

Graphic Organizer Instruction in Teaching Reading Comprehension to Low-proficient English as a Second Language (ESL) Students

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ABSTRACT

This study aimed to investigate the effects of graphic organizer (GO) instruction to teach reading comprehension to low-proficient ESL Form 2 students in Malaysia. The study utilized a quasi-experimental design to examine reading comprehension performance of two groups of students, with and without the provision of GO instruction. There were 15 students in each group who were administered with a pre-test and a post-test. The results from this study supported the positive effects of GO instruction in improving reading comprehension performance. Students who had received GO instruction were found to be more able to identify the keywords in the passages and answer the questions using own words. Besides that, they also performed better in answering average- to high-level reading comprehension questions. The findings offer new empirical evidence to support the schema theory in explaining the processes in reading comprehension. Given the visual representations in the GO instruction, the textual information from the reading passages can be more readily mapped with the students' existing mental schemas. This process was found to be useful to aid low-proficient ESL students in performing reading comprehension tasks.

Keywords: Graphic organizer; reading comprehension; English as Second Language; Malaysia; rural area

INTRODUCTION

English is a subject studied by all students in the primary and secondary schools in Malaysia. In 2017, the Malaysian Ministry of Education has implemented the new Secondary School Standard Curriculum known as Kurikulum Standard Sekolah Menengah (KSSM) in all secondary schools nationwide. In this new curriculum, the Standard-Based English Language Curriculum for Secondary Schools (SBELC) is introduced and this new curriculum emphasises on the modular approach of English language teaching. This approach ensures that all the four language skills, namely “Reading, Writing, Listening, and Speaking” and the elements of “Grammar and Literature in Action” are given enough focus during the process of teaching and learning in the classrooms (Malaysia Ministry of Education, 2016).

In Malaysia, the large majority of students learn English as their second or third languages. These students are typically being recognised as English as Second Language (ESL) learners. Similar to other ESL learners worldwide, reading in English could be an effortful task. Many of them face difficulties to understand and interpret written ideas in English. As posited by van den Broek, Bohn-Gettler, Kendeou, Carlson, and White (2011), one of the main barriers faced by EFL learners in reading comprehension is their inability to engage with the text when they read. This was shown in the reading performance of Malaysian students in Programme for International Student Assessment (PISA) 2012 where Malaysian students were found to perform less well in the higher-level reading aspects, which include interpretation and integration of the texts they read (Puteh, Mohd Zin, & Ismail, 2016). From the first author’s experience as an English teacher in a rural secondary school in Malaysia, many students do poorly in reading comprehension during tests. In particular, the majority of them could not answer the subjective questions in the reading comprehension test. They either leave the questions without answers or simply copy chunks of text directly from the passage to be presented as the answers. It is prominent that these students failed to understand the meanings delivered in the English passage. Due to their reduced English proficiency, many of them could not understand the advanced English vocabularies in the passage which are unfamiliar to them. Correspondingly, they fail to interpret the main ideas and key points in the English passage that they read.

Reading Comprehension

Reading comprehension is defined by Almasi, Garas-York, & Shanahan (2006) as the act of understanding and interpreting information within a text. However, this definition is considerably simplistic and it does not explain reading comprehension in depth. In comparison, Torres and Constain (2009) offered a more elaborative definition of reading comprehension - "a complex process which includes phonological, morphological, syntactic, and semantic elements, as well as cognitive and emotional factors" (p.56). Torres and Constain’s (2009) definition illustrates the multiple layers of information that the readers need to process in reading comprehension tasks. In general, there are three models that are commonly associated with reading comprehension; namely the bottom-up, top-down and interactive models. The bottom-up model describes reading as a process of receiving and interpreting raw linguistic information, such as sounds and letters which then passes through increasingly refined analyzes until the

meaning is grasped (Angosto, Sánchez, Álvarez, Cuevas, & León, 2013). This model is known to be applicable to most beginning readers. According to this model, reading progresses through these steps, namely (1) decoding the sounds, letters of a language such as words, clauses and sentences, and then only (2) interpreting the meaning of a text based on grammar, syntactic and lexical rules (Angosto et al., 2013).

On the other hand, top-down model is in the opposite order where students begin with complex problems and work out the basic. According to this model, readers use their previously acquired knowledge to make inferences about the written texts (Spivey, 1990). Specifically, the readers use their knowledge of the genre to predict what will be in the text and their understanding of affixation to guess the associated meanings. After reading a passage, readers make some assumption about the content and predict the events that will happen according to their background knowledge. In most circumstances, an ongoing top-down and bottom-up processes is needed in which reader are using both graphic and contextual information to grasp the meaning of a text (Verhoeven, Reitsma, & Siegel, 2011). Therefore, in reality, all models are indeed inseparable in the activities of reading comprehension. The integration of bottom-up and top-down model is being recognized as the interactive model (Dechant, 2013; Rumelhart, 1994).

Graphic organizers

Graphic organizers are visual representations of how ideas are related to each other (Ben-David, 2002). These visual representations include story map, semantic map, concept map, matrix, tree diagram, and Venn diagram (refer to Figure 1). In teaching and learning, these visual representations can be used to help students to collect information, make interpretations, solve problems, devise plans, and become aware of how they think (Ben-David, 2002). Given the benefits of representing abstract ideas visually, graphic organizers can be used at any stage of learning and are also suitable for different classroom learning arrangements (Pullupaxi, 2012). In particular, Graphic Organizer (GO) instruction is especially suitable for learners who are visually oriented in their learning style (Keenan, 2004). With the use of highly structured graphics, GO instruction is known to be effective in fostering analytic and process-specific learning (Hyerle, 1996).

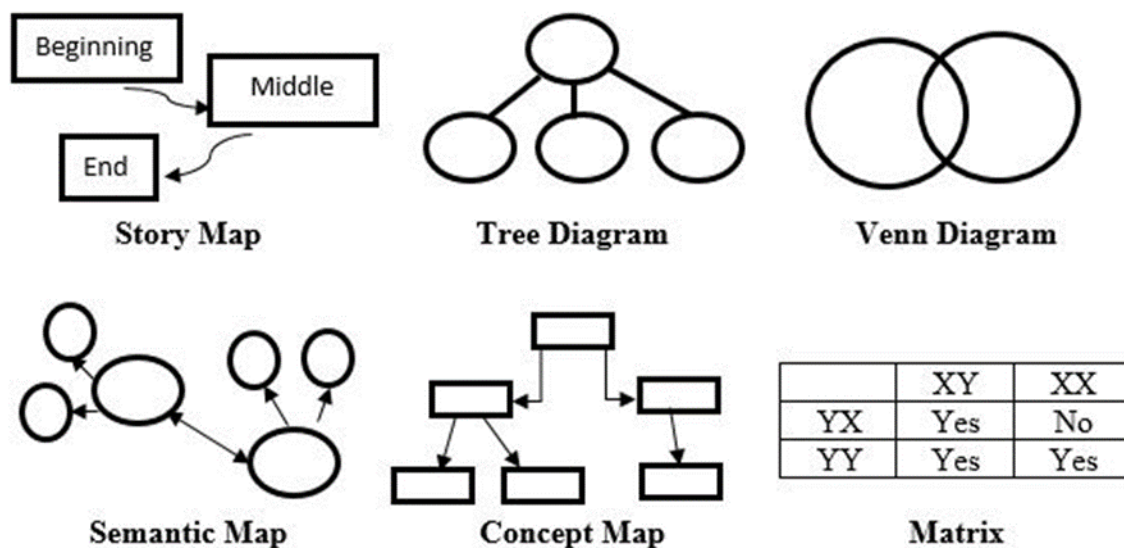


Figure 1. Examples of graphic organizers.

The applicability of GO instruction in reading comprehension is supported by the Schema Theory (Rumelhart, 1980; Xie, 2005). In cognitive psychology, schema refers to the data structure of how general ideas are stored in memory (Xie, 2005). The activation of schema in the brain can be in a bottom-up processing or top-down processing direction, depending on the type of information input (Rumelhart, 1980). When the new input is familiar to the person, the top-down processing will be operated to facilitate the assimilation of new information into the existing schema (Xie, 2005). Otherwise, the bottom-up processing will operate to enable the person to locate or build the best schema for the new input. The schema theory explains the processes of reading comprehension task experienced by ESL students. The schema theory involves the bottom-up and top-down processes where the reader organizes all the knowledge he or she possessed into some units (Rumelhart, 1980; Xie, 2005).

In the EFL contexts, when ESL students are reading English passages which are less familiar to them, both top-down and bottom-up processed are activated. The top-down processes are applicable when they can read and understand the words and sentence structures in the passage; and they merely need to connect the input with the existing schema in their memory. However, if the ESL students are facing unfamiliar words and sentence structures in the reading passage, they would need the activation of a bottom-up processing to locate or build the semantic schema. In short, when performing reading, multiple schematic processing are activated to search for information in memory and/or to rebuild new representation of memory (Xie, 2005). In relation to this, GO instruction provides a medium to translate the mental schema into visual representations and vice versa to ease information processing, storing and recalling. In the bottom-up processing, the comprehension process starts with words (their pronunciation, semantic value, morphology, etc.), which later give access to more extensive units (sentences, paragraphs) and finally to the interpretation of the whole text (Angosto et al., 2013). To assist

students in reading comprehension, bottom-up graphics such as (time lines, web diagrams, circle diagrams, data grids, pie charts and graphs) can help students to scan, sort, and organize information so they can draw inferences and conclusions, and think inductively (Clarke, 1991). On the other hand, top down graphics such as concept maps, causal chains, charts, continuum flow charts can help students to apply rules, test hypotheses, make decisions, or solve new problems, and finally to think deductively (Clarke, 1991). For both processing, GO instruction is an effective technique that teachers can use to activate students' existing knowledge and then to help them to establish connections between their background knowledge and the new information (Dunston, 1991).

In this literature review, some local and foreign studies found that GO instruction aids the ESL students' reading abilities which leads to greater comprehension. For example, Supramaniam (2011) conducted a research on GO instruction using the semantic mapping strategy to improve the reading comprehension of lower secondary students in Malaysia. She found that the students in her study performed better in reading comprehension after the use of GO instruction. Pullupaxi (2012) also carried out a study on GO instruction with university students aged 18 -22 years old in Ecuador, South America. Nine students from the control group received traditional instruction where students read and answer the given questions; while thirteen students in the experimental group used the same texts but incorporated graphic organizers. Pullupaxi (2012) found that the reading ability of the students in the latter group, including those who were low achievers had improved significantly. Additionally, the positive effects of GO instructions were also recorded in studies conducted by Darmawan (2011) in Indonesia, Hashemian, Jam and Naraki (2014) in Iran, and Praveen and Rajan (2013). The study conducted by Praveen and Rajan (2013) was noteworthy as they used various types of comprehension questions were used in their study, such as questions about (1) identifying the main idea (2) finding supporting details (3) dealing with vocabulary (4) fact and opinion and (5) making inferences. A 2-week intervention was implemented with 35 English as Foreign Language (EFL) students from Tamil Nadu, India. These students were trained to use graphic organizers along with their reading. The students were found to make 17% improvement in reading after this intervention.

Reading comprehension in the Malaysian ESL context

In general, when Malaysian students are required to perform reading comprehension in English classes, it is common for the English teachers to ask their students to read aloud a passage, look up for the meanings of difficult words, and then answer the comprehension questions. However, this conventional instructional method might not be sufficient to guide low-proficient ESL students to perform reading comprehension tasks. In ESL contexts, there is a risk that low-proficient readers are given less questions by their teachers (Potenza-Radis, 2008) which then impede the students' opportunity to perform higher order thinking in the ESL classrooms. Chen, Maarof, and Md Yunus (2016) conducted a survey with Form 2 students in Sarawak, Malaysia and they found that there were three main factors that impede the reading comprehension performance of these students, i.e., lack of background and previous knowledge, lack of interest and motivation, and lack of vocabulary knowledge. In relation to this, Kee and Ngo (2017) found

that the application of GO instruction such as the story map technique is effective to stimulate students' interest and motivation to learn during reading comprehension tasks. In their action research, story map was introduced to a class of Standard 4 ESL students in reading comprehension tasks. They noted that the students showed positive progress in answering the reading comprehension questions. Specifically, the students were more able to identify the literary elements in the texts (i.e., characters, settings, and moral values) before they answered the reading comprehension questions. Through this GO instruction, the students were given the opportunities to do hand-on works, rather than merely listening to the teachers alone (Kee & Ngo, 2017). In relation to this, the students were found to show increased interest and motivation in learning since the application of story map technique helped to create interactive teaching in the classroom (Kee & Ngo, 2017). The similar effects were found by Abdul Rahim, Yusuf and Dzulkafly (2017) in a study with Form 4 students in Malaysia. As GO instruction allows for more active student participation in the reading comprehension lessons, students may feel more motivated to persevere when they encountered difficulties in reading comprehension tasks (Abdul Rahim, Yusuf, & Dzulkafly, 2017).

Therefore, considering that past research had recommended that the use of graphic organizer (GO) is effective in helping ESL students to perform reading comprehension (Chen, Maarof & Md Yunus, 2016; Kee & Ngo, 2017; Abdul Rahim, Yusuf, & Dzulkafly, 2017), this study was conducted to investigate the application of this pedagogical approach in teaching reading comprehension to low-proficient ESL students in a rural school in Malaysia. The objectives of this research are as follows: (1) to investigate the effects of graphic organizer (GO) instruction in natural classroom settings, and (2) to investigate the effects of graphic organizer (GO) instruction on different levels of reading comprehension questions.

METHODS

This study was conducted as a quantitative study which utilised a quasi-experimental research design. Quasi-experimental research design is suitable for testing the efficacy of a new pedagogical approach in actual classroom settings, where it is not possible for all extraneous variables to be controlled (Mohd Noah, 2015). Pre-test and post-test comparison is typically applied in quasi-experimental research (Mohd Noah, 2015). In this study, the reading comprehension performance of an experimental group of students who were taught using the graphic organizers method was compared with a control group of students who were taught using the conventional method, in their respective classrooms. The sample was selected via convenient sampling method in a national-type secondary school in a rural area in Perak, Malaysia. The sample was obtained from two classes, with 23 (Class A) and 26 students (Class B) each. The low-proficient ESL students in Class A were assigned to the control group (n=15); while the low-proficient ESL students in Class B were assigned as the experimental group (n=15). The 15 students in the control group consisted of six males and nine females (range of English scores = 28-47 marks), while the 15 students in the experiment group consisted of eight males and seven females (range of English scores = 22-44 marks).

Since the quasi-experimental research was to be conducted in the natural classroom settings, the English lessons were delivered to both intact classes. However, only the reading comprehension performance scores of the students that composed the sample of this study (n=15 in experimental group; n=15 in control group) were extracted for data analysis in this study. The scores of the remaining students were merely documented as teaching and learning records. In the first step of this quasi-experimental research, a pre-test was conducted with both classes prior to the commencement of the intervention. Then, a 6-week guided reading instructions using the graphic organizer (GO) method were delivered to the class with the experimental group for 6 weeks, utilizing various graphic organizers as presented in Figure 1. The GO instruction included the use of semantic mapping to group the keywords in the passages into different thematic clusters (refer to Figure 1).

Students in the experimental group received GO instruction during the regularly scheduled class periods. The instruction was implemented for an hour, included the following exercises: (1) read a reading comprehension passage. (2) use graphic organizers to extract information from passage (refer to Figure 1 for GO examples), and (3) answer reading comprehension questions. On the other hand, conventional reading instructions were delivered to the class with the control group over the same duration. In each week, both classes were being introduced a new reading passage with 10 reading comprehension questions. The students were to read the passage and to complete the reading comprehension questions under the teachers' guidance, with or without the GO instruction. Finally, a post-test was conducted with both classes.

Instruments

The instruments used in the intervention were reading passages with reading comprehension questions. Three criteria for material selection were considered. The first criterion was to select the topics of reading comprehension which were related to the lower secondary school curriculum. The current Form 2 English textbook has 15 chapters which cover topics such as people, environment, social issues, health, science and technology. The reading materials related to these topics were sought and collected from English workbooks and past year test papers. The second criterion was to select reading texts based on the students' interest and text readability. The third criterion was to select reading passages with clear text structures that correspond to the suitability of using GO method for interpretation. When performing reading, multiple schematic processing are activated to search for information in memory (Xie, 2005). Therefore, these three criteria were set to ensure that the texts selected were suitable to enable the translation of mental schema into visual representations and vice versa, which matched with the students' language and cognitive levels.

A total of eight passages were selected (one for pre-test, six for intervention, and one for post-test). Ten reading comprehension questions were developed and organized in in four different formats, loosely followed the Bloom's taxonomy of cognitive processing (Anderson et al., 1992). The first four questions, Questions Q1 – Q4 aimed to measure participants' ability to identify information on 'True' or 'False' statements (refer to Table 1). Next, Questions Q5 – Q6

required the students to write answers which were already being stated directly in the passage. Questions Q7 – Q8 were about vocabulary knowledge. The students were required to give a word or phrase available in the passage that bear the same meaning as outlined in the question. Questions Q5 – Q8 were low-level questions as the questions only required the students to identify and recall the information from the passages. In contrast, Questions Q9 – Q10 were average- to high-level questions which were inferential or evaluative in nature. The answers to these questions were not given directly in the passages. Students were required to deduce the answers by reading between the lines and making inferences. Moreover, the students were also required to apply information based on their personal experience to answer Questions Q9 – Q10. Overall, the correct answer for each question was awarded 1 mark and the sum of the test was 10 marks.

Table 1.
 Levels of reading comprehension questions

Items	Levels	Descriptions and Examples
Questions 1 to 4	-	True/False questions <i>e.g., The ... is True/False</i>
Questions 5 to 6	Low level - remembering	Direct questions <i>e.g., What is ...?</i>
Questions 7 to 8	Low level - understanding	Vocabulary questions <i>e.g., What is the word with the meaning '... '?</i>
Questions 9	Average level – Analysing	Inference questions <i>e.g., Predict what would happen if ...?</i>
Question 10	High level - evaluation	Evaluation questions <i>e.g., What are the consequences of ...?</i>

Data analysis

The results from both tests (pre-test and post) were collected and analyzed by the researcher to answer the two research questions. Descriptive statistics was used to display demographics of the participants, the mean scores and the standard deviations of the pre-test and post-test results for both the experimental and the control groups. The performance differences between the groups before and after intervention were compared using t-test analysis in the IBM SPSS version 22 program. The performance differences between the groups before and after intervention were compared using t-test analysis in the IBM SPSS version 22 program. The group differences were also analyzed according to low- and high-level reading comprehension questions. Error analysis was conducted on the post-test answers to identify the quality of answers provided by the

students.

RESULTS

The pre-test and post-test reading comprehension scores of the students were computed. Table 2 shows the descriptive data gathered from the pre-test and post-test. The students represented by the letter E were those in the experimental group; while the students represented by letter C were in the control group. As shown in Table 2, 66.7% of the students in the experimental group (n=10) showed positive progress in their reading comprehension after having had received 6-week GO instruction. These students obtained above 0 value for their margin of improvement. In comparison, only 60.0% of the students in the control group (n=9) showed the similar positive progress. Further, 26.7% of the students in the control group (n=4) actually showed regressed performance in post-test. The findings offered the initial insights that more positive improvements were recorded for students in the experimental group, and they also showed more consistent group performance as compared to their counterparts in the control group.

Table 2.
 Individual scores in pre-test and post-test

No of students	Pre-test score	Post-test score	Margin of Improvement
E1	6	6	0
E2	5	7	2
E3	5	5	0
E4	4	4	0
E5	3	5	2
E6	4	3	-1
E7	3	6	3
E8	4	6	2
E9	3	5	2
E10	2	4	2
E11	5	7	2
E12	4	7	3
E13	5	6	1
E14	2	1	-1
E15	3	5	2
C1	7	4	-3
C2	3	6	3
C3	5	7	2
C4	5	5	0
C5	5	6	1
C6	5	6	1
C7	5	4	-1

C8	7	5	-2
C9	6	7	1
C10	4	3	-1
C11	4	6	2
C12	5	8	3
C13	4	5	1
C14	4	6	2
C15	3	3	0

*E=experimental group, C=control group

Table 3 presents the reading comprehension performance of both experimental and control groups of students before and after the 6-week intervention. As shown in the table, the experimental group had a lower mean score ($M=3.87$) compared to the control group ($M=4.80$) during pre-test. This score gap reduced markedly after the intervention, indicating that the experimental group had experienced a notable increased performance in reading comprehension during the post-test. This improvement was suggested by the t-test results, in which there was a significant statistical difference between the pre-test and post-test score comparison for the experimental group, $t(28)=-2.421, p=.05$. Such effect was not observed for the control group.

Table 3.
 Comparison of reading comprehension scores during pre-test and post-test

				Std.	
	Time	N	Mean	Deviation	T-test
Experimental Group	Pre-test	15	3.87	1.187	-2.421
	Post-test	15	5.13	1.642	($p=.022^*$)
Control Group	Pre-test	15	4.80	1.207	-1.230
	Post-test	15	5.40	1.454	($p=.229$)

In the subsequent analysis, the reading comprehension questions were separated into three categories: True/False questions (Q1 – Q4), low-level reading comprehension questions (Q5 – Q8) and average- to high-level reading comprehension questions (Q9 – Q10). The results indicated that the experimental group experienced improved performance in answering average- to high-level reading comprehension questions after the GO intervention, $t(28)=-2.117, p<.05$. In comparison, the control group only experienced improved performance in answering low-level reading comprehension question, $t(28)=-3.027, p<.01$, but not for the average- to high-level reading comprehension question, $t(28)=-.823, p=.417$. The results pointed to the effects of GO instruction in attaining average- to high-level reading comprehension; while the conventional

instruction is only instrumental in establishing low-level reading comprehension.

Table 4.

Comparison of reading comprehension scores during pre-test and post-test for different levels of reading comprehension questions

	Time	N	Mean	Std. Deviation	t-test
Experimental Group					
True/False questions	Pre-test	15	1.53	.743	-.861 (<i>p</i> =.396)
	Post-test	15	1.80	.941	
Low-level questions	Pre-test	15	1.47	.640	-1.565 (<i>p</i> =.129)
	Post-test	15	1.93	.961	
Average to high-level questions	Pre-test	15	.87	.743	-2.117 (<i>p</i> =.043*)
	Post-test	15	1.40	.632	
Control Group					
True/False questions	Pre-test	15	2.13	.843	-.000 (<i>p</i> =1.000)
	Post-test	15	2.13	.990	
Low-level questions	Pre-test	15	1.47	.640	-3.027 (<i>p</i> =.005**)
	Post-test	15	2.27	.799	
Average to high-level questions	Pre-test	15	1.20	.676	-.823 (<i>p</i> =.417)
	Post-test	15	1.00	.655	

Additionally, error analysis was conducted to investigate the types of errors produced by both groups of students for average to high-level questions in the post-test. The reading passage in the post-test was about a birthday party. Two average- to high-level questions were asked, namely, ‘why Rajoo’s sister invited Rajoo’s friends and relatives to his party’, and ‘what is the value of having a birthday party’. For the first question, the acceptable answers include the following: to make Rajoo’s birthday fun (students C1, C4, C8, C11), to enjoy the party (students E6, E9, E15) to celebrate the birthday (students C5, C6, C12, E3), to make Rajoo happy (student E12) and other related answers. For this question, four students in each group did not provide the correct answer. Predominantly, the errors were due to problematic English expressions such as ‘because her wanted the party was surprise’ (student C2), they played a few party games and musical chairs’ (student E14) and ‘to a surprise the party’ (student E10). The meanings were not

effectively presented by these answers due to the obvious English expression problems.

For the second questions, the acceptable answers include the following: to make us happy (students C3, E4), birthday is only once in a year (students C12, E7), birthday is special to remember (students C11, E2) and other related answers. Five students in the experimental group did not provide the correct answer; while twice the amount of the students in the controlled group (n=10) did not provide the correct answer. For this question, the students' responses showed that more students in the experimental group were able to appreciate the story lines and provided the correct answers such as 'because I can have many gifts' (student E1), 'because birthday party just comes once in a year' (student E7), 'because a birthday party is fun' (student E5) and other related answers. In comparison, lesser students in the controlled group were able to appreciate the implicit meanings of the passage. Due to this, their answers were still largely affected by problematic English expressions, in which the exact meanings were ambiguous to be interpreted. Examples of their answers were 'because has a grand birthday must to be more necessary' (student C7), 'it is good because it is important (student C10)', and 'because we will appreciate them' (student C9).

DISCUSSION

This study was conducted to investigate the application of Graphic Organizer (GO) instruction in teaching reading comprehension to low-proficient ESL students in a rural school in Malaysia. The first objective of this research was to investigate the effects of graphic organizer (GO) instruction using a quasi-experimental design in natural classroom settings. The results showed that GO instruction was effective in facilitating improved reading comprehension performance among low-proficient ESL students. In this study, the students in the experimental group experienced a statistically significant improved performance in reading comprehension tasks after having had a 6-week of guided reading instruction using GO method. In comparison, the students in the control group did not show statistically significant changes in reading comprehension performance after a 6-week of guided reading instruction using conventional method. These findings contributed new empirical evidence to support the effectiveness of GO instruction in helping low-proficient ESL students to master reading in English. In general, the students in the experimental group were found to perform less direct quoting from the passage to answer the reading comprehension questions; and they were also more able to identify the keywords in the passages. The findings corresponded to previous research conducted by past researchers such as Pullupaxi (2012), Praveen and Rajan (2013), and Hashemia, Jam and Naraki (2014), which had found positive effects of using GO instruction to teaching reading comprehension in EFL/ESL settings.

The second objective of this research was to investigate the effects of GO instruction to address different levels of reading comprehension questions. The findings from this study indicated that students who had received the GO instruction (experimental group) experienced improved performance in answering average- to high-level reading comprehension questions, such as analyzing questions (e.g., predict what would happen...) and evaluation questions (e.g., what are the consequences of...). In contrast, students who did not receive the GO instruction

(control group) did not show improvement in answering the average- and high-level questions, despite their improved performance in answering the low-level questions. This set of findings highlighted the strength of GO instruction in facilitating higher order information processing when reading in a less familiar language. The findings were further supported by the results of error analysis where students from the experimental group were found to be more able to relate to the story lines and the implicit meanings in the reading passages.

Together, the findings supported the relevance of schema theory in explaining reading comprehension (Rumelhart, 1980; 1997). The improved reading comprehension performance in students who had received GO instruction in this study is suggestive that GO instruction can be used to facilitate the mental processing of reading texts which aids in understanding and recalling of the information. Given the visual representations in GO instruction, the textual information can be easily interpreted by the students using their existing mental schemas, which aided them to perform reading comprehension tasks with reduced cognitive loads. This process is especially beneficial for low-proficient ESL students who are learning to read a less familiar language, i.e., English. The visual representations in GO instruction help them to organize the textual information systematically and structurally so that the information can be more readily interpreted by them using their existing mental resources. Once this is established, it also helps to scaffold their higher order thinking. When the students can analyze and interpret the textual information with ease, naturally they will be more ready to perform higher order thinking, which is required in answering average- to high-level reading comprehension questions such as inference and evaluation questions.

Additionally, the researchers also noted from the classroom observation that there were four students in the experimental group who showed exceptionally strong interest in the use of graphic organizers and were constantly asking questions about the activity. However, it is also important to note that there were two students in the experimental group who continued to show reduced interest in classroom participation, despite the application of GO instruction. This qualitative finding pointed to the possibility that the effectiveness of GO instruction is also subjective to individual's learning style and preference. Potentially, this instructional pedagogy is more suitable to visual learners (Keenan, 2004) as compared to learners with other learning-style preference. Besides that, it is also worthwhile to note that some text-types might influence the application of reading strategies. For example, Barrot (2016) found that graphic organizers were most frequently used when reading procedural texts, as compared to persuasive and expository texts. Procedural texts are texts which contains description about instructive process and informative process (Barrot, 2016). On the other hand, persuasive texts are texts about opinions, while expository texts are descriptive texts (Barrot, 2016). Therefore, future researchers can consider to explore the relationship between GO instruction, learning style, and also text-types.

Last but not least, it is worthwhile to acknowledge a few limitations in this study. First, the performance of some students in this study were affected by their extremely low English proficiency. Some students could not understand the advanced vocabularies in the passages and in the questions. Due to the lack of English vocabulary knowledge, many of them also unable to

answer the reading comprehension questions using own words. In regard to this, the researchers had identified several words in the passages which appeared to be too difficult for the students in the sample – purpose, gather, consequences, contaminated, keen, interest, via, pastime, assist, house chores, assumption, abroad, conclusion, hygienic, untreated, prevent, educated, primary, and look upon. Therefore, the choice of vocabulary needs to be better considered and evaluated in future research. Second, the GO instructions implemented in this study were solely based on semantic mapping. In future, it is worthwhile to also include other graphic organizers such as Venn diagram, compare and contrast map, cause and effect map, and concept maps.

CONCLUSION

Overall, after the graphic organizer (GO) instruction, the ESL students in this study were more able to use own words to answer reading comprehension questions and they were also more capable to identify the keywords in the passage. As a whole, GO instruction was found to be effective in encouraging independent learning and helping the ESL students to perform higher order thinking when reading the English passages. This study has offered new evidence to support the effectiveness of applying GO instruction in teaching reading comprehension to a group of ESL students in a Malaysian context. More importantly, this study has demonstrated the relevance of schema theory in supporting GO instruction in the teaching and learning of reading comprehension.

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