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Semantic Mapping and Its Effect on Vocabulary Skill Development of Grade 10 Students

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Abstract — The concept and use of semantic mapping technique and its relationship to vocabulary development have been significantly defined in this work. The purpose of this study was to investigate the use of semantic mapping strategy in vocabulary development and retention among Grade 10 students and to find out whether there is a relationship between semantic mapping and vocabulary learning strategies. The study involved thirty Grade 10 students who were officially enrolled at Bacongco National High School in Koronadal City, academic year 2016 – 2017. The study employed a quasi – experimental design under the one – group pretest – posttest measures. The group was not given the semantic mapping as a vocabulary enhancer at the outset and upon administering the pretest. The same students received the intervention in preparation for the posttest given. The findings of the study indicated that there is a difference in the pretest and posttest scores of the one – group respondents. There is a significant difference in the mean gain scores of the pretest and posttest. There is a strong relationship between semantic mapping and vocabulary learning in terms of enhancing students' vocabulary acquisition. Based on the research conducted, it was proven that the use of semantic mapping strategy is effective as a technique to improve and enhance vocabulary development and retention among the Grade 10 students.

Keywords — Semantic Mapping, Vocabulary Development, Grade 10, One -Group Pretest-Posttest

I. Introduction

The value of vocabulary learning cannot be oversimplified since understanding is the ultimate aim of reading. The medium of communication is language, therefore, listening, speaking, reading, and writing are all improved when there is a large vocabulary. Nevertheless, learning problems are manifested once a learner has low vocabulary knowledge that also parallels with poor academic achievement in various common areas of learning and this situation clearly describes that vocabulary teaching and learning seem not promising.

In Saudi Arabia, a study conducted that involved the undergraduates of Prince Sattam bin Abdullaziz University has confirmed that the learners experience vocabulary – learning problems even at the university level of education (Afzal, 2019). On the same finding, Rohmatillah (2017) investigated the difficulties faced by students in learning English vocabulary. He identified a number of obstacles that students face in their vocabulary-learning activities. Moreover, in Thailand, the importance of vocabulary learning is discussed in the national curriculum which

specifies the amount of vocabulary words that should be learned due to the vocabulary – related problems among their learners (Office of Basic Education, 2014).

In the Philippine context, the study conducted by the Southeast Asian Ministers of Education Organization and the United Nations Children's Fund (UNICEF, 2020) showed that majority of Grade 5 pupils had reading proficiency levels comparable to those in the first years of primary school, with 27% of students still at the level where they can only match single words to a picture of a common object or concept. Moreover, only 29% of Grade 5 pupils in the country are capable of reading a variety of texts and beginning to connect with their meanings (Balinbin, 2020). Paralleled to these findings is the result of the investigation that included freshmen and seniors taking up Bachelor in Elementary Education and Bachelor in Secondary Education in state and private colleges in Tarlac. Likewise, Calub and Calub (2017) found out that the pre – service teachers in both public and private schools still lack the productive vocabulary in English to make them proficient speakers and writers and which has affected their communication ability.

The reading profile of Bacongco National High School also uncovers some beginning, frustrated, and instructional readers who are in Grades 7 and 8 even those who are already in a higher grade in the current school year. The Reading Program caters to 55 clienteles, 7 of whom are beginning readers while 12 are in the frustration stage. The remaining 36 students are considered instructional readers. An identified salient factor in the low academic performance of these students is the poor or weak vocabulary building and reading comprehension.

The spelled-out findings motivated the researcher to conduct the study to determine the effect of semantic mapping in developing and improving the vocabulary retention of Grade Ten students.

Literature Review

Semantic Mapping Strategy

Kholi and Sharifafar (2013) defined "semantic mapping" as a visual strategy for vocabulary expansion and extension of knowledge by displaying in categories words related to one another. These almost graphic organizers are not pre-made, but made by the students to help web out their ideas. Semantic maps go beyond just a graphic organizer. Their strength is an adaptation of concept definition mapping but it builds on students' prior knowledge or schema. It identifies essential components and their relationships while building on prior information. This building on previous knowledge is extremely important for their development of vocabulary.

In addition, semantic mapping strategy can help students to distinguish one word from another. Vaughn and Edmonds (2006), as cited in Manoli and Papadopoulou (2012), explained 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. Similarly, Bouchard (2005) maintained that semantic mapping provides a partial and visual venue for students to organize

ideas, display relationships, and retain important details. Therefore, semantic mapping strategy 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. Pittelman and Johnson (1985), as cited in Saeidi and Atmani (2010), argued that semantic maps can help teachers assess the prior knowledge of their students and can help make students ready to encounter a text.

In teaching vocabulary, various techniques need to be used in order to motivate the learners to enjoy the English class and to avoid them from getting bored in learning process. Semantic mapping technique emphasizes comprehension by using the connections among words. The students easily remember words better as they see them in a map because semantic mapping is a good vocabulary presentation technique. A study conducted 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. Khamesan and BaradaranKhaksar (2011) explored that the effect of individual and collaborative concept mapping on learning EFL. The results indicated that in the collaborative concept mapping group, vocabulary and reading comprehension scores were significantly higher than those of traditional teaching group.

Vocabulary Acquisition

According to Nordquist (2014), vocabulary acquisition is learning the words of a language. How young children obtain the vocabulary of dialect differs from how older children and adults acquire the vocabulary of a second language. Tajeddin and Daraee (2013) explained two ways of vocabulary learning – intentional and incidental. Intentional vocabulary learning, also known as deliberate learning, allows learners to learn words directly, in more focused and goal-directed ways. Similarly, Schmitt (2008) stated that intentional vocabulary learning leads to faster gains and better retention. Furthermore, intentional or deliberate learning, aimed to establish vocabulary learning, raises learners' awareness of the unknown words and helps them acquire knowledge on strategies that could assist them in learning an enormous number of words.

On the other hand, incidental vocabulary learning refers to learning without intent to learn. Laufer (2003) defined incidental vocabulary acquisition as a result of any activity not directly related to the lexical acquisition. He explained that incidental learning does not mean that the learners do not attend to words during the task. They may attend to the words, but they do not thoroughly put these words into their memory. Both Tajeddin and Daraee (2013) believed that incidental learning involves more unintentional vocabulary learning.

Moreover, in teaching vocabulary, various techniques need 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. Rupley et al (2012) insisted that vocabulary instruction allowed students to practice immersed in language-rich activities that teach words as part of meaningful reading experience. In addition, they stated that vocabulary instruction does not solely consist in copying a list of words and then looking up the definitions of those words. This was simply a rote activity that did not give the student access to the meaning of words representative of the concepts and content of what they read.

Vocabulary Teaching

Traditionally, vocabulary has not been taught in particular subject, but has been taught within lesson of speaking, listening, reading and writing. During the lesson, students use their own vocabulary and are introduced to new words provided by the teacher and classmates which they apply to classroom activities. However, teaching vocabulary may be problematic because many teachers are not confident about the best practice in vocabulary teaching and at times do not know where to begin to form an instructional emphasis on word learning (Berne & Blachowicz, 2008). Both teachers and students agree that acquisition of the vocabulary is a central factor in teaching a language (Walters, 2009). Different techniques are used by teachers, such as teaching the words through lists, translation, synonyms, antonyms, contexts, realia, and other strategies. Some teachers believe before teaching vocabulary to their students, they should have been taught the grammar of the foreign language. Therefore, they give little or no attention to vocabulary. Vocabulary teaching should be part of the syllabus, and taught in well planned and regular basis. Rahma (2016) stated that vocabulary teaching should be based on learner generated word meanings. Learner involvement increases understanding and memory; thus, when students use their experience and background knowledge to define words, they learn better.

Meanwhile, words serve as labels for concepts and students associate words to larger vocabulary and experiences. However, Kebiel (2012) investigated teachers and students' perceptions in vocabulary learning strategies. It was found from the study that the majority of the teachers and students don't have adequate knowledge about learning strategies and vocabulary learning strategies. Teachers are not aware of the importance of vocabulary and vocabulary learning strategies. Vocabulary teaching is aimed at enabling learners to understand the concepts of unfamiliar words, gain a greater number of words, and use words successfully for communicative purposes (Cahyono and Widiati,2008). Moreover, Intaraprasert (2004) emphasized that the main goals of vocabulary learning are to discover the meanings of a new words, to retain the knowledge of newly-learned words, and to expand the knowledge of English vocabulary. Employing effective strategies both in teaching and learning the vocabulary will have positive contribution to students' vocabulary growth which will affect their language skills.

Semantic Mapping and Vocabulary

Coghlan and Brydon-Miller (2014) recommended that semantic mapping should be one of the techniques used for creating an informational organization environment. It helps to give connected structure or order and helps students to see the relationship among words. It also shows the various ways that vocabulary can be organized and categorized. Flood et al. (2008) and Barclay (2011) added that a semantic map or web is a graphic demonstration of sets of vocabulary and their relationship to each other. Meanwhile, Roe et al. (2014) elucidated that a semantic map strategy is one type of graphic organizer. It helps students visually organize and graphically show the relationship between one piece of information and another. This strategy has been identified by researchers as an excellent technique for increasing the retention of vocabulary; students learn better when they get exposed to these strategies of semantic mapping. According to Farris (2001), connecting or finding conceptual mapping by grouping words with each other will reconstruct better vocabulary learning.

Effectiveness of Graphic Organizers

Graphic organizers are effective tools in learning the content. Tileston (2004) reported that the graphic organizers help students organize their notebooks, their notes, and the essential information that will be helpful to them as a guide to use in the future. Note taking using organizers was found to help some students improve their writing. Fordham, Wellman, & Sandmann (2002) reported that students could more easily summarize a section of text through writing or prepare for an essay about a certain topic if they used organizers, and with this type of support, students at all levels can approach a writing task more confidently. Farris (2001) agrees that the graphic organizers can help with everyday classroom tasks like reading, writing, note taking, and group work.

Noting the importance of graphic organizers in learning, Little and Box (2011) contends that visual aids like graphic and advance organizers help students to develop their connection between prior knowledge and new knowledge. Fisher and Frey (cited in Little and Box, 2011) say that studies have shown that providing students with background information on a topic through the use of specific pre-reading strategies such as advance or graphic organizers implemented before reading or studying the topic is likely to assist in schema building.

Moreover, Farris (2000) suggested that graphic organizers can help students develop important cognitive functions because the organizers help students think about specific operations and outcomes in the material. His research also states that graphic organizers can help strengthen study habits. Some authors found that graphic organizers were useful for improving cognitive skills in a variety of ways. In addition, Strong, Silver, Perini, & Tuculescu (2002) found similar results in their studies. They found that after using graphic organizers, students saw information more clearly in six main categories: sequences, topic descriptions, cycle structures, problem and solution, and cause and effect relationships.

Moreover, Zahedi, et al (2012) described graphic organizers as powerful tools that do not only tell students the relationships between concepts but also show them visually the connections. Students can use graphic organizers before a lesson to lay the foundation for new ideas, to recall what they know, and to make connections between the two. Graphic organizers can be employed to take and organize notes to review and prepare for tests. They also help students to identify main ideas, important information, compare and contrast, recognize patterns, and comprehend the content. These uses of graphic organizers make them an effective strategy for students.

Vocabulary Acquisition Using Semantic Mapping

Vocabulary is a vital aspect of language skills and constitute a strong part of the framework for how well learners engage with each other. In this regard, Nash and Snowling (2006) described vocabulary as the knowledge of words and their meanings. Numerous researches have established the link of vocabulary and comprehension to the school success of the learners. Manzo, Manzo, and Thomas (2006) concluded that the capacity to learn is improved by word learning and rich vocabulary. Simply stated, Lubliner and Smetana (2005) declared that children with larger vocabularies find reading effortless, read more widely, and do better in school. Students with larger vocabularies usually articulate responses to questions and ask better questions than their peers with a limited vocabulary. In fact, not only language classes benefit from the rich vocabulary learning of the learners. Other areas of learning can profit from the students' rich vocabulary skills.

Teachers can help students gain understanding of vocabulary by using multiple strategies to connect the meaning of the text to the topics students read (Vacca & Vacca, 2011). Abdelrahman (2013), revealed through his study that student can be active in the class when teacher using semantic mapping as a strategy in learning vocabulary. It is proven from the result of students' post-test students in experimental class had high score than students in control class. Moreover, this finding is verified from the research findings which were conducted by the following previous researches. First, the research conducted by Dilek and Yuruk (2012) revealed that the semantic mapping strategy can improve students' vocabulary knowledge. The use of semantic mapping strategy was more effective and motivating them than conventional teaching strategy. Also, from this research, semantic mapping has been found out as an effective strategy for learning target vocabulary. Accordingly, as concluded by Chiou (2008), adopting a semantic mapping strategy instruction can significantly improve the learners' vocabulary acquisition, compared to using the traditional teaching method.

Although it appears that students can really benefit from teachers who include vocabulary instruction in their lesson, yet, instructional methods of effective vocabulary instruction remain elusive. Bromley (2007) stated that teachers have to help vocabulary to students who find reading difficult, but it is a difficult job choose the most specific form of vocabulary training. Therefore, methods of vocabulary instruction vary greatly.

Vocabulary Skill Development

There is much agreement among linguists and language experts that inadequate vocabulary development is the basis for many problems associated with underachievement. Vocabulary development is a process of acquiring new words to use in daily life. It is critical for both oral and written vocabulary development to increase as students get older to enable them to comprehend increasingly more complex grade level text (Loftus & Coyne, 2013). Yet, after students leave school, inadequate vocabulary development continues to affect vocational success adversely (Otto, 2008). Vocabulary development then is an essential skill, which needs emphasis in all English classes. Extensive evidence indicates that English learners can perform as well as their English-only peers on word-level skills such as decoding, word recognition, and spelling (August & Shanahan, 2006; Baker & Baker,2008). However, research also indicates that English learners do not attain the same levels of performance on text-level skills such as reading comprehension and writing, in part because of their low English proficiency, but mainly because of their low receptive and expressive vocabulary knowledge, their limited understanding of syntax or grammar, and their limited listening and reading comprehension (Baker, et al, 2011; Dressler & Kamil, 2006; Geva & Farnia, 2012; Kieffer, 2010).

Nation (2011) further describes the relationship between vocabulary knowledge and language use as complementary: knowledge of vocabulary enables language use and, conversely, language use leads to an increase in vocabulary knowledge. Researchers such as Marion (2008) and Nation (2011) and others have realized that the acquisition of vocabulary is essential for successful second language use and plays an important role in the formation of complete spoken and written texts. Underscoring the importance of vocabulary acquisition, Schmitt (2008) emphasizes that "lexical knowledge is central to communicative competence and to the acquisition of a second language. However, recent research indicates that teaching vocabulary may be problematic because many teachers are not confident about the best practice in vocabulary teaching and at times do not know where to begin to form an instructional emphasis on word learning (Berne & Blachowicz, 2008).

Pretest Without Semantic Mapping

Evaluators often use pretests and posttests in their evaluation designs, taking measures before and after an intervention to see what difference the intervention made (Lamb, 2005). In the study of Rupley et al (2012), the researchers employed two tests which were the pretest and posttest. The pretest intended to see the students' ability in vocabulary before giving treatment, while the posttest was undertaken to know the students' vocabulary mastering after treatment and the effectiveness of semantic mapping used in learning vocabulary. Pretests—taking tests before target information is presented—have the potential to significantly enhance the retention of to-be-remembered information (Little and Bjork, 2016).

In typical pretesting studies, all participants read a passage on novel content, but some participants first answer a series of questions, like a pretest, on the content before reading the passage. On a final test, which could be immediate or delayed, all participants answer questions that assess their memory and understanding of the pretested content. The typical finding is that pretested information is learned better than non-pretested information. This learning benefit has been recently shown with materials of various complexities (Potts and Shanks, 2014 & Carpenter and Toftness, 2017). The significance of pretesting before the intervention of semantic mapping strategy is shown in the researches conducted by Zarei & Adami (2013), Abdelrahman (2013), Sasan & Naeim (2011), Khoii & Sharififar (2013), and other researchers whose results of the study had showed the increase of vocabulary learning after the semantic mapping was employed in instructions.

Semantic Mapping and Posttest

One of the most respected methods to measure change in individuals is the experimental pretest-posttest design using a control or comparison group (Kaplan, 2004). Two reasons for the deference to the pretest-posttest method are its presumed tight scientific control over threats to internal validity and the fact that it can be used to make comparisons between the same people, or groups of people, at different points in time. A pretest-posttest design is a kind of experiment in which a group is tested/studied before and after the particular experiment or activity is administered. In this way it is possible to determine what changes if any have taken place and thereby judge the effect or value of the experiment (White, 2019). The recent studies of Zarei & Adami (2013), Abdelrahman (2013), Sasan & Naeim (2011), Khoii & Sharififar (2013) showed how the use of semantic mapping as a vocabulary instruction strategy has assisted the learners to improve their vocabulary development and retention as indicated in the posttest results.

Semantic Mapping and Its Impact on Vocabulary Development

The insufficiency of local studies related to the present study had brought around the researcher to lean on foreign studies conducted. The emphasis on the common ground highlights the components shared by the present study and the studies conducted in this area. Nilforoushan (2012) explored the effect of teaching vocabulary through semantic mapping on the awareness of two affective dimensions, evaluation and potency dimensions of profound vocabulary knowledge and the general vocabulary knowledge of English as a Foreign Language (EFL) students. Sixty female adult learners participated in this study and were randomly divided into two groups, experimental and control, each consisting of 30 students. In the end, students took a vocabulary achievement test and a test of awareness of evaluation and potency dimensions of vocabulary knowledge. The obtained scores revealed that semantic mapping fundamentally increased the learners' familiarity with the two dimensions.

The result of the study of Nilforoushan (2012) was confirmed by Abdollahzadeh and Amiri (2009). They investigated the effectiveness of vocabulary instruction via semantic mapping

compared to the established traditional vocabulary teaching techniques in Iran. The study conducted a sample of two hundred and sixty-four intermediate adult Iranian EFL learners from different language institutes in Orumieh. They formed two equal groups consisting of nine classes in the control group and eight classes in the experimental group. The posttest showed the dominance of the group, which was had the semantic mapping strategy.

In the same vein of the findings, Ossen (2004) investigated the potency of two vocabulary teaching techniques on vocabulary recognition and interpretation of science textbook content with English and Spanish-speaking elementary school students. The study involved 136 students who composed the control group and two experimental groups**:** semantic mapping and context/ definition. The significant difference in the mean scores favored the influence of teaching vocabulary employing the semantic mapping approach.

Similarly, Zaghlool (2004) explored the effect of a vocabulary instructional program based on semantic strategies on students' achievement of lexical items enrolled in the academic year 2003 - 2004 in public schools in Zarka. The sample of the study involved 163 male and female secondary scientific students allocated in four intact classes. A control and experimental groups were formed by two male groups while two female classes also formed the control and experimental groups, respectively. The experiment resulted in the positive impact of the instructional procedure based on semantic strategies.

The studies above are comparable to the present study to group the subjects into control and experimental to assess the learners' vocabulary performance using the strategies employed. A smaller body of research has examined the effect of gender on L2 learning vocabulary (Catalan, 2003; Grace, 2000; Gu, 2002). Sociocultural influences like culture and educational background mark some vocabulary differences in vocabulary understanding. In one study, a test of academic lexicon given to university ESL students showed that male participants had a better academic vocabulary than the females. In contrast, female participants outperformed males in general vocabulary size in L2 in a related sample (Grace, 2000).

Another investigation using a quasi-experimental design observed the conduct of L2 vocabulary learning and vocabulary learning strategies. One study found no differences in the vocabulary performance between male and female participants' short and long-term retention of target vocabulary items inherent in a text (Grace, 2000). However, with the intervention of L1 translations, all participants attained better retention. Although previous research has found a positive influence on adding imagery to similar abstract terms in the field of visual input and language learning of abstract lexicons (Farley et al., 2012), none of these studies have explicitly looked at the impact of gender. If males do have a stronger tendency than females to rely on visual imagery, this could contribute to the learning efficacy of concrete and abstract words.

Kershavarz et al.'s study (2006) on the effect of semantic mapping on vocabulary learning of 120 Iranian students utilized the pretest and posttest in the form of multiple-choice types of tests

consisting of questions based on the passages read. Students read the passages and employed the semantic mapping approach and the conventional vocabulary exercises and activities. The present study and this evaluation method show parallelism in the type of testing conducted.

Similarly, the study of Saeidi & Atmani (2011) has examined the effect of semantic mapping on learning vocabulary across genders. There was an administration of the pretest and the posttest to capture any significant differences between the performance of the participants based on their gender. The experimental groups, both male and female, received an instruction that used a diagram showing the relationship of words given by the students. The key concept was written at the center, while other words solicited from the students were written at the side. When students had difficulty identifying the categories, the teacher helped them overcome the difficulty by asking some guiding questions. They used their semantic maps when the teacher gave them a copy of the text to be read silently. Subsequently, they answered the follow-up comprehension questions. The control groups, both male and female, read a short passage. Students asked questions about the topic to check their comprehension. Translating the important words from the text, the teacher asked the students to read the text within a specified time limit. After the silent reading, the students answered the follow-up comprehension questions.

Correspondingly, Bataineh (2010) carried out a study to find whether 400 Jordanian EFL learners, male and female, encode vocabulary in-memory clusters according to semantic clusters more than acoustic clusters. The data were collected using a short-term vocabulary recognition test, a 20-item multiple-choice vocabulary test, and a 359-word cloze passage. On semantic clustering in favor of female students, the study revealed substantial differences between male and female students.

II. Methodology

Research Design

The present study was categorized as a one-group pretest-posttest under the quasi-experimental design. Ary et al (2010) maintained that experimental research involves a study of the effect of the systematic manipulation of one variable on another variable. The manipulated variable is called the experimental treatment or the independent variable. Craig et al. (2017) said that the design becomes a means for understanding how many of the extraneous variables that threaten internal validity takes place. Investigators need interventional study designs that are more applicable to the long run, hoped-for treatment population, and achieve a stronger balance of internal and external validity. To support this need, quasi-experimental designs, which first gained popularity in social science research, are increasingly being used. Besides that, Ammerman et al. (2014) argued that using a quasi-experimental design to assess the effect of a previously applied intervention will boost causal inference.

Similarly, Creswell (2008) defined quantitative research as a type of educational research in which the researcher decides what to study, asks specific, narrow question, collects quantifiable data from participants, analyzes these numbers using statistics, and conducts the inquiry in an unbiased, objective manner.

The three phases in the one-group pretest-posttest design include administering of a pretest measuring the dependent variable, giving the experimental treatment to the subjects, and administering a posttest measuring the dependent variable. Differences attributed to the application of the experimental treatment are evaluated by comparing the pretest and posttest scores (Avrianti, 2015). Respondents of the study included thirty Grade 10 students. In this design, the participants' vocabulary performance was measured and compared using the results in the pretest and posttest, where a change occurred as a result of semantic mapping as an intervention.

The design allowed the researcher to compare the results obtained from the results of the pretest and posttest of the same group of students. The compiled references, such as the NAT reviewers, textbooks, and online source materials, were essential sources for the pretest and posttest questions.

Sampling Procedure

The researcher identified one section of Grade Ten students who were grouped heterogeneously. The students were chosen randomly since only thirty of them were the subjects of the study.

Instrumentation

According to Creswell (2012), an instrument is to measure the variables in the study that may not be available in the literature or commercially. He explained that developing an instrument consist of several steps such as identifying the purpose of the instrument, reviewing the literature, writing the questions, and testing the questions with individuals similar to those who are part study. Furthermore, Sugiyono (2009) stated that a research instrument is a tool or instrument used to measure nature and social phenomena observed. In this research, the researcher collected the data through administering a test. A test is an instrument or procedure designed to measure the student's ability.

The study employed two instruments, namely, the pretest and posttest in vocabulary and the lesson guides. Ary et al (2010) stated that a test is a set of stimuli presented to an individual in order to elicit responses on the basis of which a numerical score can be assigned. Correspondingly, Avrianti (2015) explained that a test is a series of questions or exercises, or any other method, that is used to assess an individual's or a group's abilities, expertise, intellect, capacity, or talent.

Statistical Tools

The pretest and posttest phases of the study brought in germane data figures, which were tabulated and underwent statistical treatments. In determining the mean gain scores of the one-group participants, arithmetic mean was used. In identifying the significant difference between the pretest and posttest scores of the one-group participants, a t-test was used. A T-test is used to determine if the difference between the two means is statistically significant. In this study, a t-test was used to compare the pre-test that students took before the study with the means of the post-test they took after the study. All statistical tests were set at a 0.05 level of significance.

III. Results and Discussion

Significant Difference in the Pretest and Posttest Scores of One-Group Participants

The researcher determined the mean gain scores of the pretest and posttest results of the one-group respondents. Tables 1 and 2 show the data regarding the difference in the scores and mean gain scores of the pretest and posttest results of the one - group participants.

As shown in Table 1, the one-group participants have acquired 6.42 as a computed T value, which is set in 0.05 as the level of significance. Since the value of T is 6.42 and is at the critical region, it indicated that the null hypothesis should be rejected. Therefore, it revealed that there is a difference in the pretest and posttest scores of the one - group participants. The result affirmed that the semantic mapping in vocabulary instruction is more effective than employing the conventional strategy.

Moreover, this finding is verified from the research findings which were conducted by the following previous researches. First, the research conducted by Dilek and Yuruk (2012) revealed that the semantic mapping strategy can improve students' vocabulary knowledge. The use of semantic mapping strategy was more effective and motivating them than conventional teaching strategy. Also, from this research, semantic mapping has been found out as an effective strategy for learning target vocabulary. Second, the research conducted by Abdelrahman (2013) which indicated that students could be active in the class when the teacher uses semantic mapping as a strategy in learning vocabulary. The findings of Abdelrahman (2013) paralleled the results shown in this current study. Thus, these findings concluded that the group has a higher mean gain during the posttest phase. It is also supported by the previous finding of Schelinger (2000), as cited in Saeidi & Atmani (2011), which reported a strong relationship between semantic mapping and vocabulary learning.

Table 1
Significant Difference in the Pretest and Posttest Scores of One-Group Participants

Level of Significance	Degree of Freedom	Critical Value	Computed Values of T	Decision
$^{\alpha}$ = 0.05	29	t = + 2.0452 -	6.42	Reject H_o Accept H_a

Significant Difference in the Mean Gain Scores of the Pretest and Posttest of One-Group Participants

Table 1 shows the significant difference in the mean gain scores of the pretest and posttest using the variance. The difference reflected that the pretest and posttest scores of the one-group participants are 3.0147 points lower than the pretest that in the posttest, while 5.8453 points in the posttest than in the pretest. On this basis, the result described a rejection of the null hypothesis **(H_o).** Hence, there is a significant difference in the mean gain scores of the pretest and posttest. More to the point, it should be considered that using a semantic mapping strategy as an intervention was better working as an approach in vocabulary instruction for the Grade Ten students.

This result means that semantic mapping strategy instruction led to significant improvement in the participants' vocabulary acquisition. This improvement may be due to the cognitive feature of semantic mapping. According to Dilek (2012), more successful and fun techniques can be more appealing to learners than conventional techniques that are not challenging. In his research, a semantic mapping technique was used as an alternative method of teaching vocabulary items where students took an active part in the learning process with this method.

Moreover, this finding is also supported by previous relevant researches. One of them was studied by Abdelrahman (2013) which indicated that semantic mapping has a major impact on students' vocabulary awareness by encouraging them to build lexical networks among words. Khoii and Sharififar (2013), revealed that semantic mapping is a visual strategy for vocabulary expansion and extension of knowledge by displaying in categories related to another words. They also revealed that semantic mapping has two aspects in teaching and learning language, they are visual and conceptual. In teaching vocabulary, it can be used as a tool for students to discover the relationships between vocabulary words. Accordingly, as concluded by Chiou (2008), adopting a semantic mapping strategy instruction can significantly improve the learners' vocabulary acquisition, compared to using the traditional teaching method.

Another plausible reason why semantic mapping strategy instruction boosted the participants' vocabulary acquisition is that it triggered classroom interaction and collaboration, which are important aspects of an effective learning environment. The research conducted by

Abdelrahman (2013) revealed that student can be active in the class when a teacher uses semantic mapping as a strategy in learning vocabulary. In this study, it is proved from the result of students' posttest results after they were taught using the semantic mapping. The participants used to work in groups to find related words simultaneously. Such collaborative effort created a scaffolding learning environment, which had positive effects on their vocabulary acquisition.

A third possible interpretation is rooted in the different structures of semantic mapping in the form of a square, circle, or oval. These structures appealed to the participants' various learning abilities. Zahedi and Abdi (2012) argued that the result of their study showed how students easily understand the words by using semantic mapping as a teaching strategy. Accordingly, by addressing the participants' different abilities, semantic mapping strategy encouraged them to try harder and at the same time made the learning environment as meaningful and enjoyable as possible for them. Thus, semantic mapping strategy enhanced the participants' motivation and created more positive attitudes towards vocabulary acquisition. These results agree with previous conclusions about the positive effects of semantic mapping as revealed by the researches of Nilforoushan (2012), Abbasian & Arianezhad (2013), and Avrianti (2015).

Table 2

Confidence Interval			
4.43 ± 2.0452 (0.692)	4.43 ± 1.4153	4.43 ± 1.4153 ; 4.43 - 1.4153	$5.8453 > \mu > 3.0147$

IV. Conclusion

The following conclusions are drawn based on the findings of the study:

1. Semantic mapping strategy is effective in vocabulary development and retention among Grade 10 students.
2. There is a significant difference in the pretest and posttest scores of the one - group participants.
3. There is a significant difference in the mean gain scores of the pretest and posttest. As shown in the posttest result, the subjects under study put up a significantly higher mean gain score using the semantic mapping as an intervention for vocabulary development.

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