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## The Effect of Semantic Mapping Technique on Technical Vocabulary Mastery for Midwifery Students

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### Abstract

*This study was conducted to test whether Semantic Mapping Technique affects midwifery students' technical vocabularies at the University of Prima Indonesia. Semantic Mapping is a technique of visual for the expansion of vocabularies and knowledge extension by displaying in words of categories related to each other. The total of 40 midwifery students in the academic year of 2018/2019 was taken as the research samples by applying two groups for pre-test and post-test experimental research design. The experimental group was taught by Semantic Mapping Technique while the control group was taught by conventional teaching technique of vocabulary. The research data were then analyzed using T-test. In this research, a multiple-choice test was used as the research instrument for collecting data. Both the experimental and control groups were asked to answer 50 test items in Pre-test and Post-test. The research data were then analyzed statistically by using T-test formula with the assistance of the SPSS program. The study revealed that the value of T-observed (4.41) was higher than the value of T-table (2.02) at the level of significance 0.05 with the degree of freedom (df) 40. It means that the alternative hypothesis stating that Semantic Mapping technique has a significant effect on midwifery students' technical vocabularies is significantly accepted. By so doing, this technique can be considered to be used to increase students' vocabularies.*

**Keywords:** Semantic Mapping Technique, technical vocabularies, midwifery students.

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## 1. INTRODUCTION

English for midwifery students is arranged to improve students' communication skills at work and English language knowledge in key areas of midwifery appropriate with the current healthcare situations. The syllabus is arranged based on the time availability provided by each midwifery education institution. English materials are commonly based on the setting of the service done by the staffs in a hospital from the beginning when a patient comes in the admission department. They get conversations on situations of admitting a new patient, checking vital signs, handling antenatal care (ANC) consultation, etc. All themes are provided in line with the required midwifery language competences such as listening, speaking, reading, writing and vocabulary. Vocabulary is one of the language aspects which should be learned, memorized and reproduced in order to communicate (Allen, 2006). A person vocabulary is the set of words he is familiar with a language that implies that learning a language means learning its vocabularies. Hence, when an a person initiates using a language, the need for vocabulary rises and this attests the prominence of vocabulary in his or her language use (Yaghoubi & Seyyedi, 2017).

In the context of midwifery institutions, English learning is focused on the mastery of technical vocabulary; that is, English for the midwifery profession. Midwifery students are offered various learning materials relating to occupational English of health-care settings especially for pregnancy and baby delivery. However, a lot of students graduating from nursing and midwifery department in Indonesia have low competency in English especially in mastering technical vocabularies in their field that result in a difficulty to compete with graduates from other Asian countries (Susanto & Latief, 2016). Students' language low competency is closely related to their low technical vocabulary mastery. The essence of technical vocabulary mastery for midwifery students is to improve their English proficiency. In addition, the majority terms of medical devices are in English that students should reproduce in order to be able to communicate well.

Recently vocabulary learning is only focused on providing insights for developing effective vocabulary teaching and learning (Dilek & Yürük, 2013). 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 a matter of learning the vocabulary of that language as indicated above. In a foreign language learning context, it is realized that it is an element of great importance and thus emphasized to a great extent. When this importance of vocabulary learning is taken into consideration, teachers cannot neglect the role of learning strategies in vocabulary learning and teaching. Another benefit of learning vocabulary is that students may transfer their knowledge to other language skills. In addition, Biggs (1999) argues that through vocabulary mastery, learners are allowed to one more channel of communication and can benefit from one more important source of input. If vocabulary mastery is improved, it may support to improve other language skills and can accelerate language learning. To be self-sufficient, learners must know how to learn. So, the aim here is to encourage self-sufficiency by helping learners recognizesituations where they could use these vocabulary learning strategies and become aware of thesestrategies that are particularly suitable for them and use them effectively. In this case, it is very important to guide students to use awareness of these vocabulary learning techniques to make

them not only more prepared for learning but also more analytic about their techniques they make use of. Therefore, suitable learning techniques of vocabulary are recognized as a way to empower students to take control of and responsibility for their vocabulary learning.

Midwifery English vocabularies usually consist of pregnancy, care for pregnant women, diseases related to pregnancy, female reproductive system, baby birth, baby care, vitamins for mother and baby, normal birth and cesarean birth. Realizing the limitations of mastery of midwifery English vocabulary, the research seeks to increase the mastery level of midwifery students by applying *Semantic Mapping Technique*.

Based on the preliminary observation and on the teaching of English for Midwifery students at Faculty of Nursing and Midwifery, University of Prima Indonesia, the researcher found that most midwifery students are lack of medical or technical vocabulary. The observation aims to discover the process of teaching by the observed teacher (Arbain, 2016). 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. Inside the interview with some students, they stated that they gain problems within the implicit and specific information of the textual content.

There are some benefits of using Semantic Mapping technique in teaching vocabularies. Firstly, it provides students the opportunity to think about the connections between terms being learned. Secondly, this technique can organize students' thoughts and visualize the relationship between key concepts in a systematic way. Thirdly, students can reflect their understanding of vocabularies. Realizing the benefits of this technique in teaching vocabulary, the researcher assumes that using Semantic Mapping Technique can be productive and beneficial to increase midwifery students' technical vocabulary mastery. The use of semantic mapping technique is expected to motivate the midwife students to learn and make them not bored in English teaching-learning process. Semantic Maps can be used to generate a set of related math ideas (using words, images, and symbols) and show how they are connected. With prompting or modeling, it can help students distinguish related yet different ideas (such as expression, equation, inequality, solution, and substitution) in a flexible format.

Besides its benefits in learning vocabularies, Semantic mapping technique is suggested not to be used as an individual worksheet for students. This technique is designed to enhance learning for all students in a small or large group setting. All students pull from their prior knowledge to create a visual map of vocabulary words/phrases/concepts or ideas that are connected to a central main word or idea. This technique can also vary in the way in which they are presented. Without the use of technology Semantic maps may be difficult for auditory learners; however, with the use of a smartboard auditory implements can be embedded into the map.

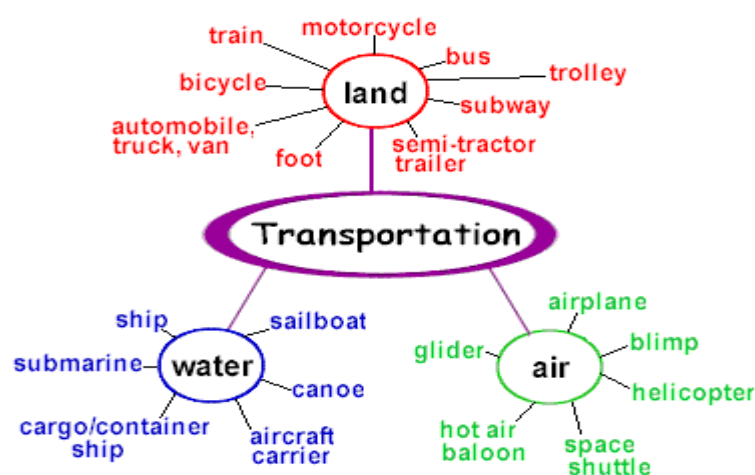
## **2. LITERATURE REVIEW**

### **2.1 Semantic Mapping Technique**

Semantic mapping technique is a technique of enhancing vocabulary by using graphic organizers in the forms of maps or webs of words. This technique is aimed at creating that can visually display the meaning-based connections between a word or

phrase and a set of related words or concepts. This technique can help students to identify, understand, and recall the meaning of words they read in the text.

A semantic mapping technique is a technique for graphically representing concepts (Antonacci, 1991). As a technique, semantic maps involve expanding a student's vocabulary by encouraging new relations to familiar concepts. In teaching and learning vocabulary, semantic maps can be used as a pre-reading activity for charting what is known about a concept, theme, or individual word. They can also be used during reading as a way to assimilate new information learned from the text. Semantic mapping technique is maps or webs of words. The purpose of creating a map is to visually display the meaning-based connections between a word or phrase and a set of related words or concepts. Semantic maps help students, especially struggling students and those with disabilities, to identify, understand, and recall the meaning of words they read in the text. Through this technique, a teacher can provide his students with direct instruction on how to apply the semantic map technique to increase their vocabularies. The following shows an example of a step-by-step set of directions in vocabulary teaching. First, pick a word they don't know from a text they are reading and marking the word. If they are using digital text, the teacher can highlight, bold, or underline the word. Second, use a blank map or begin to draw a map or web (either on paper or using an online tool). Third, place the word they don't know in the center of the map. Fourth, ask them to pronounce the word. If necessary, they can use an online dictionary with audio to help them. Fifth, ask them to read the text around the words to see if there are related words they can add to your map. If they are using digital text, they can get the computer to read the text to the teaching using the text-to-speech function. Sixth, use an online dictionary or online thesaurus to look up the word and find a definition. Seventh, ask them to find words and phrases that fit with the meaning. Select pictures/images (online or from available resources) or draw pictures that fit with the meaning. Eighth, add these words, phrases, or images to your semantic map. If they are working online, print out the map. Finally, ask the student to read the text again by applying the meaning of the word to the text and ask them to share and compare their maps with their classmates.



**Figure 1.** Semantic map on transportation.

Some benefits can be gained by applying Semantic Mapping Technique in teaching vocabulary. Firstly, it can draw upon current knowledge by firmly planting a

new word. Secondly, it can help students learn new words and build up background knowledge. Thirdly, it can build students' confidence along with their background knowledge. When students feel like they are on the solid ground in a new subject, and they will get ready to explore new territory.

## 2.2 English for Midwifery Students

English for Midwifery students is usually aimed at equipping students with the four language skills and medical vocabularies. Most English for midwifery students consists of review grammar and tenses; building medical terminologies; midwifery care sciences and medical equipment which are integrated in the practice of listening, speaking, and dialogue between midwife and patients (Nursalam, 2009).

English for midwifery students is a branch of English for Specific Purposes (ESP) since General English (GE) courses do not meet learners' needs. It deals with teaching and learning English for a particular purpose and field (Saragih, 2014). Its course focuses on the specific field delivered in English with specific vocabulary, terms, and other relevant things which are adapted to a particular context and the learners' specific needs. It is conducted to meet students' future career needs.

The major objective of the teaching of English for the midwifery program is to prepare midwives to communicate well in English in the scope of the health of women, newborns, and families in various settings. Upon completion of this English teaching, graduates will be able to comprehend and reproduce medical vocabularies relating to clinical practice, evidence-based midwifery practice.

## 2.3 Vocabulary Enhancement on Midwifery Students

For Midwifery students, medical vocabulary learning cannot be separated from other four language skills; listening, reading, speaking and writing. Although little attention to medical vocabulary learning has been given in the practice of learning, a lot of ESP teachers of English as a second or foreign language have realized that knowing a language means knowing its vocabulary as well (Dilek & Yürük, 2013).

Effective Vocabulary learning technique may help students learn and remember technical words. By using Semantic Mapping technique for different vocabulary items, students can increase their abilities on vocabulary learning. Teachers of a foreign language need to learn if this method can help them. The purpose of this experimental study is to see which of the two methods, using Semantic Mapping Technique or Traditional Technique, is more effective in helping

## 2.4 The Practice of Semantic Mapping on Technical Vocabulary Learning

In the teaching of Technical Vocabulary, there is a certain guideline that should be followed besides variability of the learners, differentiated instruction, and technology that can support students in understanding and creating maps displaying word relationships.

Teacher displays several models of semantic maps about familiar texts or topics. The class discusses the ways the ideas are connected, and how these connections are visually represented. If students do not have a lot of experience with this activity yet,

you should consider modeling the process of creating a semantic map while thinking aloud.

Students create a list of terms or ideas related to the target text or topic. Students write each term on a separate index card. Consider providing students with a list of all or some of the terms you want them to use. In groups or individually, students consider the relationships among the terms and organize the cards to represent the relationships among the words. Students may benefit from instruction in the types of relationships words or ideas may have with one another, such as:

- opposites · synonyms · concept-example · cause-effect · category-category member
- sequence (first, second...) · part-whole · entity-attribute

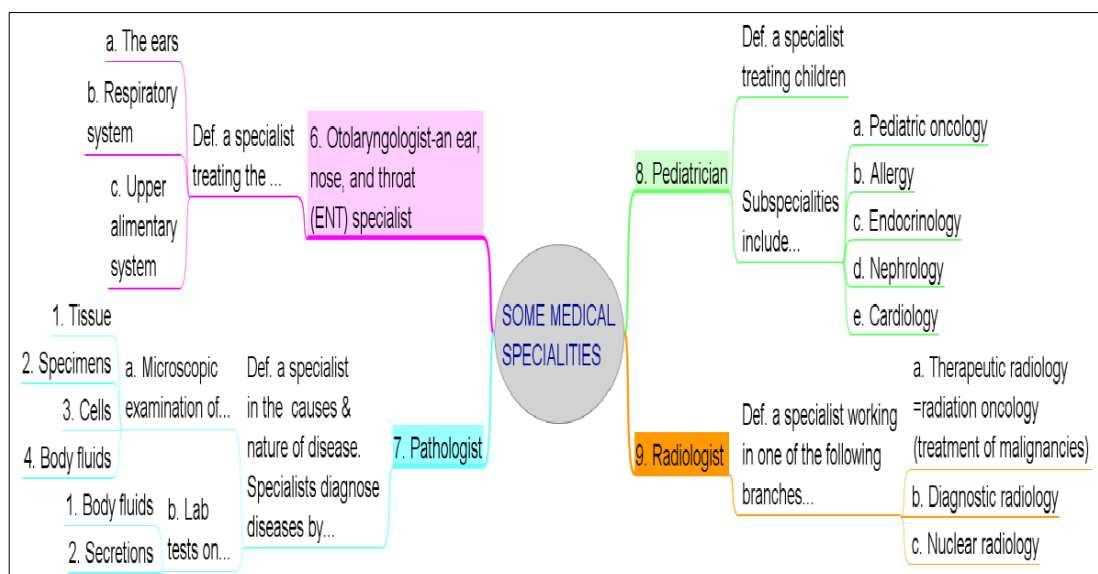
Once students are satisfied with their representation of relationships, they copy their semantic maps onto blank paper, drawing a circle around each term, placing them on the paper concerning one another, and connecting them by lines as appropriate. Students should be able to see several examples of semantic maps so that they understand how ideas can be visually represented. They may also choose to distinguish between more and less important ideas by text size or use a system of color-coding.

In pairs or small groups, students take turns presenting their semantic maps and provide feedback to one another. Some students will benefit from guidance for giving and receiving feedback. Modeling, role-playing, and sentence stems can help many students make these conversations effective.

Students reflect on their learning in groups or individually, either in conversation or writing. Students respond to questions including:

- Why is this called “mapping”? How is it different from other types of mapping?
- How does this mapping relate to the memories you are creating in your brain?
- How does semantic mapping affect your learning process?
- How might semantic mapping work if you were studying for a test?
- In what other contexts might this strategy be useful?

The example of the map of technical vocabularies of medical English is displayed in the following figure.



**Figure 2.** The semantic map on medical terms.

### 3. METHODS

The research applied a quantitative method with pre-test and post-test experimental research design. The total of 42 midwifery students of 5th semester in 2018/2019 at University of Prima Indonesia was selected by using the cluster sampling technique. The 42 samples were divided into two groups of experimental class and control class. Experimental groups consisted of 22 midwifery students while the control group consisted of 20 students. The experimental group was taught technical vocabularies using Semantic mapping technique while the control group was taught by the conventional way of vocabulary teaching and learning. Hence, the following hypotheses are formulated:

- Alternative hypothesis: semantic mapping technique affects midwifery students' technical vocabulary significantly.
- Null hypothesis: semantic mapping technique does not affect midwifery students' technical vocabulary significantly.

The research was conducted at the Faculty of Nursing and Midwifery, University of Prima Indonesia. The research instruments consisted of 50 multiple choice items on midwifery technical vocabularies which have been validated by using content validity and retested by using test-retest reliability. The research design is displayed in the following figure.

**Table 1.** Research design.

Groups	Pre-test	Treatment	Post-test
Experimental	√	Y	√
Control	√	Z	√

Where:

Y = Teaching vocabulary used semantic mapping technique.

Z = Teaching vocabulary without used semantic mapping technique.

√ = Test is given text.

### 4. RESULTS AND DISCUSSION

The research found that the highest score of the pre-test of the experimental group was 80 and the lowest score of the pre-test of the experimental group was 55 (see Table 2). While the highest score of the post-test of experimental group is 90 and the lowest score of post-test of the experimental group is 70. The mean of the pre-test is 66. 8 and the mean score of the post-test is 78, 6. The data were gained after administering the pre-test and post-test. Before the post-test, the researcher applied the treatment, by applying Semantic Mapping Technique in teaching technical vocabularies to midwifery students. On the other hand, the control group was taught technical vocabularies by using a conventional technique of teaching.

Meanwhile, the test result showed that the highest score of the pre-test of the control group was 70 and the lowest score of the pre-test of the control group was 45 (see Table 3). While the highest score of the post-test of the control group was 80 and the lowest score of post-test of the control group was 50. The mean of the pre-test was 56 and the mean of post-test of the control group was 63.

**Table 2.** Students' Score of Pre-test and Post-test on Experimental Group

No	Midwife Students' Initial	X1	X2	d (X2-X1)	d <sup>2</sup>	dx (d-Mx)	dx <sup>2</sup>
1	AN	70	80	10	100	-1.81	3.27
2	AM	60	70	10	100	-1.81	3.27
3	AG	70	80	10	100	-1.81	3.27
4	EK	70	80	10	100	-1.81	3.27
5	EN	70	80	10	100	-1.81	3.27
6	ET	80	85	5	25	-6.81	46.37
7	FD	60	80	20	400	8.19	67.07
8	HR	60	70	10	100	-1.81	3.27
9	HY	80	90	10	100	-1.81	3.27
10	JK	70	75	5	25	-6.81	46.37
11	JM	60	70	10	100	-1.81	3.27
12	JS	70	80	10	100	-1.81	3.27
13	NV	60	80	20	400	8.19	67.07
14	NS	60	80	20	400	8.19	67.07
15	RD	70	90	20	400	8.19	67.07
16	SP	65	80	15	225	3.19	10.17
17	ST	70	80	10	100	-1.81	3.27
18	SD	70	80	10	100	-1.81	3.27
19	SI	70	80	10	100	-1.81	3.27
20	TD	70	80	10	100	-1.81	3.27
21	YN	60	70	10	100	-1.81	3.27
22	YK	55	70	15	225	3.19	10.17
TOTAL	1470	1730	260	3500		427.14	
MEAN	66,8	78,6					

**Table 3.** The total score of pre-test and post-test control group.

No	Midwife Students' Initial	Y1	Y2	d (Y2-Y1)	d <sup>2</sup>	dy (d-My)	dy <sup>2</sup>
1	AG	70	75	5	25	-1.5	2.25
2	BD	65	70	5	25	-1.5	2.25
3	BG	50	60	5	25	-1.5	2.25
4	CT	55	60	5	25	-1.5	2.25
5	DN	60	80	20	400	13.5	182.25
6	ES	60	60	0	0	-6.5	42.25
7	EL	55	60	5	25	-1.5	2.25
8	EA	45	50	5	25	-1.5	2.25
9	FR	50	60	5	25	-1.5	2.25
10	JY	50	55	5	25	-1.5	2.25
11	JR	50	60	10	100	3.5	12.25
12	JI	45	50	5	25	-1.5	2.25
13	JO	60	70	10	100	3.5	12.25
14	MA	70	80	10	100	3.5	12.25
15	NL	65	70	5	25	-1.5	2.25
16	NS	50	55	5	25	-1.5	2.25
17	RB	55	60	5	25	-1.5	2.25
18	SR	60	65	5	25	-1.5	2.25
19	UN	60	65	5	25	-1.5	2.25
20	YH	45	55	10	100	3.5	12.25
TOTAL		1120	1260	130	1150		305
MEAN		56	63				

The result of computation by using T-test showed that the value of T-observe was 4.14 while the value of T-table was 2.021 with the degree of freedom 40 at the significant value of 0.05. Since T-observed was higher than T-table, it was determined that the alternative hypothesis stating that semantic mapping technique affects



midwifery students of technical vocabulary significantly is accepted. This concurs with previous researchers who have found the benefit and significant of semantic mapping technique to EFL students (Dilek & Yürük, 2013).

This study has shown that the semantic mapping as a teaching technique has assisted the midwifery students in improving their English technical vocabulary. This is because the technique supported the students in increasing their comprehension. As Sadeghi and Taghavi (2013, p. 12) asserted, semantic mapping is “a strategy to activate, assess and embellish students’ prior knowledge of a topic before reading”. Basically, its multiple advantages in reading comprehension integrated the students’ new information with prior knowledge.

## 5. CONCLUSIONS

Based on the research findings, it is concluded that Semantic Mapping Technique affects Midwifery Students technical vocabulary mastery significantly which can be proved by the computation analysis of T-Observed 4.14 which was higher than T-table 2.021. It implies that the alternative hypothesis is accepted while the Null hypothesis was rejected.

Based on the conclusion drawn, some suggestions are proposed: (1) English lecturers of midwifery students need to facilitate his students with suitable technique to increase their technical vocabularies so that they can communicate successfully in their field of work. (2) Semantic mapping Technique is an effective alternative technique to be used in vocabulary teaching to increase midwifery students’ technical vocabularies. Semantic mapping technique is a great technique for students’ vocabulary learning. It fosters collaborative brainstorming which is beneficial for vocabulary building. It can also be used to review concepts before an assessment. Semantic mapping technique can be used with technology fairly easily. Smartboards make semantic maps hands-on and can implement sound and movement into the map. I have personally used semantic maps in my own classroom and found them highly effective. It engages students and makes vocabulary connections to new words or concepts.

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