interested in learning English by using Mind mapping technique.

The findings presented here deal with the students’ interest in learning English by using Semantic Mapping. It can be seen in the following table:

Table 8 Percentage of Students’ Interest in Semantic Mapping

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. | Interval | Categories | Frequency | Percentage (%) |
| 12345 | 85-10068-8452-6836-5120-35 | Very highHighModerateLowVery low | 5919 3 0 | 13.9 %25 %52.7 % 8.3 % 0 |
| Total | 36 | 100 |

The result indicated that 5 (13.9%) students were “very high interest”, 9 (25%) students were “high interest”, 19 (52.7%) students were “moderate interest”, 3 (8.3%) students were “uninterested” and none “very uninterested”. It means that half of the students were moderate interest in learning English by using Semantic Mapping. It means that all of the students were interested in learning English by using semantic mapping technique.

Table 9 Mean score of Students’ Interest in Mind Mapping and Semantic

Mapping

|  |  |  |  |
| --- | --- | --- | --- |
|  | Number of Students | Total of Score | Mean Score  |
| E Class I | 36 | 2899 | 80,53 |
| E Class 2 | 36 | 2448 | 68 |

$\overbar{X}= \sum\_{}^{}\frac{x}{n}$

The table above shows that the mean score of students’ interest in mind mapping is 80.53 classified into high interest, and the mean score of students’ interest in semantic mapping is 68 classified into moderate interest. From the mean score above, it can be concluded that the mind mapping technique was more interesting than semantic mapping technique.

**DISCUSSION**

The main objective of the research was to find out which technique (Mind Mapping or Semantic Mapping) is more effective to enhance the students’ reading comprehension of the narrative text. The result of pretest showed that students’ reading comprehension in both groups were in the same level. Based on this condition, it can be concluded that both of groups have equal ability for treatment. After pretest, the researcher used different procedure in teaching reading. The students in experimental group 1 were taught by using Mind Mapping, while students in experimental group 2 were taught by using Semantic Mapping. The treatment was conducted in six meetings.

The posttest was held to measure the enhancement in experimental class 1 and experimental class 2 after the treatment. The result showed that there was significant difference in using Mind Mapping and Semantic Mapping in teaching reading comprehension. It was proven by the mean score of the students taught by Mind Mapping 84.00, which was higher than the mean score of the students which were taught by Semantic Mapping 76.97. The result of this research also supported by the previous theory which stated that Mind Mapping provides useful examples for poor readers to improve, and gives meaning and purpose to read.

There are several factors influencing the result of Mind Mapping which is higher than Semantic Mapping. Firstly, this technique helps the students seeing the connections between prior knowledge and new information, which helps them to transfer what they learn from the text and apply it to new situations. It is similar with Budd (2003) who claims that Mind Mapping is a visual tool that can be used to generate ideas, take notes, organize thinking, and develop concepts. Secondly, the students’ interest in reading comprehension is improved. This technique gives the positive interest to the students. It can be known from the questionnaire which is distributed to the students related to the Mind Mapping. The result of the students interest is higher than the student’s interest which taught by Semantic Mapping. It supports the findings of Al-Jarf (2011) research which points out that mind-mapping is used to enhance student’s engagement and interest in learning. Thirdly, mind-mapping welcomes more flexibility than outlining does, students’ creativity is subsequently encouraged. It allows the students to be more creatively constructing the information in their mind as their prior knowledge to comprehend the text. This findings also supported by the previous findings which stated that Mind Mapping helps the students to construct the information in their mind, and make it meaningful (Siriphanic, *et.al,* 2010).

On the contrary, the experimental 2 group was taught by using Semantic Mapping. The result of this research showed that this technique also enhances the reading comprehension of the students, but it could not be significantly seems like Mind Mapping. The main factor in this step which is provided complicated procedure to understand by the students. Even though, there some step which can be improved their vocabulary and speaking skill.

Nevertheless, Semantic Mapping was not giving significant contribution to the students to comprehend the text. They seemed like bored to follow each step of this procedure. They looked confused to solve the problem in reading. Moreover, Semantic Mapping made them become slow reader, in this case teaching and learning process was focused on the students, and then this situation resulted mediocre learning process. The result showed different level of reading comprehension. Consequently, it can be stated that there was significant difference between the use of Mind Mapping and Semantic Mapping in teaching reading comprehension.

**CONCLUSSION**

Using mind mapping technique is more effective than semantic mapping to enhance students’ achievement of reading comprehension at the second graders of SMAN 5 Makassar. This is indicated by the higher scores the students obtained after being taught under mind mapping technique as opposed to those who studied under semantic mapping technique.

Students who studied narrative text under mind mapping and semantic mapping techniques showed great reading interest. However, the interest degree between the two experimental classes was different. Students learnt through mind mapping technique were more interested to read than those who learnt through semantic mapping. Thus, using mind mapping technique in teaching reading comprehension is more effective and more interesting than Semantic Mapping to enhance students’ reading comprehension achievement of the second graders of SMAN 5 Makassar.

**SUGGESTION**

Since mind mapping technique enables the learners to comprehend reading text in interesting way, researcher suggests this technique to be used by the English teacher of SMAN 5 Makassar. Further research might explore more about the usefulness of mind mapping technique to enhance students’ engagement, motivation, and achievement in learning English. Researcher also recommends for future research to investigate the appropriateness of the technique for learner style of learning English.

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