The Effect of Vocabulary Knowledge and Background Knowledge on Iranian EFL Learners' L2 Reading Comprehension

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Abstract

This study was an attempt to investigate Iranian EFL learners' L2 reading comprehension ability after receiving vocabulary knowledge and background knowledge instruction. In so doing, seventy-four university students were selected according to their proficiency level. As for the instruments of the study, the pre-test and post-test of Preliminary English Test (PET) and the Select Readings book were used. Only the reading section was used since the purpose of the present study was to evaluate learners' level of reading proficiency gains after the treatment. In the experimental conditions, the pre-reading activities of vocabulary and background knowledge were used to practice the reading skill; while, in the control condition traditional methods of language teaching were utilized. The results of a repeated measures one-way ANOVA showed that there were significant differences between the experimental and control conditions, with the participants of both the vocabulary and background instruction groups outperforming their peers in the control group. The discussion of the results and the implications of the study were further elaborated on.

Keywords: vocabulary knowledge, background knowledge, L2 reading comprehension, university EFL learners

INTRODUCTION

The drastic change in the last few decades in language teaching methodology resulted in a heavier responsibility for language teachers. Having been aware of this fact, language teachers tried to learn more about their learners, their psychological states and the strategies they apply in the process of learning. Oxford (1998) argued that the focus on the learner necessitated a change in the role of the language teacher in which the teacher's role has also undergone changes in that the teacher does not act as a dictator but as a facilitator.

The issue of learner-centered activities and tasks in the classroom has been considered as an imminent topic of concern for a long time for those in charge of ensuring the best for educational systems. One of the most important skills in EFL contexts such as Iran is the reading skill. Reading provides learners with the important knowledge about the target language and culture. Many factors play a role in the improvement of learners' reading skills, one being the strategies that successful learners use (Hosenfeld, 1977; Qingquan, Chatupote, & Teo, 2008; Rubin, 1975; Vann & Abraham, 1990). In this regard, there is a need to consider the characteristics of the classroom structure and methods to see which one is the best for promoting the reading ability of the learners. According to Jalilifar (2009) "there is a need to take into consideration the way that knowledge is presented to the students on the printed page" (p. 97).

Learner-oriented teaching techniques, as opposed to conventional strategies, provide learners with opportunities to take more active roles in their own learning. Learner-centered activities lead to peer interaction which itself promotes the development of language and the learning of concepts and content. This strategy is preferred to more solitary-oriented reading techniques. Activation of background knowledge about the reading topic and the adequate vocabulary knowledge are effective means of reaching satisfying conclusions with reading. The above mentioned facts lead us to consider reading comprehension as a very significant part of language learning, particularly foreign language learning.

LITERATURE REVIEW

Background Knowledge and Reading Comprehension

Background knowledge which is also referred to as subject knowledge or topic familiarity of learners about the reading text has been investigated in L2 literature for years. The theoretical base of the background theory is the schema theory, according to which comprehension includes two elements: one the linguistic element which is responsible for decoding text and transmitting the information to the brain, and the conceptual elements which relates this information to pre-existing knowledge structure, namely the schema. Based on this theoretical perspective, several studies have been conducted and indicated that L2 readers benefit from having background knowledge of the reading texts.

Studies showing the advantages of background knowledge on L2 reading comprehension have operationalized background knowledge in different ways. As an example, a few studies investigated background knowledge based on the culture highlighted in the text and concluded that when readers could become familiar with that culture, they had a better comprehension performance (e.g., Johnson, 1982; Lee, 2007; Alptekin, 2006).

In addition to the cultural issues, studies have indicated the benefits of discipline related background knowledge on discipline related reading performance (e.g., Alderson &

Urquhart, 1985; Barry & Lazarte, 1995; Chen & Donin, 1997). Moreover, studies considering learners' knowledge of general topics such as whether (Al-Shumaimeri, 2006), gender related topics (Bugel & Buunk, 1996), and sports (Levine & Hause, 1985) signified similar findings for the benefits of background knowledge in reading comprehension. There are, however, some studies which did not show positive impacts of the background knowledge (e.g., Alderson & Urquhart, 1985; Hammadou, 1991). But, the majority of researchers has acknowledged the beneficial role of background knowledge in reading comprehension and has started to evaluate its role in conjunction with the L2 vocabulary knowledge.

In this study the purpose is to evaluate the background knowledge relevant to specific texts read by learners rather than more general knowledge. Alexander, Schallert, and Hare (1991) made a distinction between content knowledge and topic knowledge. Whereas the content knowledge refers to the reader's knowledge of the physical, social and metal world, the topic knowledge is related to the knowledge more specifically linked to a particular reading text. The study by Alexander, Schallert, and Hare (1991) reached the conclusion that both content and topic knowledge contribute differentially but idiosyncratically to the learners' reading comprehension ability.

Vocabulary Knowledge and Reading Comprehension

Several studies have exhibited the relationship between vocabulary knowledge and reading comprehension. Zhang and Annual (2008), for example, examined the role of vocabulary knowledge on secondary Singaporean learners' reading performance. The Vocabulary Size Test was utilized as the instrument for measuring learners' vocabulary knowledge. Results indicated that learners' vocabulary knowledge at the 2000 word and the 3000 word levels was significantly correlated with their reading scores.

Martin-Chang and Gould (2008) in another study reported a strong correlation between vocabulary and reading on the one hand and between reading rate and preliminary print knowledge on the other hand. They argued the significance of vocabulary knowledge in reading skill due to the fact that it operates similar to the background knowledge in reading comprehension. Vocabulary learning, according to the researchers, facilitates decoding, which constitutes an important element of reading.

Joshi and Aaron (2005) were other scholars who found that vocabulary knowledge was a strong predictor of reading comprehension when factoring reading rate with decoding and comprehension. In a similar vein, Garcia concluded that a lack of vocabulary knowledge in the test passages followed by questions is a strong predictor of the sixth and fifth grade learners' reading test performance. Restricted vocabulary level along with a lack of sufficient vocabulary knowledge can hinder learners from comprehending the meaning of the text.

Similar to the above studies, other researchers have used vocabulary size scores to predict comprehension levels of learners (e.g., Alderson, 2000; Joshi, 2005; Ricketts,

Nation, & Bishop, 2007; Manyak& Bauer, 2009). Laufer (1997) discovered a significant relationship between several types of vocabulary size tests and reading comprehension tests. The established correlations were all significant, positive, and varying from moderate levels to strong levels of significance.

In a study of monolingual high school learners, Cromley and Azevedo (2007) found that background knowledge and vocabulary knowledge both had large influence on reading comprehension. Therefore, the researchers asserted that a better comprehension of texts requires an investigation of the ways background knowledge is employed in the second language reading process.

Sanchez and Garcia (2009) evaluated the relationship between text cohesion vocabulary which is an element of rhetorical competence and reading comprehension while taking into account learners' word decoding abilities and background knowledge of the topic. Their results showed that text cohesion vocabulary led to an enhancement in middle school learners' reading comprehension scores of expository passages.

In a more recent study, Rydland, Aukrust, and Fulland (2012) investigated the role of word decoding, first and second language vocabulary and background knowledge on language learners' reading comprehension performance. Two types of reading tests were used in the study: 1) Woodcock Passage Comprehension which presented reading texts through a cloze response format, and 2) a Global Warming Test which was a series of authentic texts all addressing the topic of global warming. As expected by the researchers, word decoding and vocabulary knowledge were influential upon participants' reading performance in Woodcock Passage Comprehension, while background knowledge was the determiner of participants' scores in Global Warming Test. As a result, in line with the previous research findings (e.g., Keenan, Betjemann, & Olson, 2008, Lerva°g&Aukrust, 2010), Rydland, Aukrust, and Fulland (2012) found that the effect of word decoding and vocabulary on reading comprehension differs based on the way reading comprehension is measured.

THIS STUDY

The present study was an attempt to investigate the difference between the experimental participants who received several pre-reading activities and tasks as part of their reading instruction and the control participants who did not. To this end, the following research questions were included:

- Does vocabulary knowledge have any significant effect on Iranian EFL learners' L2 reading comprehension?
- Does background knowledge have any significant effect on Iranian EFL learners' L2 reading comprehension?

METHOD

Participants

The participants were 74 EFL learners in a university in Tehran, Iran who were selected out of 80 learners according to their level of proficiency. All the students in one intact class were invited and agreed to participate in the study. The study lasted for 16 sessions. The first session was devoted to the administration of pre-test, and the next 4 sessions, i.e., sessions 2-5 were the control condition in which the learners simply read the texts without any specific pre-reading preparation. Session 6 was devoted to the post-test to examine the learners' reading gains in the control condition. Sessions 7-10 included the pre-reading activity of background knowledge after which at the eleventh session learners were administered the post-test to measure their reading performance. And, session 12-15 was allocated to the use of vocabulary knowledge building as a pre-reading activity. Finally, session 16 included the use of post-test to measure learners' reading performance.

The participants in the studied class were considered to constitute a fairly homogeneous group in terms of their learning history and English proficiency as measured by the Preliminary English Test (PET). The learners whose level of proficiency was not in the intermediate category were excluded from the study. They were between 18 and 28 years old. The class was composed of both male and female learners, with 30 males and 44 females in the class. The participants of this study had learned their English more or less entirely in an instructed setting. None had ever been to an English-speaking country and they had had little opportunity to use English for communicative purposes outside the classroom. Their major was agriculture and chemistry and all were freshmen. As university students, they had 3 hours of general English per week, focusing on all the language skills of reading, listening, speaking, and writing, with a larger amount of time devoted to reading activities. The textbook that was used in each class was the intermediate level Select Readings book compiled by Lee and Gundersen (2000).

Learners received pre-test (PET) at the beginning of the study andpost-tests (PET) after each 4 sessions of teaching.Participants were told that the test was for purposes of research only and they accepted this at its face value. They were not told the precise purpose of the study and were assured that the information collected would not impact their course grades. No participants withdrew from the study.

Instrumentations

The following instruments were used in this study to elicit data on learners' reading comprehension performance.

Pre-test and Post-test

The Preliminary English Test (PET) which is a standardized test developed by Cambridge University was administered to the participants in order to determine their level of proficiency and ensure that they were of near homogeneity. Only the reading section was used since the purpose of the present study was to evaluate learners' level of reading proficiency and their gains after the treatment.

The pretest contained 5 reading parts and 35 questions. Five quite short texts with five multiple choice questions including signs, messages, postcards, notes, emails and so forth were used in part one. The learners were required to read the texts and select one of the three sentences (A, B, or C) as the best description of the text. For the second part of reading, eight short descriptions of people with a total of five matching type questions were included and learners were asked to find specific information in the text. The third part was of the true/false format including a long text and ten sentences about the passage. The learners' task was to read the text quickly and find the necessary information. The forth part consisted of a long text and five multiple choice questions. The learners' task was to read the text and identify the details with selecting the correct answer (A, B, C, or D) for each question. And, the last part, i.e., part five, was a short text with ten numbered spaces. The learners were required to read the text and understand the essential vocabulary and grammar and choose the correct answer from a choice of four (A, B, C, or D). This part has a multiple-choice cloze format.

The PET was also administered at the end of the treatments to measure the learners' reading gain and included the same format and same type of questions but with different texts.

It should be mentioned that since PET is a standard test whose psychometric properties including reliability and validity have been tested extensively, the present study did not perform reliability and validity estimates.

Select Readings Book

For the treatment, Select Readings book written by Lee and Gundersen (2000) was used. The study lasted for sixteen sessions.

This textbook is taught in the general English classes at the university level and includes different language skills. Specifically, there are pre-reading activities such as brainstorming tasks and vocabulary preparation activities that are well suited to the purpose of this study. In other words, the book has a communication and task-based approach, encouraging the learners to use the language communicatively.

Procedure

There was an intact class in this study in which the learners were first exposed to the control condition, then to the experimental condition of background knowledge

building and finally to the vocabulary knowledge building in order to evaluate the effect of background knowledge and vocabulary knowledge as efficient pre-reading activities on their reading performance. After having been screened in terms of their level of reading proficiency, the study was conducted.

In the control condition, learners read one text in each session. The teacher did not provide them with any pre-reading activities; they were only required to answer the relevant reading questions after the completion of reading. The teaching of vocabulary and grammar points was explicit and in the target language. But when difficulties occurred in comprehension of learners, their mother tongue (Persian) was also used. In the sixth session, the PET was administered to the learners to evaluate their reading gains.

For sessions 7-10 which included the instruction of vocabulary knowledge before the reading of texts, a worksheet including the key words and unknown words of the text were administered. The words had a monolingual explanation in front and were used in an example sentence to better clarify their meaning by means of contextualization. Learners were asked to read the worksheet and were given the opportunity to ask for clarification where necessary. This strategy is called the VLP approach to pre-reading where there is vocabulary practice, oral language facility and prediction. The VLP procedure for pre-reading is based on two goals: to present a way of pre-teaching words employing oral language tasks which strengthen the words' structural and semantic properties and to use the words as a basis for anticipating the text. Here, the pre-determined words (i.e., those selected according to difficulty) are presented to learners who would note synonyms, antonyms, word classes, dictionary use, semantic analysis, part of speech, and structural analysis. One learners finished working on these activities, they anticipated based on their readings. After the four sessions, the PET was administered.

For sessions 12-15 which was allocated to background knowledge instruction, a variety of pre-reading activities for activating schematic knowledge were used. As an example, a hand-out containing the background information about the text was used. The aim of the handout was to remind learners of what they did in fact already know and think about that topic, that is activate existing schematic knowledge. Another type of activity used in the pre-reading was the questions to which the learners were required to find the answers from the passage. These questions preceded the main text and had the scanning function inducing the learner to read the text quickly in order to find specific information related to the questions. This activity helped the readers find an idea of what was going to happen in the text and therefore had a brainstorming function. Yet another activity which was utilized in these sessions was the discussion of cultural issues and conceptual aspects related to the topic of the text. The assumption behind the use of this activity was that the focus of pre-reading activities should not be just the offering of knowledge about the linguistic aspects; rather they should shift attention to

the sociocultural and intercultural issues as well. In the sixteenth session, the PET was given to learners.

In fact, the type of instruction was similar in all sessions except for the fact that the control sessions did not include the provision of vocabulary knowledge and background information about the reading tasks as opposed to the experimental sessions. It should be mentioned that the same teacher instructed the experimental and control groups. Then, at the end of each four sessions of teaching, both the control and the experimental participants had the PET as the post-test to examine their reading improvement.

RESULTS

The research questions of this study were concerned with the effects of pre-reading activities on the reading comprehension performance of language learners. In order to analyze the data to test the research questions, the statistical procedures have been carried out using statistical package for the social sciences (SPSS) version 21. First, the scores of the pre-test and post-test were analyzed to ensure the assumptions of normality. The results of Kolmogorov-Smirnov test are presented below.

Table 1.

One-Sample Kolmogorov-Smirnov Test Results

	Null hypothesis	test		Sig.	Decision
1	The categories of pre-test occur with equal probabilities.	One-sample Square Test	Chi-	.225	Retain the null hypothesis.
2	The categories of post-test occur with equal probabilities.	One-sample Square Test	Chi-	.092	Retain the null hypothesis.

The results of Kolmogorov-Smirnov tests show that the scores in all the variables are normally distributed ($p > 0.05$).

To examine the first and second research questions, a repeated measures ANOVA was run on the three groups' pre-test and post-test scores with time (pre- vs. post-test) as within and each instruction type (control, vocabulary instruction and background instruction) as between subject factor. Table 2 below shows the descriptive statistics for the learners' pre-test and post-test reading performance.

Table 2. Descriptive Statistics for Reading Performance in Three Conditions

	conditions	Mean	Std. Deviation	N
pretest	control	18.7703	5.64363	74
	experimental vocabulary	18.7703	5.64363	74
	experimental background	18.7703	5.64363	74

	Total	18.7703	5.61804	222
	control	19.1351	5.55008	74
posttest	experimental vocabulary	22.1081	5.23311	74
	experimental background	21.6892	5.33257	74
	Total	20.9775	5.50889	222

The results of descriptive statistics show that the mean scores of the control condition from the pre-test (M = 18.77, SD = 5.64) to the post-test (M = 19.13, SD = 5.55) were close with a slight improvement. Whereas in the vocabulary condition, the scores of the pre-test (M = 18.77, SD = 5.64) improved considerably in the post-test (M = 22.10, SD = 5.23). In a similar vein, the scores of the background condition from the pre-test (M = 18.77, SD = 5.64) to the post-test (M = 21.68, SD = 5.33) were increased.

In order to compare the test scores across the treatment conditions, a one-way repeated measures ANOVA was computed. Table 3 below shows the results of the analysis.

Table 3. Repeated Measures ANOVA for Reading Performance in Three Conditions

Source	Time	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Time	Linear	540.766	1	540.766	152.887	.000	.411
Time conditions	Linear	191.626	2	95.813	27.089	.000	.198
Error(Time)	Linear	774.608	219	3.537			

The repeated measures ANOVA indicated statistically significant difference between the four conditions, $F(1, 219) = 152.887$, p = .000). The results of this analysis revealed a significant effect of time ($F(1, 219) = 152.887$, p = .000) and a significant conditions _ time interaction ($F(2,219) = 27.089$, p = .000), suggesting that only vocabulary instruction and background instruction conditions led to an improvement from pre-test to posttest on reading performance. The results of Tukey post-hoc test are reported in table 4 to isolate the exact points where differences between the conditions occurred.

Table 4. Tukey Test Results Condition Differences

(I) conditions	(J) conditions	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
control	experimental vocabulary	-1.4865	.87910	.211	-3.5610	.5880
	experimental background	-1.2770	.87910	.316	-3.3515	.7974
experimental vocabulary	control	1.4865	.87910	.211	-.5880	3.5610
	experimental background	.2095	.87910	.969	-1.8650	2.2839
experimental background	control	1.2770	.87910	.316	-.7974	3.3515
	experimental vocabulary	-.2095	.87910	.969	-2.2839	1.8650
Based on observed means. The error term is Mean Square (Error) = 28.594.						

The results of Tukey are in line with those of descriptive statistics, indicating that there are not statistically significant differences between the instructional conditions. In other words, their mean scores are similar to each other, while the pre-test and post-test scores of the vocabulary and background experimental groups are different.

Figure 1 provides a schematic representation of the mean percentages for the three conditions in the pre-test and post-test.
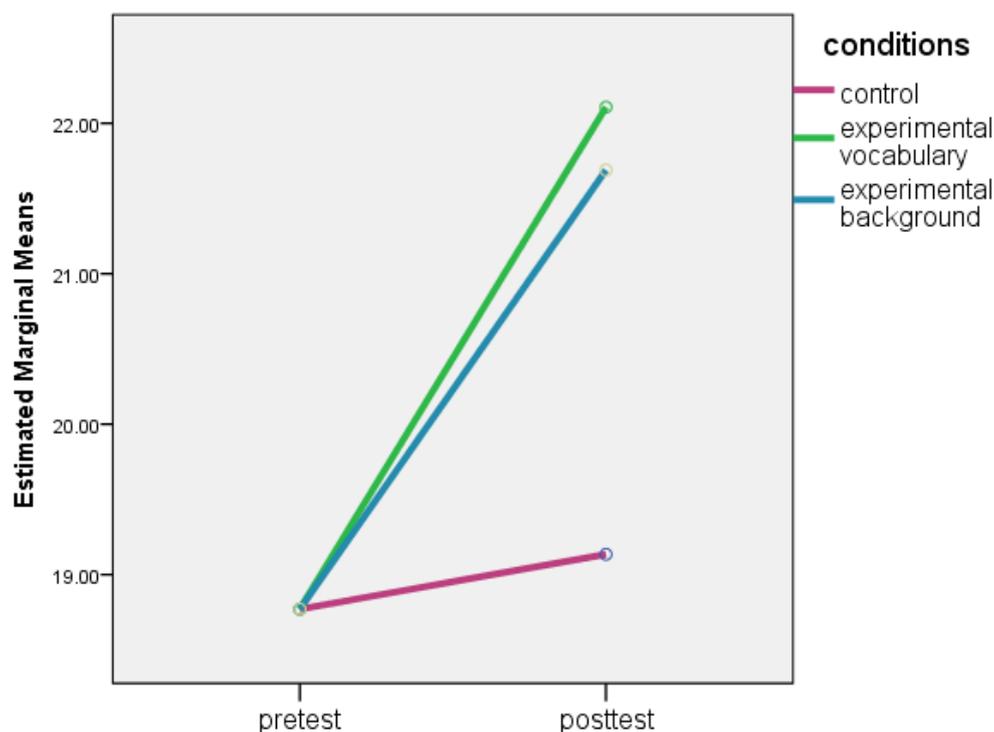
Figure 1. Pre-test and post-test performance by condition

DISCUSSION AND CONCLUSION

The data which were obtained by means of the reading pre-test and post-test were analyzed through SPSS software. The results of the first research question which investigated the impact of vocabulary knowledge instruction on reading comprehension showed the enhancement of participants in the reading comprehension after the treatment. This result was in fact predictable since it seems obvious that the number of known and unknown vocabulary items can largely determine the complication and comprehension of a text (Hu & Nation; Schmitt). Stahl, too, believes that the link between the vocabulary knowledge and reading ability is a strong one and that vocabulary knowledge has consistently been the best predictor of the complexity of a text. The results of the first research question are therefore consistent with those of previous studies that investigated the relative influence of vocabulary on second language reading comprehension (August, Carlo, Dressler & Snow, 2005; Carlisle, Beeman, Davis, & Spharim, 1999; Kieffer & Lesaux 2007; Lesaux, Lipka, & Siegel, 2006).

The findings of these studies confirmed the strong relationship between the vocabulary knowledge and reading performance of second or foreign language learners.

The positive influence of the vocabulary on reading comprehension can be enhanced by the instruction of related vocabulary strategies so that learners can better employ their vocabulary knowledge to the text. These research studies defined the stages in vocabulary acquisition and also highlighted the new ways of learning vocabulary (Coady & Huckin, 1997). Along with the recent trends in learner autonomy, vocabulary learning strategies summarized the seemingly demanding processes for language learners (Cohen, 1998). However, the ultimate aim has always been to define the best strategy for vocabulary retention (Gu & Johnson, 1996).

Vocabulary is commonly recognized as the main communication tool, and is often viewed as the most problematic area by language learners. Vocabulary learning process is triggered by various factors including not only explicit and implicit techniques or individual and group based activities but also motivation and learning strategies (Coady, 1997a, 1997b; Nation & Newton, 1997). Generally, vocabulary learning strategies are considered a sub group of general language learning strategies in foreign language pedagogy (Carter & McCarthy, 1988; Oxford, 1990; Schmitt, 1997). Language learning strategies are processes of utmost importance when learning a second or a foreign language. They encompass those tactics and elements of the language learning process which depend on the learner and are related to personality factors, learning style, age, sex and cultural background.

Results of repeated measures ANOVA for the second research question indicated the positive effect of background knowledge on the reading performance of participants. This result is in line with the findings of other studies pinpointing the importance of prior knowledge that readers bring to the text in explaining their comprehension of passages (Alexander & Jetton, 2000; Best, Floyd, & McNamara, 2008; Samuelstuen & Braten, 2005). Alexander and Jetton (2000) for example determined topic knowledge as a particular instance of background knowledge which relate to the depth of the person's knowledge in relation to a specific selection of text. Therefore, topic knowledge is an appropriate construct for reading performance, since it connects the learners' background knowledge to the subject in a particular text and the topic specific issues involved in the text.

Prior topic knowledge can be specifically significant for the understanding of different content area texts by presenting learners with a top-down tool to piece together information in diverse texts and move beyond the explicit meaning of the text (Donin & Silva, 1993). Comparing the reading performance of graduate learners in their first (L1) and second (L2) language, Chen and Donin (1997) examined text processing which was assumed to be influenced by both the language proficiency and background knowledge. The conclusion was that while the background knowledge exerted a top-down influence on passage understanding, the language proficiency had a bottom-up impact. For

readers who had had high background knowledge but low language proficiency, their background information compensated for their lack of language abilities.

The implications of these findings provide insights for how teachers can assist students improve their EFL reading abilities and vocabulary retention. Since improving comprehension and vocabulary acquisition were the overarching goals of the study, teachers, who try to make their classes as varied as possible, may rely on different pre-reading tasks to enhance the learning experience for language learners. Hence, one of the implications is for teachers to integrate different learner-centered activities to the classes so that learners would have higher level of motivation. The results of the studies on motivation (Nikolov, 1999) indicate that learners will not focus on learning unless classroom tasks are intrinsically motivating for them. They cannot control and monitor their own learning, but if they are engaged with decision making, they will gradually develop effective learning.

Teachers need to be aware of the importance of reading strategies that can help learners better exploit their vocabulary and reading resources. With language learners, the learning and especially reading strategies are primarily developed and shaped by the teacher and only then they can develop autonomy for their use. At the beginning stages, the teacher is responsible for a calm and encouraging atmosphere in the class, motivation and interest for learners, but if they are involved in these processes, they will become aware of them and apply the strategies successfully. Knowledge in itself as an aim of language learning represents a self-reward this type of situation and learning involves. One particular way to help learners develop strategies to deal with the technologically-enhanced materials is related to the use of group work. The learner group, according to Dörnyei and Malderez (1997), is a strong cooperation among learners which can have a major impact on the effectiveness of learning.

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