

The Complexity of the Language Level and the Multimodality Used in Singaporean and Indonesian Science Textbooks Written in English for Primary Three and Four

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Abstract

Teaching Maritime English Vocabulary to cadets can be very challenging for an English teacher. Cadets have daily tight schedules and physical activities that often consume their energy. It is important for the teachers to find out a strategy that is effective to be implemented in the classroom. This research was aimed to investigate the effectiveness of Vocabulary Self-Collection Strategy (VSS) and Word Mapping Strategy (WMS) to teach Maritime English vocabulary of cadets with high and low metacognitive awareness. This study employed a quasi-experimental design with a 2x2 factorial design. Two experimental groups of the first year Nautical Cadets of Semarang Merchant Marine Polytechnic were involved in this study. There were 36 participants. Metacognitive Awareness Inventory and Maritime English Vocabulary Assessment were used as the instrument for collecting the data. Observation was also conducted to support the data findings. To analyze the data, Paired Sample T-test and Two Way ANOVA were used. The research findings showed that both VSS and WMS are effective to be used in teaching Maritime English Vocabulary to cadets with high and low metacognitive awareness. However, when we compared the effectiveness of VSS and WMS, the findings revealed that VSS was more effective to be used in both high and low metacognitively aware cadets. The statistical analysis showed that there is an interaction among vocabulary teaching strategies, metacognitive awareness and vocabulary mastery.

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INTRODUCTION

English is considered as an international language. It has a special role that is recognized in many countries (Crystal, 2003). It is used widely in newspaper publishing, book publishing, international telecommunications, scientific publishing, international trade, mass entertainment, and diplomacy. In Maritime industry, all safety procedures and publications are written and announced in English, all standardized safety communication are also conducted using English. Therefore, English has a very significant role as a mean of communication especially those who work in the seafaring or maritime industry.

Maritime English is the international working language in the maritime industry. It is Language for Special Purpose (LSP) used for communication at sea. In Maritime schools and colleges, it is considered as one of important subject because communication has a great influence towards safety and security of a vessel. In maritime world, where the crew from different countries work together, English becomes the only way they can communicate correctly and effectively. Since English become the standardized language for all procedures and publication, it is highly recommended for seafarers to master English well to avoid miscommunication which can endanger vessels.

There are many accidents at sea happened because of miscommunication among the crew. The low proficiency level of English has become one of the causes. An accident can happen when a crew tries to convey information but he doesn't say it correctly so that his partner cannot understand well. This can result in misunderstanding. On the other hand, a crew may give information correctly but his partner cannot understand because of his limitation of vocabulary in English. This can cause misunderstanding too that can lead to accident. On the vessels, all safety procedures and instructions are written in English. Difficulty in understanding those safety documents and safety instruction can put the crew in danger. Ineffective or misunderstood communications in

our personal lives may cause problems or embarrassment, but in maritime context, the results of misunderstandings may have much more serious results.

In second or foreign language learning, vocabulary is considered as one of important factors. Vocabulary acquisition is just as important as the acquisition of grammar; it is the heart of communication (Amiryousefi&Vahid, 2010). According to McVey (2007), along with correct grammar, an extensive vocabulary will help ESL students communicate effectively, both verbally and in writing. Word knowledge is an essential component of communicative competence, and it is important for production and comprehension in a second language (Coady&Huckin, 1997).

According to Hastunar, Bharati and Sutopo (2014) in learning a foreign language, vocabulary plays an important role to connect the four skills of speaking, listening reading and writing. Vocabulary is considered as a base to develop those four skills in learning English as a Foreign language.

Realizing the importance of vocabulary, many Maritime English teachers believe that cadets of maritime colleges, who will soon become seafarers after they graduate, have to be equipped with adequate vocabulary. As seafarers, they have to be able to understand instructions, manuals, publications, and they might have to give instructions to the lower-rank crew. It is important to ensure that cadets have an adequate vocabulary so that they are able to communicate correctly and effectively when they work on the vessels.

However, a research conducted by Navarro, Garbin, Agena, & Garcia (2015) regarding Maritime students' English proficiency revealed that maritime students are incompetent in vocabulary and reading comprehension and fairly incompetent in grammar. He investigated 586 respondents of Filipinos maritime students (222 first year students, 189 second year students and 168 third year students) and concluded that the English proficiency level of maritime students should be improved particularly along vocabulary,

grammar and reading comprehension. Even though it has not been found any similar research in Indonesia, considering the similarities between Philippine and Indonesia in terms of archipelago country and the geographical position as the Southeast Asian country, the result of Navarro's study can become a valuable resource of knowledge for the writer in conducting this research.

In Semarang Merchant Marine Polytechnic, cadets have a tight schedule and physical activities that often consume their energy. Therefore, it becomes a great challenge for Maritime English teachers in conducting teaching and learning process for cadets to find an interesting and effective strategy in teaching Maritime English, especially in teaching vocabulary.

Vocabulary Self-Collection Strategy (VSS) and Word-Mapping Strategy (WMS) are two strategies of teaching vocabulary which are expected to be able to promote vocabulary mastery of cadets. VSS is an interactive-learning instructional strategy that promotes word consciousness, as students are actively engaged in identifying important words from their reading to share with members of their class (Antonacci & O'Callaghan, 2012). While WMS is a strategy aimed to promote the students' deeper understanding of words through depicting varying relationships between and among words. (Antonacci & O'Callaghan, 2012).

Therefore, this study was aimed to investigate the effectiveness of those two teaching strategies.

The great importance of vocabulary in language learning has become a topic of interest for many researchers. Some of them investigate effectiveness of certain strategy, some others examine the correlation between factors which have effect on language teaching and learning. In fact, there are a lot of factors that have influence on the success of language teaching and learning process. Recent studies found that non-cognitive skills play a significant role in determining students' performance. Non-cognitive skills are those attitudes, behaviours, and strategies which facilitate success in school

and workplace, such as motivation, perseverance, and self-control. These factors are termed 'non-cognitive' as they are considered to be distinct from the cognitive and academic skills usually measured by tests or teacher assessments (Gutman & Schoon, 2013). According to Heckman, Stixrud & Urzua (2006) non-cognitive traits and behavior, however, might be as important as—or even more important than—cognitive skills in determining academic and employment outcomes. In a wide range of studies, many of non-cognitive attributes are shown to have a direct positive relationship to student's concurrent school performance as well as future academic outcomes (Farrington, Roderick, & Allensworth, 2012).

One of non-cognitive attributes that has great influence on language teaching and learning process is Metacognition. It has been defined in various ways by different researchers. Flavell was the first who introduced the term 'metacognition'. He defined metacognition as "one's knowledge concerning one's own cognition process and products or anything related to them" (Raofi, Mukundan, & Rasyid, 2014). Flavell then redefined metacognition as individuals' information and awareness about their own cognition. What should be noted about the concept of metacognition is, it is composed of two underlying components: metacognitive awareness and metacognitive strategies. Metacognitive awareness is the learners' knowledge about their learning, while metacognitive strategies refer to learners' regulation and management of their learning which encompasses a wide range of activities: selecting the most useful strategies for a particular task; planning, monitoring, regulation and evaluation of learning (Schraw in Raofi, Mukundan, & Rasyid, 2014). Metacognition is considered essential to successful learning because it enables individuals to manage their cognitive skills better and to determine weaknesses that can be corrected by constructing new cognitive skills. Recent research indicates that metacognitively aware learners are more strategic and perform better than unaware

learners. They are able to plan, sequence, and monitor their learning in a way that directly improves performance. Therefore, metacognitive awareness was taken into account as moderate variable because it might have contribution or influence during teaching and learning process which can affect vocabulary mastery.

METHODS

This study employed a quasi experimental design with 2x2 factorial design. There were two experimental classes which were taught using different strategy: VSS and WMS. The population of this study was the first year Cadets of Semarang Merchant Marine Polytechnic majoring in Nautical Study. Two out of five classes was chosen randomly. One class was treated as the first experimental group, and the other class was treated as the second experimental group. The first experimental group was taught using VSS, while the second one was taught using WMS. There were eight meetings for each group, and each meeting was conducted for 80 minutes.

Cadets who were used as sample are those who got high score of metacognitive awareness and those who got low score of metacognitive awareness. Cadets who were in the middle were not included in the analysis.

There were two instruments used for collecting the data. The first was Metacognitive Awareness Inventory. It was a self-report scale consists of 42 items adopted from Schraw& Dennison (1994). The original inventory was written in English and it was translated into Bahasa Indonesia to suit the purpose of this study. The second instrument used in this study was Maritime English Vocabulary Assessment consisting 45 items, which was administered before treatment as a pre-test and after treatment as a post-test. Before being used for research, both of instruments were tested during try-out to examine the validity and reliability. Observation form was also used to support the data findings.

Paired sample T-test was used to examine the effectiveness of VSS and WMS to be used in teaching Maritime English Vocabulary to cadets

with high and low metacognitive awareness. Two-way ANOVA was used to compare the effectiveness of VSS and WMS and also to find out the interaction among variables: vocabulary teaching strategy, metacognitive awareness and vocabulary mastery. Tukey's Test was used as the post hoc test.

RESULT AND DISCUSSION

The findings revealed that both VSS and WMS were effective to be used for cadets with high and low metacognitive awareness. The result of Paired sample T-test indicated there were significant differences between pre-test and post-test score. Both experimental groups showed score improvement from pre-test to post-test.. The scores of the two experimental groups are presented in table 1 and table 2.

Table 1. Pre-test and Post-test Score of Experimental Class I (VSS)

No	Name	Pre-test Score	Post-test Score	Level of Metacognitive Awareness
1	V 10	37.8	86.7	High Metacognitive Awareness
2	V 2	62.2	80.0	
3	V 12	62.2	84.4	
4	V 15	53.3	91.1	
5	V 8	60.0	84.4	
6	V 6	62.2	91.1	
7	V 4	71.1	82.2	
8	V 3	46.7	77.8	
9	V 9	68.9	82.2	
Total		524.4	760.0	
Mean		58.2	84.4	
10	V 7	60.0	80.0	Low Metacognitive Awareness
11	V 11	62.2	93.3	
12	V 13	57.8	88.9	
13	V 14	66.7	77.8	
14	V 16	68.9	93.3	
15	V 5	62.2	80.0	
16	V 18	62.2	73.3	
17	V 17	68.9	84.4	
18	V 1	71.1	88.9	
Total		580.0	760.0	
Mean		64.4	84.4	

From Table 1, it can be seen that the mean score of high metacognitively aware cadets who were taught using VSS improved from 58.2 to 84.4. While the mean score of

cadets with low metacognitive awareness who were taught using VSS raised from 64.4 to 84.4.

Table 2. Pre-test and Post-test Score of Experimental Class II (WMS)

No	Name	Pre-test Score	Post-test Score	Level of Metacognitive Awareness
1	W 16	57.0	80.0	High Metacognitive Awareness
2	W 17	33.3	77.8	
3	W 9	62.2	66.7	
4	W 12	40.0	80.0	
5	W 11	48.9	75.6	
6	W 6	42.2	80.0	
7	W 14	48.9	80.0	
8	W 8	57.8	80.0	
9	W 18	55.6	75.6	
Total		445.9	695.6	
Mean		49.54	77.28	
10	W 10	55.6	68.9	Low Metacognitive Awareness
11	W 4	62.2	73.3	
12	W 7	62.2	68.9	
13	W 13	51.1	71.1	
14	W 5	60.0	64.4	
15	W 1	51.1	75.6	
16	W 3	37.8	62.2	
17	W 2	62.2	77.8	
18	W 15	66.7	51.1	
Total		508.9	613.3	
Mean		56.54	68.14	

Table 2 describes that the mean scores of high metacognitively aware cadets who were taught using WMS improved from 49.54 to 77.28. While the mean score of cadets with low metacognitive awareness who were taught using WMS raised from 56.54 to 68.14.

VSS and WMS are vocabulary teaching strategies that have different focus. While VSS promotes words consciousness of students by asking students to identify important words from their readings, WMS promotes students' deeper understanding of words by depicting varying relationships between and among words (Antonacci, 2012).

Both strategies were found to be effective to be implemented for cadets. VSS is considered as interactive and interesting for students. It promotes word consciousness as the students are asked to select words that they consider as important or interesting. Since students are asked to choose words that they like, their learning can be more meaningful. High metacognitively aware cadetshave high ability to

plan, monitor, and evaluate their learning. When they were taught using VSS, they knew what words were important to be learned and what was the purpose of learning those words. They were more aware and conscious about new vocabularies that they had learned. On the other hand, VSS also helped cadets with low metacognitive awareness to be more effective in learning by providing them a meaningful experience in learning.

According to Anderson (2015), people usually attend to and can remember more easily something that they consider to be meaningful or important. VSS could make cadets more motivated and interested in learning new words.

WMS has the ability to promote students' deeper understanding of words. Students can categorize and arrange words by using a word map. When working together to make a word map, cadets experienced more meaningful processing of study materials. According to Anderson (2015), more meaningful processing of material can result in a better recall. When they were taught using WMS, Cadets did not only receive the materials but they also actively processed the materials in a meaningful way. High metacognitively aware cadets could understand better the purpose of making word map, how to organize the information they found and how to arrange it in a word map. Therefore, WMS is effective to be implemented for cadets who have high metacognitive awareness. WMS also could help low metacognitively aware cadets to understand text and vocabulary more. By using a word map, cadets learned how to arrange information or words into a meaningful word map which was easier to be understood and remembered than a plain text.

However, when we compared the effectiveness of both strategies, it was found that VSS was more effective than WMS to be implemented for cadets with high and low metacognitive awareness. The result of Two-Way ANOVA also revealed that there was an interaction among variables: vocabulary teaching strategies, metacognitive awareness and

vocabulary mastery. The interaction is illustrated in Figure 1.

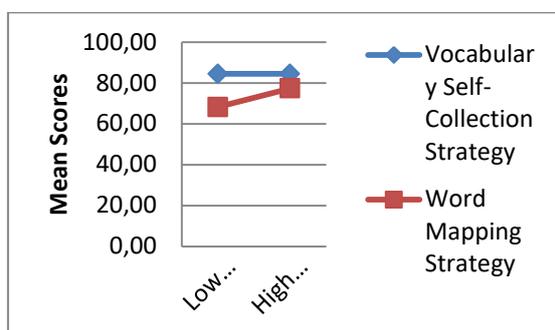


Figure 1. Interaction among variables: vocabulary teaching strategies, cadets' metacognitive awareness and vocabulary mastery

From Figure 1, it can be seen that there are two non-parallel lines which indicate an interaction. The difference between VSS and WMS is described using different line colour. It shows the effect of different teaching strategies used in the experimental class I and experimental class II. Different strategies caused different result. From the graph, it can be seen that the mean score of VSS is higher than WMS. It can be concluded that VSS, in general, is more effective to be used in teaching Maritime English Vocabulary to cadets with high and low metacognitive awareness.

The effect of metacognitive awareness towards vocabulary mastery can also be identified from the graph. The difference in vocabulary mastery shows metacognitive awareness effect. Different level of metacognitive awareness can result in different scores. However, in experimental class I (VSS), there is no difference in the mean scores between cadets who have high metacognitive awareness and those who have low metacognitive awareness. It is different from what is found in experimental class II (WMS), where cadets with high metacognitive awareness have higher mean scores than those with low metacognitive awareness. It is concluded that the effect of metacognitive awareness towards mean score is

greater in experimental class II which used Word Mapping Strategy in teaching vocabulary.

WMS, compared to VSS requires a more complex process of thinking. While in VSS cadets were only asked to choose words that they considered as important or interesting, elaborate the reasons and use the words in their own sentences, in WMS cadets were required to arrange and organized the words into a word map. High metacognitively aware cadets could follow the steps better than low metacognitively aware cadets. They could organize information better and use their time more effectively.

Different from Word Mapping Strategy which requires a more complex process of thinking, Vocabulary Self-Collection Strategy is actually simpler and easier to be completed by cadets. However, even though it is simpler and easier, apparently it is more effective to be implemented for cadets with high and low metacognitive awareness.

Cadets in maritime schools usually have a very hectic schedule. Besides learning in the class, they have to do several physical activities which can consume their energy. Sometimes they come to the class exhausted. Therefore, they need a teaching strategy that is fun, interesting, simple and meaningful. VSS can accommodate those needs of cadets and therefore it is effective to be used to teach Maritime English Vocabulary to cadets with high and low metacognitive awareness.

The result of observation seemed to support this finding. During teaching and learning process, there were several things that were noted. First, when cadets in experimental class II (WMS) were asked to work in a group to draw a word map, not every member of the group was actively involved in the discussion. In fact, only several cadets who really worked to complete their word map. It was different from cadets in experimental class I (VSS) who were motivated and excited when they selected words that they liked. The second important thing is, on the sixth meeting, some cadets of experimental class II (WMS) said that they were bored with activity of making word maps. It was very contrast with cadets in experimental class I

(VSS) who showed motivation and interest until the end of the treatment.

CONCLUSION

From the analysis, it can be concluded that VSS and WMS are effective to be used in teaching Maritime English Vocabulary to cadets with high and low metacognitive awareness. The analysis of pre-test and post-test scores proved that both groups showed improvement after VSS and WMS were implemented.

However, when we compared the effectiveness of VSS and WMS, the findings indicated that VSS was more effective to be used in both high and low metacognitively aware cadets. It was proven from the result of statistical analysis. The result of observation also showed that cadets considered VSS as more interactive and interesting. They showed high motivation and interest during the teaching and learning process. VSS involved simple tasks and provided a meaningful experience. Therefore, it was more suitable to be implemented for cadets with high and low metacognitive awareness. The result of statistical analysis also revealed that there is an interaction among vocabulary teaching strategies, metacognitive awareness and vocabulary mastery.

However, before conducting the teaching and learning process, it is important for teachers or lecturers to prepare the materials and to design the lesson plans well. It is important to note that providing cadets with various activities is essential. There is no strategy that works well in a very long term. Cadets' daily activities and schedules that can be tiring and boring become a challenge for teachers to provide interactive and interesting activities in the classroom to make them motivated to learn.

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