SEMANTIC MAPPING TO INCREASE TECHNICAL VOCABULARIES FOR MIDWIFE AT UNIVERSITAS PRIMA INDONESIA IN ACADEMIC YEAR 2019/2020

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Abstract - This study was conducted to increase midwife students’ vocabularies at Universitas Prima Indonesia by using Semantic Mapping Technique. This research was conducted to find out whether the Semantic Mapping Technique gave a significant effect on midwife students’ achievement in vocabularies at Universitas Prima Indonesia Medan. This research was intended to find out whether there were any differences between the midwife students’ vocabulary after being taught by using Semantic Mapping Technique. Semantic Mapping is Technique of visual for the expansion of vocabularies and knowledge extension by displaying in words of categories related to another. This research applied one group for pre-test and post-test. The sample of this research was midwife students at Universitas Prima Indonesia Medan consist of 40 midwife students’ in academic year 2019/2020. This study was an experimental design. The population of the research was midwife students at Universitas Prima Indonesia. There were two classes as the sample and all of the midwife students as a sample is 42. The classes were divided into two groups, experimental and control group. The experimental group was the class taught by applying Semantic Mapping Technique, while control was taught without using Semantic Mapping Technique. In this research, a multiple-choice test was used as the instrument of collecting data. Both the experimental and control group were asked to answer the question in pre-test and post-test the data obtained were analyzed statistically by t-test formula. The result got that t-observed (t_\text{(obs)}) was higher than t-table (4.41 > 2.0211) at the level significant 0.05 with the degree of freedom (df) 40. It means that the alternative hypothesis (H_a) is accepted and Semantic Mapping Technique significantly affects midwife students’ achievement to increase vocabularies.

Keywords: Semantic mapping technique, vocabulary, increase.
I. INTRODUCTION

English teaching involves four language skills. There are Listening, Speaking, Reading and writing. In teaching and learning the language, there are four aspects that support it. The four aspects are namely, grammar, spelling, pronunciation and vocabulary. Vocabulary is one of the language aspects which should be learned, learning vocabulary is important because we are able to speak, writing, reading, and listening nicely. Vocabulary is defined as all the words known and used by a particular person. A person vocabulary is the set of words they are familiar with in a language, learning a language means a learning its vocabularies. The importance of learning English for midwife department students is to develop the student’s English proficiency. In the global era, English is a mandatory material that most used as teaching vocabularies for midwife students. This is important because it cannot be denied that midwifery in Indonesia often finds obstacles when serving foreigners. They are quite difficult to have a dialogue with tourists, even though our country is now being visited by foreigners more of often, both for holidays, research, or student exchanges and the research found that midwife students got many difficulties in pronunciation some words. It is not impossible, while here the tourists experience health problems, or just need a check-up. In addition, the instruction for using the majority of medical devices are in English. The importance of learning English for midwifery students is very necessary to be able to speak English fluently because some midwifery will work in International Hospital and forced to communicate with foreigners.

Vocabulary is a basic element of learning English. This is an important factor in reading, listening, writing and speaking. According to Yun (2005:68), the field in which vocabulary is commonly used is as follows: (1). All the words as the language. (2). The number of words that an individual can understand and use whether in speaking or writing. (3). The word said to be representative of a subject or occupation. (4). List of words to serve a specific purpose.

In fact, most people still need some vocabulary rules in order to gain a good sense of language. The words that someone chose affect how good the impression he makes and how people react to serve a specific purpose of the language. Basically, the learning vocabulary aims to be able to listen and speak well.

Vocabulary is not only words. When the researchers talk about vocabulary, it means that the researchers talk the words. There are some different ways to think about vocabulary: meaning, pronunciation, collocation, expression, synonym, and homonym.

In teaching vocabulary, various techniques are needed to be used in order to motivate the learners to enjoy the English class and to avoid them from getting bored in the learning process. In teaching vocabulary, the researchers assume that using Semantic Mapping Techniques could be productive and beneficial to increase midwife students. The use of semantic mapping techniques is expected to motivate the midwife students to learn and make them not bored in English teaching-learning process. This study is to analyze the target needs and learning need of midwifery students at Universitas Prima Indonesia.

Research about learning strategies has focused on vocabulary learning and teaching and order to provide insights for developing effective vocabulary and learning. Although vocabulary has been attributed less importance than the four skills in language teaching, interest in its role in language learning has grown rapidly in recent years because learning a foreign language is basically a matter of learning the vocabulary of that language as
indicated above. In a foreign language learning context, it cannot be denied that vocabulary is an element of great importance and thus emphasized to a great. When this importance of vocabulary learning is taken into consideration, we cannot skip the role of learning strategies in vocabulary learning and teaching. Vocabulary plays an important role in learning a foreign language. In other words, vocabulary in the basic elements of language will make language meaningful.

Semantic Mapping Technique

Semantic Mapping Techniques is a term, which describes a variety of strategies designed to show how word or concepts are related to one another through graphic representations. It is a categorical structuring of information in graphic form. It is an approach leading midwife students to relate words to their own experiences and prior knowledge. Semantic maps as Jonassen (1993: 98 ) indicates “are type of graphic organizers that visually represent relationships among categories of concepts”. Semantic mapping is not new; it has been around for years under the labels “semantic webbing”, “semantic networking,” or “plot maps”. It has been regarded as a successful and helpful teaching strategy based on the creation and evaluation of the learner's background knowledge or schemata.

There are many different definitions of Semantic Mapping Technique described by different researchers. Sinantra, Gemake and Breg ( cited in Zaid. 1995: 6 ) described Semantic Mapping as “a graphic arrangement showing the major ideas and relationship between items, and they are an extremely practical framework for the storage of terms. Heimlich and Pittelman( 1986 :3 ) defined Semantic Maps as “diagrams that help midwife students see how words related to one other”. According to Stroller and Grabe (1993: 34 ) “Semantic Mapping leads to better vocabulary retention because new lexical items are introduced in semantic networks”. In short, Semantic Mapping displays graphical information which is related two parts, namely: a topic or concept and stimulates meaningful word relations.

Semantic Mapping can be defined as a visual representation of knowledge, a picture of a conceptual relationship. Semantic Mapping Techniques also as vocabulary presentation techniques in learners’ vocabulary retention in the framework of a study. Semantic Mapping Techniques require the lecture and the learners cooperate working together to build up a diagrammatic map which indicates the associations between vocabulary suggested by the lecture, vocabulary by the midwife students and vocabulary found in reading the text. Semantic Mapping Techniques is a process activates midwife students background information which is about the topic and provides an efficient way to strengthen keywords, allowing midwife students to include the new vocabulary into their existing schemata. Semantic mapping assists the learner to learn unknown words true know words in a semantically related network.

In vocabulary learning, it is important for the learners to make an effort and show the required interest. If the text does not involve enough effort, the learners may not be interested and may not pay his attention and enthusiasm. Instead of traditional techniques which are not challenging enough, more effective and enjoyable techniques can be used as they require more effort. The learners can get rid of the routine traditional ambience in the classroom. As this technique is new for the learners, the learners will be expected to interest and attend the process, especially the thought of the product which will be their own creations will courage the learners to use this technique.

Schema theory

The idea of the schema has been highlighted in cognitive science since the mid-1970s. Schemata
have employed a process interpreting sensory data, in retrieving information from memory, in organizing action. Vocabulary development must be related to schemata or background knowledge. Thus, when new words are presented within the semantic frame they can be readily interpreted. The value of semantic mapping has been recognized as a result of understanding the important role played by prior knowledge or schemata in the learning process. Therefore, each midwife student must be careful in choosing vocabulary that relates the meaning to the previous word.

**Semantic Mapping in Vocabulary Development**

According to Brown (1945:16), there are two kinds of vocabulary, as follows: (1). Active Vocabulary (Productive Vocabulary). Active Vocabulary is words which the students understand, can pronounce correctly and uses constructively in speaking and writing. (2) Passive Vocabulary (Receptive Vocabulary). Passive Vocabulary is words that recognize and understand when they occur in a context, but he cannot produce correctly himself. It refers to language items that can be recognized and understood in the context of reading or listening and also called as receptive vocabulary. The teachers introduce students about vocabularies. The teacher can choose the relevant topic to be studied. Allen (2006:5) also states that in teaching students the teacher should teach the students to recognize and understand the word in multiple context examples; use the word in their speaking and writing; connect the word to their own lives and offer examples of its correct and incorrect use; understand subtle shades in the word’s meaning; and generate affective contexts to help others understand the word.

Perhaps the most widely known use of semantic mapping as an instructional technique is in general vocabulary development. In this technique, the semantic mapping procedure prepares midwife students to understand, learn, and assess the information to be read. Johnson and Pearson (1984:12-13) adapt a semantic mapping procedure for vocabulary development: (1) Choose a word or topic related to classroom work. (2) List the word on a large chart tablet or on the chalkboard. (3) Encourage the midwife students to think of as many words as they can that are related to the selected keyword and then list the words by categories on a sheet of paper. (4) Midwife students then share the prepared lists orally and all words are written on the class map in categories. (5) Midwife students can gain further practice in classification by labelling the categories on the semantic map (cited in Heimlich and Pittelman, 1986:5).

**Semantic Mapping in Pre and Post Reading**

In addition to being effective for vocabulary development, semantic mapping technique has been demonstrated to be a good alternative to traditional activities used before reading a new passage, as well as after reading a passage (Heimlich and Pittelman, 1986: 6). In this application, before reading a certain passage, midwife students work on the key concept and think as many words as they can about the key concept by the help of their prior knowledge. After reading the story, midwife students can add words and new categories to their knowledge. Semantic mapping is a pre and post-reading technique is effective with basal as well as with other reading materials and has been successfully adapted content instruction as well (Heimlich and Pittelman, 1986: 6).

Semantic Mapping as a Study Skill Technique Hunt (1957) elaborated on the semantic mapping technique, using it as a study skill to guide the processing of textbook material. In Hunts procedure;” mapping is used as a study skill technique with either individuals or groups” (cited in Heimlich and Pittelman, 1986: 6). There are three basic steps to design a map of content information from a text in Hunts procedure: (1). Identification of...
the main idea: The main idea is written on a sheet of paper and a shape is drawn around it. (2). Secondary categories: The principal part of textbook chapter will form the secondary categories in the semantic map. Before reading the textbook, midwife students hypothesize what the basic parts of the passage. Labels for the secondary categories are then written on the map. (3). Supporting details. In this final step of the procedure, midwife students read the chapter for details and complete the map by adding details from memory (Heimlich and Pittelman, 1986: 8).

The Procedures of Semantic Mapping Technique

The use of semantic mapping in the classroom may be divided into five phases in general. These are “introducing the topic, brainstorming, categorization, personalizing the map, post-assessment synthesis” (Zaid, 1995:90. In Zaid’s variation, phases are explained below: (1). Introducing the topic: The lecturer declares the topic by drawing a large oval on the blackboard and writes the topic inside of it. This topic is about the passage midwife students will read. Through this, the students can guess the purpose of the reading passage. (2). Brainstorming: The lecturer wants the midwife students to think about keywords and ideas which are interrelated to the topic. This fact enables the midwife students to use their background knowledge and experiences. Brainstorming is an application of the schema theory, which is necessary for connecting known and unknown concepts. Thus, prior knowledge can be used as a stepping block to new knowledge. The brainstorming part of semantic mapping gives an opportunity to observe each of the midwife students’ schemata so prior knowledge. The keyword and ideas are listed to one side of the blackboard. In this phase, all responses are accepted as they relate to the topic. (3). Categorization: The lecturer supports the midwife students to make connections among their offers. “Category clusters” (Antonacci, 1975:174) are formed by the midwife students and the lecturer together according to the midwife students’ ideas. Then the lecturer and midwife students decide suitable headings or labels for each of the clusters or categories of words. When this clustering finishes, the lecturer wants the midwife students to make their own copies. In this phase According to Zaid (1995), the midwife students grow experience in practising some valuable cognitive skills, particularly categorizing and exemplifying and they also learn to compare and contrast, cause and effect relationships and making the inference. This part also can be termed as pre-assignment. (4). Personalizing the map: After each midwife student makes his/her own copy, a material such as a reading passage which is about the key concepts of the map, is given. This reading passage consists of more related concepts than the midwife students have listed. As they read, midwife students are to decide what to add or eliminate from the map they have created. In this step, new information is integrated with prior knowledge. (5). Post-assignment synthesis: The last part of this procedure is used to record the midwife students’ suggestions from their personal maps on the assignment. After they read the passage and add or eliminate some items, the whole class decides the final shape of the map. The new version serves as a visual image of the knowledge they gained from the map.

Before the main research, as a prior step, descriptive research was conducted. This study was conducted based on survey research for the purpose of making descriptive assertions about some population and aims at finding out whether there is a relationship between midwife students believes about vocabulary learning strategies and what vocabulary learning strategies they prefer to use when they are dealing with new words. Quantitative data for this descriptive study was collected through a two-part multiple-choice including 40 items. The first part aimed to identify midwife students beliefs about vocabulary learning strategies and the second part
aimed to find out what vocabulary learning strategies they preferred to use most.

After conducting the questionnaire, as the testing material two tests, a pre-test and a post-test were used. First, the subjects were given the pre-test. The main study is an experimental study focusing on the effectiveness of alternative methods in teaching second language vocabulary for pre-intermediate level students of English by comparing the scores of the experimental group and control group. This study involved 42 students from the University of Prima Indonesia. This research was carried out in two classes. The midwife students were divided into two groups. The first group was chosen as an Experimental Group that received Semantic Mapping Technique, whereas the second group was constituted the Control Group that was instructed vocabulary through Traditional Technique. There were 22 midwife students in experimental and 20 midwife students in the control group.

In the treatment process, the semantic mapping technique was used in the experimental group and the control group worked with traditional approaches with the same material including a reading text. Semantic Mapping Technique was compared to Traditional Technique to see which of the two techniques, using semantic mapping technique or traditional technique, is more effective in helping midwife students’ retention of vocabulary and also in order to see what learners really perform in a classroom setting during the vocabulary learning process. By this way, midwife students’ would be able to learn the required words in a short time, and minimum lack of retention would be obtained. For the experimental group, the semantic mapping technique was used as pre and post-reading activities.

The researcher found that semantic mapping techniques can increase or positively influence teaching vocabulary to midwife students because the semantic mapping technique is one of the most effective ways to help midwife students in connecting one word to another. The researcher revealed that the main purpose of the semantic mapping technique is to provide opportunities for midwife students to develop the knowledge they have from the vocabulary they have learned.

The purpose of the research are to determine the extent to which vocabulary is possessive by midwife students, the researcher want to prove that semantic mapping technique can increase vocabulary of the midwife students, the researcher wanted to find out the difficulties experienced by midwife students in learn vocabulary. And the researchers want to find out whether there were differences in midwife students vocabulary after learning using the semantic mapping techniques.

### II. RESEARCH METHOD

This research was conducted into two classes, namely: experimental and control groups. The experimental group was given treatment by using Semantic Mapping Technique and the control group was taught by using conventional technique.

Research Design

<table>
<thead>
<tr>
<th>Groups</th>
<th>Pre-test</th>
<th>Treatment</th>
<th>Post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>✓</td>
<td>Y</td>
<td>✓</td>
</tr>
<tr>
<td>Control</td>
<td>✓</td>
<td>Z</td>
<td>✓</td>
</tr>
</tbody>
</table>

Where: Y = Teaching vocabulary used semantic mapping technique

Z = Teaching vocabulary without used semantic mapping technique

✓ = Test is given text

This research was conducted at Universitas Prima Indonesia Medan and the subject of the research is...
midwife students. The total number of midwife students of 42 students. The university is located at Jalan Danau Singkarak Gg. Madrasah Medan. The research was conducted in June 2019.

This research applied Quantitative design as well as the data. To collect the data, the researcher was taken the midwife students ‘ test result’. They were taken from two groups. Experimental and Control groups. The data consist of midwife student vocabulary. In this research, the data were taken from the subject, namely 42 midwife students of University of Prima Indonesia Medan. The form of the instrument is a multiple-choice test. The lecture was given the instrument to midwife students by used semantic mapping technique. The midwife students were asked to answer the questions after reading the text after that the midwife students answer the questions. It has been clearly stated in the previous chapter that the researcher would obtain the data by administrating pre-test and post-test to both experimental and control group. The experimental group was taught by using semantic mapping technique and the control group was taught without by using semantic mapping technique.

The Result of Pre-test and Post-test of Experimental Group

<table>
<thead>
<tr>
<th>No</th>
<th>Midwife Students’ Initial</th>
<th>X1</th>
<th>X2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AN</td>
<td>70</td>
<td>80</td>
</tr>
<tr>
<td>2</td>
<td>AM</td>
<td>60</td>
<td>70</td>
</tr>
<tr>
<td>3</td>
<td>AG</td>
<td>70</td>
<td>80</td>
</tr>
<tr>
<td>4</td>
<td>EK</td>
<td>70</td>
<td>80</td>
</tr>
<tr>
<td>5</td>
<td>EN</td>
<td>70</td>
<td>80</td>
</tr>
<tr>
<td>6</td>
<td>ET</td>
<td>80</td>
<td>85</td>
</tr>
<tr>
<td>7</td>
<td>FD</td>
<td>60</td>
<td>80</td>
</tr>
<tr>
<td>8</td>
<td>HR</td>
<td>60</td>
<td>70</td>
</tr>
<tr>
<td>9</td>
<td>HY</td>
<td>80</td>
<td>90</td>
</tr>
<tr>
<td>10</td>
<td>JK</td>
<td>70</td>
<td>75</td>
</tr>
<tr>
<td>11</td>
<td>JM</td>
<td>60</td>
<td>70</td>
</tr>
</tbody>
</table>

12 JS 70 80
13 NV 60 80
14 NS 60 80
15 RD 70 90
16 SP 65 80
17 ST 70 80
18 SD 70 80
19 SI 70 80
20 TD 70 80
21 YN 60 70
22 YK 55 70

TOTAL (∑X1) : 1470 (∑X2) : 1730
MEAN 66.8 78.6

From the table above, it can be seen that the highest score of the pre-test of the experimental group is 80 and the lowest score of the pre-test of the experimental group is 55. While the highest score of the post-test of experimental group is 90 and the lowest score of post-test of experimental group is 70. The mean of the pre-test is 66.8 and the mean of the post-test is 78.6.

The data were gained after administrating the pre-test and post-test. Before the post-test, the researcher applied the treatment, in this case teaching vocabularies by using Semantic Mapping Technique on midwife students’ to increase vocabulary to the experimental group. On the other hand, the test was administered to the control group without treating them by using Semantic Mapping Technique on midwife students to increase vocabularies. The result of pre-test and post-test of the control group can be seen in the table below..

The result of pre-test and post-test of the control group

<table>
<thead>
<tr>
<th>No</th>
<th>Midwife Students’ Initial</th>
<th>Y1</th>
<th>Y2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AG</td>
<td>70</td>
<td>75</td>
</tr>
</tbody>
</table>
From the table above, it can be seen that the highest score of the pre-test of the control group is 70 and the lowest score of the pre-test of the control group is 45. While the highest score of the post-test of the control group is 80 and the lowest score of post-test of the control group is 50. The mean of the pre-test is 56 and the mean of post-test of the control group is 63.

The data were gained after administrating the pre-test and post-test. Before the post-test, the researcher not applied treatment to the control group.

The Total Score of Pre-test and Post-test Experimental Group
The Total Score of Pre-test and Post-test Control Group

<table>
<thead>
<tr>
<th>No</th>
<th>Midwife Students’ Initial</th>
<th>Y1</th>
<th>Y2</th>
<th>d (Y2 - Y1)</th>
<th>$d^2$</th>
<th>dy (d - M)</th>
<th>$dy^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AG</td>
<td>70</td>
<td>75</td>
<td>5</td>
<td>25</td>
<td>-1.5</td>
<td>2.25</td>
</tr>
<tr>
<td>2</td>
<td>BD</td>
<td>65</td>
<td>70</td>
<td>5</td>
<td>25</td>
<td>-1.5</td>
<td>2.25</td>
</tr>
<tr>
<td>3</td>
<td>BG</td>
<td>50</td>
<td>60</td>
<td>5</td>
<td>25</td>
<td>-1.5</td>
<td>2.25</td>
</tr>
<tr>
<td>4</td>
<td>CT</td>
<td>55</td>
<td>60</td>
<td>5</td>
<td>25</td>
<td>-1.5</td>
<td>2.25</td>
</tr>
<tr>
<td>5</td>
<td>DN</td>
<td>60</td>
<td>80</td>
<td>20</td>
<td>40</td>
<td>13.5</td>
<td>182.25</td>
</tr>
<tr>
<td>6</td>
<td>ES</td>
<td>60</td>
<td>60</td>
<td>0</td>
<td>0</td>
<td>-6.5</td>
<td>42.25</td>
</tr>
<tr>
<td>7</td>
<td>EL</td>
<td>55</td>
<td>60</td>
<td>5</td>
<td>25</td>
<td>-1.5</td>
<td>2.25</td>
</tr>
<tr>
<td>8</td>
<td>EA</td>
<td>45</td>
<td>50</td>
<td>5</td>
<td>25</td>
<td>-1.5</td>
<td>2.25</td>
</tr>
<tr>
<td>9</td>
<td>FR</td>
<td>50</td>
<td>60</td>
<td>5</td>
<td>25</td>
<td>-1.5</td>
<td>2.25</td>
</tr>
</tbody>
</table>

Where the score of $M_x$:

$$M_x = \frac{\sum d}{N}$$

$$= \frac{260}{22}$$

$$= 11.81$$
### Data Analysis

The result of the test is calculated by using t-test formula as follows:

\[
 t = \frac{M_x - M_y}{\sqrt{\left(\frac{d_x^2 + d_y^2}{N_x + N_y - 2}\right) \left(\frac{1}{N_x} + \frac{1}{N_y}\right)}}
\]

where:

- \(M_x\) = the mean of experimental group
- \(M_y\) = the mean of control group
- \(d_x\) = the standard deviation of experimental group
- \(d_y\) = the standard deviation of control group
- \(N_x\) = the total number of samples of experimental group
- \(N_y\) = the total numbers of samples of control group

After the data have been collected it is also obtain that:

\[
\begin{align*}
M_x &= 11.81 \\
M_y &= 6.5 \\
d_x^2 &= 427.14 \\
d_y^2 &= 305 \\
N_x &= 22 \\
N_y &= 20
\end{align*}
\]

\[
 t = \frac{11.81 - 6.5}{\sqrt{\left(\frac{427.14 + 305}{22 + 20 - 2}\right) \left(\frac{1}{22} + \frac{1}{20}\right)}}
\]

Where the score of My:

\[
My = \frac{\sum d}{N} = \frac{130}{20} = 6.5
\]
The result of computation by using t-test is called t-observed. In this research, the result of computation by using t-test was 1.18 and the calculation of the score by using t-test for degree freedom (df) 42 (Nx + Ny -2 = 22+20-2 = 40) at level of significance 0.05 that critical value was 2.021. The result of computation by using t-test showed that t-observed (t-obs) was higher than t-table. It can be seen as follows:

\[ t-\text{obs} > t-\text{table} \]
with df 40
\[ 4.14 > 2.021 \]

It is mean that the alternative hypothesis was accepted.

### III. CONCLUSION

Based on the analysis of the data of the research as follow : (1). Semantic mapping techniques is one of the way for the lecture to increase the midwife students’ achievement. (2). Midwife students’ achievement in vocabulary taught by using Semantic Mapping Techniques is higher than midwife students taught without using semantic mapping techniques.

### REFERENCES


