The Role of Schema or Background Knowledge Activation and Graphic Organizer on Increasing Iranian EFL Learners' Reading Comprehension

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Abstract

The purpose of current study is to use graphic organizers and schema or background activation knowledge to determine its effectiveness on increasing Iranian EFL learners' reading comprehension. For doing this study, 63 female students learning English at intermediate level in Ganje Daneshpazhohan English institutes in Tehran, Iran, were randomly selected and were divided into three groups including graphic organizer, schema, and control group. First, all three groups were given a reading comprehension pretest. Then, the graphic organizer group were taught reading through the use of graphic organizer tasks while those in schema group were taught how to activate their background knowledge before reading. Regarding the control group, there was no treatment. Finally. the posttest took place in the following class meeting after the training. The results indicated that using graphic organizer and background knowledge activation strategy could play a significant role in developing the level of reading comprehension among Iranian EFL learners. Finally, graphic organizer was recognized to a more useful method for learning enhancing reading comprehension among Iranian EFL learners. Therefore, the interactive reading processing approach based on schema theory and graphic organizer seems to have better effects in English reading comprehension.

Key words: Graphic organizer, schema, metacognitive reading strategies, reading comprehension, EFL

1. Introduction

English is an international language, and it is increasingly important for non-English speakers to learn English to be competitive in this information age. Further, to respond to the national policy, English as Foreign Language (EFL) instructors in Iran should consider the problems of EFL orientation such as the reformation of EFL instructional policy and strategies.

The ultimate purpose of EFL instruction is to cultivate students' skills of self-study and lifelong learning in English. According to a great number of EFL/ESL studies, effective English learning strategies suitable for individuals' need facilitate English learning. Language learning includes four dimensions: listening, speaking, reading, and writing. The present study focuses on the dimension of reading. Reading is a receptive behavior in knowledge acquisition.

Effective English reading strategies help build English reading metacognition and increase English reading comprehension. One purpose of reading is to obtain reading comprehension for

long-term memory, which can shape individuals' schemata or experiences. According to Goodman's (1994) statement, "Reading is a psycholinguistic guessing game," schemata or background knowledge is helpful to English reading comprehension. Reading strategies, especially cognitive and metacognitive strategies, stress the mental decoding process in reading including prediction, guess, inference, analysis, synthesis and evaluation.

Readers with high metacognitive ability are able to take advantage of effective cognitive reading strategies to meet their needs. A strategy is an action selected deliberately to achieve particular goals. Readers can plan, predict, analyze, synthesize, verify, adjust and evaluate their use of reading strategies, and then feedback their learning to another field. Cognitive reading strategies focus on the thinking process in reading and more direct manipulation of the learning materials for forming and revising internal mental modes as well as receiving and producing messages in the target language. Cognitive reading strategies include repetition, collecting information, translation, classifying, note-taking, deduction, recombination, imaginary, key word, conceptualization, evaluation, transfer, and inference (O'Malley et al, 1985).

A graphic organizer is one of the cognitive reading strategies and similar toAusubel's (1968) Advance Organizer as an introductory passage to activate readers' schemata or background knowledge for promoting reading comprehension. Graphic Organizers are visual presentations of overall related concepts. They can be used as one of the reading strategies in pre-reading, while-reading, and post-reading activities. Instructors can also use them to examine students' reading comprehension. Texts with familiar topics or familiar rhetorical organization facilitate reading comprehension according to schema theory, which advocates that background knowledge can promote reading comprehension.

Out of all of the research-proven instructional strategies used in the classroom to help students learn, the use of some instructional strategies such as graphic organizer stand out the most (Marzano, Pickering, & Pollock, 2001). These instructional methods create an instructional strategy that helps students identify similarities and differences in the information they are presented within their classrooms.

1.1. Background of the study

Previous research has investigated the effects of prior knowledge on comprehension, and has found it to be an important individual differences factor in the ability to generate inferences and maintain local and global coherence (O'Reilly & McNamara, 2007), the ability organize the mental representation of the text (Rawson &Kintsch, 2004) and generally improves comprehension (Shapiro, 2004). Studies that have provided readers with background knowledge prior to reading have also found benefits of prior knowledge on comprehension (Rawson &Kintsch, ibid). Extant text comprehension theories also assume that prior knowledge is used to complete, and enrich, the reader's mental representation of the text (Rapp & van den Broek, 2005). The importance of prior knowledge in comprehension is indisputable, however the relative contributions of various types or characteristics of prior knowledge have not been studied. Therefore, one of the goal of this study is to begin investigate the effects of qualitatively prior knowledge on comprehension product.

On the other hand, out of all of the research-proven instructional strategies used in the classroom to help students learn, the use of some instructional strategies such as graphic organizer stand out the most (Marzano, Pickering, & Pollock, 2001). These instructional methods create an instructional strategy that helps students identify similarities and differences in the information they are presented within their classrooms.

Clarke (1990) defines graphic organizers as: "Words on paper, arranged to represent an individual's understanding of the relationship between words. Whereas conventions of sentence

structure make most writing linear in form, graphic organizers take their form from the presumed structure of relationships among ideas" (p. 30). Another explanation of graphic organizers is given by Tate (2003), who defines them as visual representations, which help the left and right hemispheres of the brain make sense out of information and search for patterns in the information it processes.

By using graphic organizers on a consistent basis in the classroom, teachers can reach many of their students and be equipped to raise them up to an acceptable level of academic achievement and understanding.

As an English second language teacher, I sometimes used visual aids in my classrooms. However, I noticed the trend of using visual aids such as concept maps and Graphic Organizers (GOs) as part of the instructional methodologies. After I read some articles about using visual aids and graphic organizers in ESL context, it spurred my desire to find out if these tools could benefit Iranian EFL learners. In particular, I felt the need to ascertain through this preliminary empirical investigation if second language learners could improve their reading comprehension through the use of GOs.

1.2. Statement of the Problem

Reading is one of the language skills, and reading comprehension is a part of overall language proficiency. It is necessary for English teachers to cultivate students' English reading skills by providing students with effective reading strategies such as cognitive reading strategies and metacognitive strategies in class.

A number of studies on ESL/EFL reading show some common obstacles encountered by Iranian EFL learners .According to some teachers teaching English in an EFL context like Iran, students could read an essay better than the other text genres such as newspaper articles, poems, and novels. They read very slowly, and in general, students' vocabulary is deficient. They do not know how to guess the meaning of the unfamiliar words. Most students lack English grammar ability. They lack cultural background knowledge in the target culture. Most of them adopt the 'word by word' reading strategy for interpreting a text. Even though they understand the meaning of each word in a text, they are not able to comprehend the whole meaning of the text. They have no motivation for reading and do not have efficient problem-solving ability in reading comprehension. Most of students lack clear and specific objectives for English reading.

By considering the above issues, it is necessary for Iranian EFL learners to be equipped with effective reading strategies. Beckman (2002) supposed that strategic learners had strong motivation, self-monitoring, and self-regulation ability. If students are good at using effective reading strategies, they may become active, strategic, and independent readers who can adjust their strategies to different reading situations, evaluating their products and behaviors for full comprehensions.

1.3. Research Questions

Referring to the primary objectives of the study, the main research question raises here is as follows:

1. Does training in the use of Graphic Organizers enhance the reading comprehension of Iranian EFL learners?

2. Does activating background knowledge or schemata related to the topic have any significant effect on Iranian EFL reading comprehension?

3. Is there any significant difference between the effect of activating background knowledge or schemata related to the topic and the use of graphic organizers in enhancing EFL learners' reading comprehension?

1.4. Research Hypotheses

Taking all the afore-mentioned research questions into account, the following hypotheses were suggested:

1. The use of Graphic Organizers cannot enhance the reading comprehension of Iranian EFL learners.

2. Activating background knowledge related to the topic does not have any significant effect on Iranian EFL reading comprehension.

3. There is no significant difference between the effect of activating background knowledge or schemata related to the topic and the use of graphic organizers in enhancing EFL learners' reading comprehension.

2. Review of literature

2.1. The application of schema theory to ESL/EFL reading comprehension

Content schema or cultural orientation in terms of background knowledge frequently influences ESL/EFL reading comprehension a lot. Carrell (1987) conducted a study with subjects (28 Muslim Arabs and 24 Catholic Hispanic ESL students of high-intermediate proficiency) enrolled in an intensive English program at a Midwest university. The instrument was two texts, one with Muslim-oriented content and the other with Catholic-oriented content. The results of the study showed that schemata affected the ESL readers' comprehension and recall. Subjects better comprehended and remembered passages that were familiar to them. Carrell (1987) suggested if subjects are familiar with both rhetorical and content form, they remember the content at most, but unfamiliar content causes more difficulty for readers than unfamiliar rhetoric does. Steffensen and Joag-Dev(1984) conducted a study using two passages about weddings, both written in English for L2 Indian students and L1 American students. They found that readers comprehended the passage about their culture more than the unfamiliar one. Johnson (1981) investigated the effects of the cultural origin of prose on the reading comprehension of 46 Iranian intermediate advanced ESL students at the university level. Half of the subjects read the un-rewritten English tests of two stories, one from Iranian folklore and one from American folklore, while the other half read the same stories in rewritten English. The results revealed that the cultural origin of the story had a greater effect on comprehension than grammar or semantic complicity of the text.

From the above studies, one can recognize that background knowledge (content schema) plays a dominant role in reading comprehension. Specific schema helps to explain the differences between experts and novices. Experts have more specific schemata than novices do for interpreting and reacting to new information in a particular subject area. Specific schemata come from individuals' experiences in specific fields (Tip: concepts-schema, 1988)..

Nistand Mealey (1991) indicated that schemata organize knowledge in memory by putting information into the correct slot, each of which contains related parts; when new information enters memory, it not only must be compatible with one of the slots, but it must actually be entered into the proper slot before comprehension can occur. If no information is available to fill a slot, the reader fills the slot with a value that s/he knows to be typical in that slot, that is, default schema. Schemata are hierarchically organized, with most important information at the top, down to the least important information (Anderson, 1978).

Many reading instructional strategies are logically centered on schema theory. The most important implication of schema theory is the role of prior knowledge in processing. Therefore, Wilfredo (1995) advocated teaching learners metacognitive strategies for activating their schemata before reading, such as reading the heading and the title, looking at visuals in the text, and making

predictions based on the title and pictures. Gagne and Glaser (1987) also supported explicit teaching mental models to provide students with appropriate schemata.

2.2. Effect of graphic organization on reading comprehension

Hawk's research (1986) favored the GO strategy because it provides the advantages including an overview of the material to be learned, a reference point for putting new vocabulary and main ideas into orderly patterns, a cue for important in formation, a visual stimulus for written and verbal information, and a concise review tool.

Lamb (2003) also indicated the advantages of graphic organizer below:

o Graphic organizers are a way to encourage students to think about information in new ways. With graphic organizers, they remove the words and focus on the connections.

o They are a great tool for activities that ask students to review concepts and to demonstrate their understanding. They can easily make changes and take different perspectives to help students clarify their thinking.

o A huge amount of information can be shared on a single picture to provide the "big view" of a topic.

o It is easy to edit, revise, and quickly add to a visual map.

o They can be used as a nice planning tool from information identification to product development.

o They are great for visual thinkers or those who need to practice their visual thinking.

Dunston (1992) found out that when presented before reading to elementary students, graphic organizers benefit reading comprehension and recall of information. She also discovered that when students constructed graphic organizers after reading, elementary students' recall improved and secondary students' scores on vocabulary and comprehension improved. She suggested that the effects of graphic organizers were the greatest when students had accepted model instruction and training on how to use graphic organizers. The readers with poor reading proficiency have also the same situation. If teachers give them model instruction and train them how to use graphic organizers by a schedule, they may improve their vocabulary and reading comprehension. Dunston's point of view mentioned above will be proven in this study.

Darch, Carninr and Kemeenui (1986) revealed that students who used graphic organizers in a group social structure learned more than those who used graphic organizers independently. Moore and Readence (1980) conducted 16 studies on graphic organizers. They found that graphic post organizers seemed to produce greater effects than graphic advance organizers. Graphic organizers give students maps that they can use to locate, gather, organize, and synthesize information from a variety of resources. Students can put that knowledge to use in developing possible solutions for real-life, messy problems. Teachers may activate students' prior knowledge, cultivate students' metacognition, and build up their holistic concept of a given topic for long-term memory by modeling graphic organizers strategy.

3. Methodology
3.1. Participants

The participants were 63 female students learning English at intermediate level in Ganje Daneshpazhohan English institutes in Tehran, Iran. The students' ages ranged from 18 to 24, with mean of 21. In addition, some students had completed 12 years of schooling and some of them had graduated from different universities in Iran at BA level and some were following their education at high school.

In determining the sample, the researcher employed three intact classes as three groups: GO group, and (b) Schema group and control group. Although the participants selected for this study were studying English at the same level determined by the institute, their level of proficiency was determined by the Nelson proficiency test including 40 multiple-choice items which was first administered to the whole subjects. Then, based on the normal probability curve, those subjects who placed between one standard deviation above the mean and one standard deviation below the mean were selected as the main participants. It should be pointed out that some of the entire participants were dropped from the study due to their absence in some treatment sessions or due to incomplete data, resulting in 54 subjects.

3.2. Instrument

To collect data for this study, the following four instruments were developed

3.2.1. Nelson Proficiency test: The Nelson proficiency test (series 400 B) was used to assess the subjects' level of proficiency in English. It was used to assess the participants' level of proficiency in English. This test comprised 30 multiple-choice vocabularies, grammar, and reading comprehension items. For ensuring the subjects homogeneity, having administered General English proficiency test, those subjects who placed between one standard deviation above and below the mean were considered as the main subjects for the purpose of this study.

3.2.2. Reading Comprehension Pretest :Scores on the reading comprehension test prior to intervention program for the experimental group were one of the primary sources of data for this investigation. The pretest was taken by all students in total. It included twenty-six multiple-choice items for three reading passages. These passages were selected from retired TOEFL practice test books of Rogers (2002), Gear (2002), and Phillips (2004). The passages were diverse in topics and almost of the same length and number of test items. The purpose of giving a variety of reading subjects was to avoid topic- bias and topic familiarity. Time allotment for the pretest was forty-five minutes. In assessment, one point was awarded for a correct item.

3.2.3. Reading Comprehension Post test :Results of the post treatment test were compared with those of the pretest in order to make inferences on the effectiveness of the GO training and schema training through the change in students' reading comprehension performances. The posttest was taken by the thirty-five students who had gone through the pretest and the GO training. The posttest was of a parallel construct as the pretest and used the same sources for its content construction. It also adopted the same scoring method as the pretest's. The time allotment for this test was sixty minutes since there were extra tasks of creating Gas for the reading passages: subjects were asked to draw Gas before answering the multiple choice items. Regarding the schema group, they were asked to read a short passage related to the main reading passage before reading and answering the reading comprehension posttest.

3.3. Graphic Organizer (GO) tasks

GO tasks were used as a quantified indicator to measure students' use of Gos after the training. The tasks were administered after the GO training and before answering each set of multiple choice questions on the posttest. They included seven subtasks which required students to draw seven Gas for seven provided concept boxes. In total, these concept boxes contained sixty-eight concepts taken from the three reading passages on the posttest. Each of the student' Gas was scored by points given to directional links made between two concepts. Correct links were the ones connecting pairs of concepts as shown in the models given by the trainer. Each correct directional link earned one point. The total number of directional links in the seven graphics was fifty-nine.

3.4. Schema tasks

Before reading the text, students were instructed to determine the purpose of reading. They learned how the information in the text was organized. Before they started to read the main text, they were forced to read a short paragraph related to the main text in order to activate their background information or knowledge about the text they were going to read. They were also instructed to suggest some questions based on the short paragraph they read so that they could be able to find their answers after reading the main text. Altogether, encouraging students to generate questions about the text stimulate their background knowledge , to connect with the text, and to assess about what they had learned were the main purposes behind this strategy training.

3.5. Procedure

The design of the research was chronologically sequenced into three separate stages: pretest (45 minutes); Training to use GOs (100 minutes) for the GO group and Training to use schema or background knowledge activation for the Schema group; GO tasks and post-test (60 minutes). Participation was voluntary but only those who completed all four steps were considered for the data. The pretest, training, and posttest took place in a classroom setting during regular class time. The students in three groups took the pretest in one class session and received the training in next two class sessions. The posttest took place in the following class meeting after the training, and it completed the treatment process. Thus, the whole procedure took four successive 60-minutes class meetings (the first class meeting was for the pretest; the second and third were for the training; the last one was for the GO tasks, and the posttest.

The GO training lessons were incorporated into the regular coursework by the class instructor to benefit the students' reading. Participation was voluntary Participation was voluntary and could withdraw at any time during the experiment.

Regarding the control group, the students only took the reading comprehension pretest and posttest without any training.

4. Results and Discussion
4.1. Research Questions

By considering all the above-mentioned issues and fulfilling the purpose of this study, the following research questions were raised:

Research question 1: Does training in the use of Graphic Organizers enhance the reading comprehension of Iranian EFL learners?

Table 1.One-Sample Kolmogorov-Smirnov Test for Graphic Organizer group, Schemata group, and control group.

		Pretest Control	GO group	Schemata group
N		17	19	18
Normal Parameters(a,b)		11.89	11.11	10.56
		3.017	2.698	2.607
Most Extreme Differences		.143	.149	.163
		.143	.149	.163
		-.120	-.106	-.147
Kolmogorov-Smirnov Z		.869	.623	.631
Asymp. Sig. (2-tailed)		.438	.832	.821

In order to see whether we are able to use t-test as a parametric test, first we should check whether the data have been normally distributed or not. If the level of significance is more than 0.05, it indicates the normality of data distribution. Therefore, we can use parametric test for further data analysis.

As it is evident from Table 1, the result of normality test shows that p values of three groups (.438, .832, and .821) are more than significance level (0.05).Therefore, we can accept the assumption of normality and we can use paired sample t-test for comparing the results of pretest and posttest in graphic organizer and schemata group.

Table 2. Mean pre- and posttest of reading comprehension test scores for samples in Graphic Organizer group.

Group	Test	Mean	N	SD	Std. Error Mean
Graphic Organizer group	**Pretest**	11.89	19	3.017	.692
	Posttest	15.37	19	3.499	.803

As it is evident from Table 3, there is a significant difference between pre- and posttest in graphic organizer group in Iranian EFL context (t=-6.465; P= .000). In other words, participants scored higher in posttest (M=15.37, SD=3.499), when they were taught and used graphic organizer during reading comprehension, than pretest (M=11.89, SD= 3.017). With respect to this point, the first hypothesis (*The use of Graphic Organizers cannot enhance the reading comprehension of Iranian EFL learners.*) is rejected. In other words, using graphic organizer could play a significant role in developing the level of reading comprehension among Iranian EFL learners.

Table 3. Mean pre- and posttest of reading comprehension test scores for samples in Graphic Organizer group.

Group	Pair	Mean	SD	Std. Error Mean	T	df	Sig (2-tailed)
Graphic Organizer group	**Pre- and posttest**	-3.474	2.342	.537	-6.465	18	.000

Research question 2: Does activating background knowledge or schemata related to the topic have any significant effect on Iranian EFL reading comprehension?

As it is evident from table 5, there is a significant difference between pre- and posttest in schemata group in Iranian EFL context (t=4.424; P= .000) while with respect to the activation of the students' background knowledge before reading in Iranian EFL class. Further, it is clear from Table 4 that students had a better performance in reading comprehension when they were exposed to schemata or background knowledge activation strategy (posttest) than the time they were not exposed to (pretest) (means 13.00 and 11.11, respectively). According to table 5, the "t" value of 4.424 was found to be significant at .001 level. Therefore, the second hypothesis (*Activating background knowledge related to the topic does not have any significant effect on Iranian EFL reading comprehension.*) is also rejected. In other words, activating background knowledge related

to the topic or schemata could play a significant role on increasing adult EFL learners' reading comprehension.

Table 4. Mean pre- and posttest of reading comprehension test scores for samples in schemata group.

Group	Test	Mean	N	SD	Std. Error Mean
Schemata group	**Pretest**	11.11	18	2.698	.636
	Posttest	13.00	18	2.449	.577

Table 5. Paired sample test for reading comprehension test scores for samples in schemata group.

Group	Pair	Mean	SD	Std. Error Mean	T	df	Sig (2-tailed)
Schemata group	**Pre- and posttest**	-1.889	1.811	.427	-4.424	17	.000

Research question 3: Is there any significant difference between the effect of activating background knowledge or schemata related to the topic and the use of graphic organizers in enhancing EFL learners' reading comprehension?

In order to answer the third questions, first the gain scores from pretest to posttest in graphic organizer, schemata, and control group were computed and then ANOVA was used to see whether there was any significant difference among the three groups in pretest and posttest stage. The following tables show the results:

Table 6.Mean pretest scores of samples in graphic organizer, schemata, and control group.

Group	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
Control	17	.47	1.281	.311	-2	2
Graph Organizer	19	3.47	2.342	.537	-3	7
Schemata	18	1.89	1.811	.427	-2	5
Total	54	2.00	2.223	.303	-3	7

The results of data analysis (ANOVA) in table 6 indicates that there is a statistically significant difference between graphic organizer, schemata, and control group in the results of pretest and posttest because obtained F value of 11.463, was found to be significant at .001 level (P=.000). In other words, the third null hypothesis (*There is no significant difference between the effect of activating background knowledge or schemata related to the topic and the use of graphic organizers in enhancing EFL learners' reading comprehension.*) is rejected. In other words, there is a significant difference between the three groups.

Table 7. Results of ANOVA for mean pretest scores of samples in graphic organizer, schemata, and control group.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	81.250	2	40.625	11.463	.000
Within Groups	180.750	51	3.544		
Total	262.000	53			

Now, in order to see where the difference stands, the post hoc Scheffe test (see Table 8) showed that the graphic organizer group performed significantly better than schemata group (3.47vs. 1.89). Finally, schemata group performed significantly better than control group (1.89 vs. .47). The results indicated that the scores of graphic organizer group increased at a significantly higher rate than the schemata and control group. As a result, graphic organizer was recognized to a more useful method for learning enhancing reading comprehension among Iranian EFL learners.

Table 8. Post hoc Scheffe Test.

		Subset for alpha = .05	
Group	**N**	1	2
Control	17	.47	
Schemata	18	1.89	
Graphic organizer	19		3.47
Sig	54	.051	000.1

The data analysis found statistical evidence to support the effectiveness of Graphic organizer in reading comprehension of the entire participant group. The overall significant result of GO training might be explained by the useful training period. Jiang and Grabe (2007) said "the instructional use of Gas for reading development purposes is a collective process which benefits from long-term, consistent exposure" (p. 35). The longer term of GO training possibly might allow students sufficient exposure to relate textual discourse to GO visuals or to train students in the use of Gas as a long-term process with a lot of practice identifying GO representations for textual discourse and creating their own Gas. Bean et al. (1986) suggested GO instruction should take at least a semester and the students need consistent exposure to and practice with Gas.

In addition, this finding supports the previous study of Geva (1983). She found that Gas used with structured discourse were helpful for learners of low reading proficiency. Geva's research

construct is similar to the present one in the amount of training time and research subjects although her participants were all L1 and were enrolled in a community college program. Geva used node-relation flowcharts to train these less skilled readers. Her research finding was that learning to recognize text structure through flowcharting transferred to more careful reading of expository texts by less skilled learners (Geva, 1983). This finding suggests the usefulness of having students low in reading proficiency use Gas as a metacognitive strategy.

In summary, this finding could support previous claims concerning the use of visual aids in helping these readers recognize text structures and transferring linear text to a visual format. Based on the findings, I would like to encourage teachers to use GOs as an instructional strategy, especially in reading comprehension classes. However, teachers need to consider the length of the GO instructions as well as the types of GOs for effective instructional results. They also need to select the types of discourse structures of reading texts with care and consider the amount of practice.

On the other hand, the data analysis found statistical evidence to accept the alternative hypothesis that activation background knowledge or schemata are effective for reading comprehension of Iranian EFL learners. The significant differences on the reading test performance among the three language groups revealed the advancement of the English as a second language learner.

In terms of the schema theory, the finding indicated that these students may share homogeneous content schemata (Li, Wu & Wang, 2007). Also, the quality of comprehension of the language groups as revealed by the test performances have indicated the amount of linguistic schemata for these students from different language backgrounds might be essentially equivalent.

5. Conclusion

Schema theory views organized knowledge as an elaborate network between ideas. A large proportion of learners' difficulties may result from insufficient general knowledge, especially in cross-cultural situations. Schemata grow and change as new information is acquired. The general knowledge provides a framework into which the newly formed structure can be fitted. Schema theory plays a very important role in reading comprehension. Meaning does not come from the text alone; it needs the reader to predict and interpret the message presented in print. Meanings and comprehension occur when readers' prior knowledge or schemata are compatible with the information retrieved from the text. Goodman (1967) advocates that reading is a psycholinguistic guessing game.

In general, if students have sufficient "prior knowledge" in the specific subject, any teaching approach will do for students' learning. If students' "prior knowledge" is less, they need more support such as improving the models of teaching sources, supporting definite teaching or directive teaching, so as to help students deal with message into memory (Rosenshine, 1986). Appropriate teaching materials and methods benefit students to organize the messages and direct students to notice the focal points of learning for reducing their burden of memory.

Furthermore, stimulating the senses can enhance learning. Laird (1985) quotes research that found the vast majority of knowledge held by adults is learning through seeing (75%). Hearing is the next most effective (about 13%), and the other senses--touch, smell, and taste-- accounted for 12% of what we know. If multi-senses are stimulated, greater learning takes place.

Graphic organizers, an effective cognitive reading strategy, are a visual presentation. They can present the related concepts and the relationship among concepts for reading comprehension.

Graphic organizers are good tools for activating students' background knowledge and examining students' reading comprehension before reading, while reading, and after reading.

6. Pedagogical Implication

The interactive reading processing approach, which is based on schema theory, is an active EFL/ESL teaching method. It emphasizes the interaction between teachers and students in class. It is very important for instructors to activate students' learning motivation in reading. Before reading, teacher-modeling instruction is needed for recalling students' background knowledge in text. Selecting appropriate reading materials (i.e., fit for students' English proficiency levels and interests) may promote students' motivation and reading comprehension. Selecting familiar reading materials about daily life or authentic topics can activate students' background knowledge for guessing or predicting the meaning of the texts.

Students can be taught effective reading strategies before, while and after reading class to cope with the individual differences and text genre. Active readers can adjust their reading strategies and reading rates according to the different situations, which they encounter while reading. Instructors need to teach students some effective reading strategies or techniques including cognition and metacognition for training students' logic and thinking ability. The capacity of vocabulary is a major element of building reading proficiency. One should encourage students' extensive reading to increase their vocabulary, phrases and background knowledge. In fact, sufficient vocabulary can speed up the rate of reading, which benefits English reading comprehension and the building of the habit of lifelong learning.

Visual presentations benefits students' understanding the relationship of all concepts with one another in the text. One needs to provide students with the instruction of graphic organizers to increase their reading comprehension before, while, and after reading. After reading, instructors can ask students to make concept maps of the text or think aloud for examining students' reading comprehension. Background knowledge is helpful for the students with low-level English reading proficiency to predict or guess the meaning of unfamiliar words or sentences in the text for compensation of insufficient vocabulary by schema strategy, which may enhance their self-confidence in reading.

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