

## **Scaffolding Comprehension and Recall Gaps: Effects of Paratextual Advance Organizers**

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### **Abstract**

Although filling the gap in reading comprehension gained momentum with the rise of the top-down approach, Vygotsky's concept of scaffolding and the dual code theory provided a strong support for the use of paratext to enhance comprehension. Scaffolding is dependent on other-regulation, one type of which is object-regulation. From this vantage-point, various types of paratext can function as sources of object-regulation to scaffold the interaction between the reader and the text. Hence, the purpose of this study was to explore the effect of three types of paratext (the picture, preface, and title) on the reading comprehension and recall of less proficient and more proficient EFL learners. The control groups in the two proficiency levels read a text with no paratext, whereas participants in the experimental groups read the same text accompanied by the three types of scaffolding paratext. Both groups were also given a recall test which required the recall of propositions from the original texts. The results showed the beneficial effect of paratext on reading comprehension among the more proficient experimental group. As to reading recall, neither less proficient nor more proficient group succeeded in manifesting better recall than the control groups. These findings have two implications. First, there is proficiency "short-circuit" for the scaffolding effect of paratext on reading comprehension. Second, short-circuit has a task-bound nature. As the results of this study show, the proficiency ceiling needed to move beyond the short-circuit effect of comprehension is different from that of recall because recall is a comparatively more demanding task.

**Keywords:** comprehension, recall, scaffolding, paratext, prior knowledge

## INTRODUCTION

For many students, reading is the most important of the four language skills in a foreign language. Considering the study of English as a foreign language all over the world, reading has traditionally been considered as the main reason why students learn the language (Carrell, 1988). Specially, reading for comprehension plays an important role in the process of foreign language. Although current theories of foreign language learning do not agree upon specifics, all take into account the role of comprehension in the processing, storage, and recall of linguistic input, and its impact on the development of a learner's foreign language.

In the last three decades, the accepted theory of EFL reading has changed dramatically from a bottom-up model, a decoding process of reconstructing the author's intended meaning via decoding individual linguistic units from the small units to the largest, to a top-down model which conceptualizes the reading process as one in which stages which are higher up and at the end of the information-processing sequence interact with stages which occur earlier in the sequence. Top-down processing research shows that the greater the background knowledge a reader has of a text's content area, the better reader will comprehend that text (Pearson, Hansen, & Gordon, 1979; Stevens, 1980; Taylor, 1979). A large body of literature has argued that prior, knowledge of text-related information strongly affects reading comprehension (Anderson & Pearson, 1984, 1987; Carrell & Eisterhold, 1983; Wilson & Anderson, 1986). As well as being a means of improving reading for comprehension, background knowledge is claimed to facilitate reading for recall. Research by Carrell (1984, 1987) documents that a reader's prior knowledge has an effect on the information recalled from a text.

As background knowledge provides theme or content knowledge (Chou, 2011), it enhances text processing. This is reflected in a number of studies on the role of background knowledge (Brantmeier, 2005; Hammadou, 1991a, 2000; Johnson, 1982; Lee, 1986; Nassaji, 2003; Pulido, 2004, 2007). There, however, exist reactions to the extent of the role played by background knowledge as the facilitator of top-down processing. Cziko (1978, 1980) suggests that lower-proficiency readers are not able to utilize background knowledge for better comprehension and recall on the ground they appear to rely on bottom-up strategies for processing information in a text; that is, a relatively high degree of competence in a language is a prerequisite to the ability to use top-down

strategies in reading. Another reaction comes from Clarke's (1980) notion of a "language competence ceiling" which hampers L2 reader's attempts to use effective reading strategies. On the contrary, opposing the above reaction, Hudson (1982) in his research on the role of background knowledge has argued that background knowledge can overcome linguistic deficiencies.

It is suggested that insufficient prior knowledge can hinder text interpretation (Barnett, 1989; Carrell, 1988; Dubin & Bycina, 1991). One way of facilitating a reader's interaction with a text and providing background knowledge is through various kinds of text-related tasks. There are three main types of such tasks: those which precede presentation of the text, those which accompany it, and those which follow it (Wallace 1988, 1993; Williams, 1984).

Pre-reading tasks, the concern of this study, have tended to focus on preparing the reader for linguistic difficulties, offering compensation for second language readers' supposed sociocultural inadequacies, reminding readers of what they do already know, as well as giving them prior knowledge of the content of a text. Paratextual aids are a commonly used kind of pre-reading scaffolding. Out of Genette's (1987) elements grouped under the rubric paratext, prefaces, titles, and pictures, the focus of this study, are popular practice to supply a reader with prior knowledge and consequently improve comprehension and recall of the actual text.

There are, however, reactions to the practice of the foregoing three aids. First, some researchers suggest that some EFL readers may not effectively utilize knowledge-based processes, and that they seem to engage almost exclusively in text-based processing (Carrell, 1983; Carrell & Wallace, 1983). Specifically, readers may not capitalize on paratextual information they are provided with to facilitate comprehension and recall. Second, readers may fail to benefit from paratextual information on account of their low proficiency, which causes inefficient interaction of text-based/bottom-up and knowledge-based/top-down processing for enhanced comprehension and recall. Finally, the effect of each paratextual aid on comprehension and recall may significantly differ in terms of its type, the manner of its presentation, and the particular type of reading task.

If prior knowledge is an important factor in reading for comprehension and recall, if a reader does not have prior knowledge is an important factor in reading for comprehension and recall, and if a reader

does not have prior knowledge in his English discourse processing, then can low- and intermediate-proficiency readers take advantage of the aforementioned paratextual aids (titles, prefaces, and pictures to significantly improve their reading comprehension and recall?

## LITERATURE REVIEW

There is a wide range of scaffolding aids for improving comprehension and recall of information from a text. Titles, prefaces, and pictures form part of the paratextual scaffolding for processing written texts. This section provides a short account of the effects of these three aids on comprehension and recall achievements gained by L1 and L2 readers, especially by lower-proficiency and less-skilled ones.

A number of studies have demonstrated the beneficial effects of providing title. For example, Arnold and Brooks (1976) gave their subjects verbal description of unusual situation. Each description was preceded by a preface. Although the integrated titles did not facilitate verbatim recall of the text, they enabled subjects to make more correct inferences than did the non-integrated titles. Similarly, Harris et al. (1980) showed that titles that provided setting information resulted in better gist recall in young readers than titles simply listing the characters in the story. A study by Dooling and Lachman (1971) also demonstrated that when the subjects received the title they recalled more from the passage than those receiving no title.

Bransford and Johnson (1973) had three groups of subjects read a passage, rate its comprehensibility, and then recall it. One group read just the passage, while another group was given a title before reading. The researchers reasoned that the topic would allow this group to activate relevant knowledge prior to reading, making the passage more understandable. This group rated the passage as more comprehensible and was also able to recall more idea units than the groups that were given no title. The third group in this study was given the topic after reading the passage. Neither comprehensibility rating nor recall of topic-after subjects was improved relative to the no-topic group. The authors concluded that just having the prior knowledge is not sufficient for understanding, but what is important is that the prior knowledge be active during the acquisition of information. In another study, Doctorow Wittrock, and Marks (1978) showed that the comprehension of their subjects was substantially improved by giving them titles for paragraphs

in a text. They suggest that titles help readers locate relevant background information in memory which they use to make sense of the passage (Oakhill & Garnham, 1988).

As to the effect of visuals such as pictures, according to Pan and Pan (2009), there is strong theoretical support. This includes the dual coding theory (Paivio, 1971, 1986; Sadoski & Paivio, 2001), the theory of mental models (Johnson-Laird, 1983), the transmediation theory (Siegel, 1995), and the repetition hypothesis (Gyselinck & Tardieu, 1999). Among these, the dual coding theory seems to be the most comprehensive theory explaining the relationship between visuals and reading. This theory is based on the premise that information can be better retained and retrieved when it is dual-coded because two mental representations rather than one. According to Paivio, in dual coding theory, words and images are considered to have different cognitive representations; therefore, differences in the types of input entail the use of separate systems by the human brain: the verbal system and the imagery system. The verbal system processes linguistic codes (e.g. words, speech, or language) whereas the imagery system mainly operates on visual codes (e.g. images or pictures). Paivio maintains that input in either system can activate input in the other system. Besides these frameworks, Vygotsky's sociocultural concept of other-regulation through scaffolding provided another rationale of the role of visuals. As Elster (1998, p. 68) argues, visuals are a 'scaffold' which increase nurture attention.

Beyond this theoretical support for the effect of pictures in processing reading input, a myriad of studies have provided evidence-based support for the role of pictures (Alesandrini & Rigney, 1981; Daley, 2003; Eisner, 2002; Evans, 2003; Gyselinck & Tardieu, 1999; Hanley, Herron, & Cole, 1995; Liu, 2007; Mackay, 2003; Marcus, Cooper, & Sweller, 1996; Mautone & Mayer, 2001; Omaggio, 1979; Rose, 2001; Tang, 1992). The results generally indicate that visuals have positive effects on text comprehension. Several studies focused specifically on pictures accompanying texts (Caputo, 2009; Carrell, 1983; Ebrahimpur, 1999; Free, 2004; Gerrard, 2008; Nicholas, 2007; Pike, 2008; Sufiyatun, 2009).

The degree of picture facilitation expected depends on the relationship between the particular reading task and the kind of pictures provided or generated; in other words, pictures that are directly related to the task content and component processes will be more effective than

those that are either neutral to, or in conflict with, the task Pressley, Levin, and Hope (1981) showed that the kind of pictures can greatly influence the kind of prose information recalled by readers, especially young readers. With text-complementary pictures, recall is enhanced; with text-contradictory pictures, either it is not enhanced; or it is diminished.

The degree of picture facilitation also depends on readers. The message here is that even given task-appropriate pictures, not all readers will experience comparable degrees of picture facilitation. In order for pictures to “work,” Levin (1983) suggests, they must activate certain information skills within the reader. If the reader does not possess these skills or is quite involved in bottom-up processing of texts due to his low-proficiency, negligible or negative effects would be expected. Levin and Lesgold (1978) reviewed nearly twenty studies that showed improved reading when the text included pictures. However, pictures are not always helpful. Schallert (1980) suggests that pictures do not aid comprehension when they are inconsistently or vaguely related to the text, and that to be useful they must illustrate information that is central to the text or new content that develops the overall meaning. Rohwer and Harris (1975) showed that pictures aid comprehension not simply by restating what is in the text, but by providing a different perspective on the same information (see also Ruch and Levin, 1977).

Peeck (1974) presented children with stories both with and without accompanying cartoon strip pictures and investigated the effect of the pictures on longer-term memory for information in addition to what was in the text. When the memory test was immediate, the presence of pictures had no effect on memory for that information that was presented consistently in the pictures and the text. However, when the text was delayed for either a day or a week, memory for information that was presented both in the pictures and in the text was improved for the children who had originally seen the pictures. Memory for information presented only in the text was never improved by the pictures. So, in the longer-term, pictures help children remember textual information that they specifically complement, but not other information (Oakhill & Garnham, 1998). In a later study, Lesgold, DeGood, and Levin (1997) found evidence that pictures have no provide accurate and specific representations of the information in the text in order to facilitate recall.

Another study suggesting that pictures have very specific effects in aiding comprehension is that of Bransford and Johnson (1972). They

asked adults to recall a passage that appeared meaningless because it described an unlikely situation in an obscure way. Subjects who were given a picture that showed the people and objects in the story in the correct spatial relations recalled the passage better than subjects given no picture. Furthermore, subjects given a picture showing the same people and things but in the correct relation to one another recalled no more than subjects who saw no picture. Oakhill and Garnham (1988) state that these results suggest that pictures are only helpful if they provide a detailed framework for the interpretation of a text. Arnold and Brooks (1976) also investigated how different types of pictures help readers to understand texts. They found that their subjects made correct inferences about short texts with integrated pictures than with non-integrated pictures. However, as Oakhill and Garnham (1988) point out, in both Arnold and Brooks' and Bransford and Johnson's experiments, the texts were unintelligible without the pictures, and the unhelpful pictures were misleading. Since reading books do not contain passages and pictures of this sort, a more pertinent question is whether some types of picture that are true to the text are better than others.

Yuill and Joscelyne (cited in Oakhill & Garnham, 1988) investigated the effects of different types of picture on the comprehension of and memory for short stories in skilled and less-skilled comprehenders. Although the stories were not obscure, some information was not explicitly stated, though it could readily be inferred by skilled readers. Yuill and Joscelyne suggest that less-skilled comprehenders are unable to integrate information from different parts of a text, they, but not skilled comprehenders, should be helped by pictures that indicate how the different pieces of information fit together. They investigated the effects of pictures of two types. The pictures were either large ones that summarized the whole story, or small ones that illustrated events. In contrast to earlier studies, both types of pictures were plausible representations of the story content. The results of the experiment supported Yuill and Joscelyne's conjectures. Integrative pictures improved the comprehension of the less-skilled but not the skilled comprehenders.

In studying two groups of children's comprehension, Brookshire et al. (2002) asked them to read a story and recall certain facts about it. The findings showed that the group reading the story with pictures had better comprehension. Free (2004) investigated the impact of pictures plus words on reading comprehension. The findings showed the significant

effect of pictures on reading comprehension. In another study, Gerrard (2008) investigated the effect of pictures on the comprehension of three narrative texts: written-only text, combination of text and pictures, and picture-only text. The results confirmed positive effect of pictures on the participants' comprehension. Unlike these studies, Pike's (2008) study yielded mixed results because pictures both facilitated and intruded with the participants' inferencing ability.

Pan and Pan (2009) measured beneficial effects of pictures on low-proficiency Taiwanese EFL students. They found out the accompanying pictures improved the students' comprehension of both simple and difficult texts. Drawing on the dual code theory, Jalilvand (2012) explored the impact of pictures on first-grade high school students' reading comprehension. Participants were divided into four reading conditions: groups. Each group read a reading comprehension text under one of four conditions based on text length and picture. ANOVA results did not support the effect of text length on reading comprehension. However, participants performed better on the on texts accompanied by pictures.

In sum, appropriate pictures, titles, and prefaces presented with a text generally improve comprehension and recall in readers, especially n L2 readers, as the bulk of research described above indicates. However, their effects are specific to the type of the above three aids, the manner of their presentation, the part of the text they illustrate, the particular reading task, the type of text (see, for example, Schallert, 1980, who suggests that pictures are particularly useful when the text conveys spatial or structural information), readers' information processing skills, and readers' proficiency level.

## **PUPRPOSE OF THE STUDY**

This study was designed to serve three purposes. The first one was to investigate the effect of the three paratextual aids (titles, prefaces, and pictures) on the comprehension and recall of texts read by low- and intermediate-proficiency EFL readers. The second one was to determine the correlation between reading comprehension and recall, two major goals of reading, in low- and intermediate-proficiency readers. The last purpose was to extend evidence on the interaction of top-down and bottom-up modes of processing of texts read by low- and intermediate-proficiency EFL readers and its relationship with the notion of "threshold



linguistic competence” (Clarke, 1980). This study was designed to investigate the following research questions in accordance with the general research purposes posed earlier:

1. Is there any significant difference in reading comprehension between low- and intermediate-proficiency EFL readers receiving the three paratextual aids (titles, prefaces, and pictures) and those receiving no paratextual scaffolding?
2. Is there any significant difference in reading recall between low- and intermediate-proficiency EFL readers receiving the three paratextual aids (titles, prefaces, and pictures) and those receiving no paratextual scaffolding?
3. Is there any significant correlation between reading comprehension and recall in low- and intermediate-proficiency EFL readers?

## **METHOD**

This study purported to investigate the impact of titles, prefaces, and pictures on the comprehension and recall of texts taken by EFL readers in terms of their proficiency level. The following method was adopted in conducting the study:

### **Participants**

The population for the study consisted of 53 students studying EFL at a language center. Of the 53 students, 28 were studying at Level 4 (the 6<sup>th</sup> term in a program with 14 proficiency levels), and 25 were studying at Level 8 (the 10<sup>th</sup> term). The students at Level 4 consisted of 11 males and 17 females, and the students at Level 8, of 11 males and 14 females.

Participants in each group were randomly assigned to two text conditions. As a result, four text conditions were established. Group 1a (low proficiency) was an experimental group (N=13: males=5 and females=8) reading Text 1 with the paratext made up of a title, a preface, and a set of pictures. Group 1b (low proficiency) was a control group (N=15: males=6 and females=9) reading Text 2 without the paratextual aids. Group 2a (lower-intermediate proficiency) was an experimental group (N=13: males=6 and females=7) reading text 2 with the paratext consisting of a title, a preface, and a set of pictures. Group 2b (lower-

intermediate) was a control group (N=12: males=5 and females=7) reading Text 2 without the paratextual aids.

The participants' language proficiency was determined in terms of the TOEFL test (100 items), excluding the listening section. The students' proficiency in Group 1 (Level 4) was considered low, with TOEFL scores around 25.10; the students' proficiency in Group 2 (Level 8) was considered intermediate, with TOEFL scores around 43.88.

## **Instrumentation**

Participants in Group 1 read Text 1, which was taken from *teaching Listening comprehension* (Ur, 1986). The text was a reading passage about a mother who wanted to watch TV but got wavy lines because of the maladjustment of the aerial. It was 197 words in length. Participants in Group 2 took Text 2, which was adopted from *Expanding Reading Skills: Intermediate* (Markstein & Hirasawa, 1982). The text was a reading passage about the importance of tribalism in Africa. It consisted of 291 words. Both texts fell into the difficulty levels which matched subjects' proficiency levels. As very tough measure of difficulty level, the Fog Index was used. The indices were 6.39 for Text 1 and 12 for Text 2.

For each of the reading passages, pre-reading aids were developed by the researcher or had already been included in the books from which the passages were taken. These aids comprised a title, a preface, and a set of pictures about the general topic of each passage. Second, an 8-item and a 10-item true/false reading comprehension tests were developed for Text 1 and Text 2, respectively.

The reliability coefficients for the recall and comprehension, and proficiency tests in the low-proficiency groups were found to approach the same quantity ( $r=.64$ ,  $r=.66$ ,  $r=.65$ , respectively). On the contrary, the reliability coefficients for the foregoing types of tests taken by the lower-intermediate-proficiency subjects came within a noticeably wide range ( $r=.84$ ,  $r=.64$ ,  $r=.72$ , respectively).

## **Data Collection Procedure**

The data were collected during the regularly scheduled class sessions. Three measures were deemed appropriate for investigating the research hypotheses:

**Proficiency protocol:** The first of these measures was the TOEFL test. In Group 1 (low proficiency), mean scores for the experimental and control groups were 25.69 and 24.60, respectively. In Group 2 (low-intermediate proficiency), mean scores for the experimental and control groups were 46 and 41.58, respectively. A *t*-test performed on these means confirmed that they were not statistically different, suggesting that there were no significant differences between experimental and control participants in each of Group 1 and Group 2 in terms of general language proficiency in English.

**Comprehension protocol:** All participants were given their reading comprehension tasks within a week after the proficiency protocol. As to Group 1, participants in Experimental Group 1 were instructed to briefly look through a set of pictures and read the title and the preface. Then, participants in both Experimental group 1 and Control Group 1 were given ample time to read Text 1 and complete an 8-item true/false reading comprehension test. The same procedure was followed with Group 2, with the difference that the subjects in Experimental Group 2 and Control Group 2 were instructed to read Text 2 and complete a 10-item true/false comprehension test.

**Recall protocol:** A few minutes after the comprehension protocol was over, participants in Group 1 and Group 2 were instructed to review Text 1 and Text 2, respectively. The participants in the experimental groups were also encouraged to look back at the paratextual aids in addition to reading the texts. Following this period, all materials were taken from the participants. All of the participants were then given ample time to write everything they recalled from the texts.

## Data Analysis

The comprehension test was scored counting the total number of confirmations of true statements and rejections of false statements. Concerning the recall test, the recall scripts were marked according to a scoring scheme based on the analysis into propositional units. Units in the written recalls which showed a correct recall of the passage were counted. A proposition was counted as recalled if it was verbatim or expressed the gist of the proposition in the text. Since this method of scoring is subjective by nature, a test of inter-rater reliability was conducted over a random sample of 25 percent of the recall protocol ( $r=0.93$ ).

In this study, the following statistical procedures were adopted to describe the data and to address the research questions. To measure the difficulty of Text 1 and Text 2, the Fog Index was made use of. The reliability of the tests of comprehension, recall, and proficiency was calculated by employing Kudar-Richardson formula 21. Spearman's rank order correlation coefficient ( $\rho$ ) was used to compute correlation between the tests of (a) comprehension and recall, (b) comprehension and proficiency, and (c) recall and proficiency. The  $t$ -test was employed to determine the statistical differences between the experimental and control subjects in terms of general language proficiency, comprehension, and recall in English. To determine whether the samples met the criterion of equality of variances, an F test was used.

## RESULTS

### Scaffolding Reading Comprehension

In order to address Research Question 1, the data were subjected to an appropriate analysis. The Student's  $t$  test was performed on low-proficiency subjects' gains on comprehension, yielding the following values:  $M$  (experimental group)=5.692,  $M$  (control group)=5.666,  $t=.066$ . The results revealed that the difference between the experimental and control group on the comprehension test was not statistically significant at the .05 level (Table 1).

**Table 1:** T-test for reading comprehension in low-proficiency groups

	Experimental Group	Control Group	
Comprehension	N=13	N=15	
Scores	M=5.69	M=5.66	$t=0.06(2.05)$
	SD=1.25	SD=0.81	

Clearly, the findings seem to indicate that the paratextual aide (titles, prefaces, and pictures) do not have a significant positive effect on low-proficiency readers' performance on comprehension. It appears that the mere exposure to the three paratextual aids does not result in substantial difference in comprehension gains. These results are not consistent with some of those in which the active presentation of the same aids was found to be facilitating.

Table 2 displays statistics for the data pertinent to intermediate-level groups. Means and standard deviations of subjects' gain scores on the comprehension measures are as follows: M(experimental group)=8.15 and C(control group)=5.50. A *t*-test was run. A statistically significant difference was found between experimental and control subjects' comprehension gain scores ( $t=3.60$ ,  $p<.05$ ).

**Table 2:** T-test for reading comprehension in intermediate-proficiency groups

	Experimental Group	Control Group	
Comprehension	N=13	N=12	
Scores	M=8.15	M=5.50	$t=3.60(2.05)$
	SD=1.40	SD=2.23	

These findings seem to demonstrate that the presentation of the three paratextual aids approaches significance for intermediate-proficiency readers' comprehension. It appears that intermediate-proficiency students can benefit from the mere exposure to the paratext in order to substantially enhance their reading comprehension. This accords with some of the earlier findings suggesting that receiving the same type of paratext can enhance reading comprehension.

### Scaffolding Reading Recall

Table 3 presents the data for the participants' recall scores in the low-proficiency groups: M(experimental group)=28.23, M(control group)=29.80, SD (experimental group)=5.904, SD (control group)=4.708. The application of *t*-test yielded the following results:  $t=0.783$ ,  $p<.05$ . The results indicated that paratext did not aid the experimental group to significantly surpass the control group in recall; on the contrary, the latter group slightly, but not statistically significantly, outdid the former.

**Table 3:** T-test for reading recall in low-proficiency groups

	Experimental Group	Control Group	
Recall	N=13	N=15	
Scores	M=28.23	M=29.80	$t=0.78(2.05)$
	SD=5.90	SD=4.70	

These findings suggest that the three paratextual aids do not contribute to low-proficiency readers' recall performance. It is likely that low-proficiency readers are not responsive to the exposure of the paratextual aids as a factor facilitating recall. These results are not consistent with some of the findings reported on the enhancement of low-proficiency readers' recall as a result of the active presentation and discussion of some of the paratextual aids used in this study.

The main results of recall study on the intermediate-proficiency groups are summarized in Table 4. The mean and standard deviation proportions were as follows: experimental group ( $M=19.84$ ,  $SD=7.16$ ); control group ( $M=20.08$ ,  $SD=9.62$ ). As with the low-proficiency participants, there was higher mean proportion in the control recall protocol than was in the experimental. The  $t$ -test result showed this difference to be non significant ( $t=0.78$ ) at  $p<.05$ .

**Table 4:** T-test for reading recall in intermediate-proficiency groups

	<b>Experimental Group</b>	<b>Control Group</b>	
Recall	N=13	N=12	F=1.80(2.75)
Scores	M=19.84	M=20.08	t=0.07(2.069)
	SD=7.16	SD=9.62	

These findings suggest that the presentation of the three paratextual aids produces no significant effect on intermediate-proficiency readers' recall. It appears that, like low-proficiency students, lower-intermediate-proficiency students are generally irresponsive to the three paratextual aids or incapable of taking advantage of them to produce significantly more recall propositions.

## **Relationship between Comprehension and Recall**

Table 5 supplies the data on the correlation between comprehension and recall in low- and intermediate-level groups. This result obtained from the correlation analysis indicate a significant degree of positive correlation between comprehension and recall for the low-proficiency students ( $r=0.517$ ,  $p<.05$ ). These findings suggest that the variable of reading comprehension is significantly correlated with the variable of recall in low-proficiency readers. However, this correlation does not imply that one of these two variables causes the other, but only that the

two variables are related. Table 5 also gives the result of the application of Spearman's rank correlation to the intermediate-proficiency students' gains on the comprehension and recall tasks ( $r=0.380$ ,  $p<.05$ ). This result indicated that there existed no statistically significant correlation between recall and comprehension for the intermediate-proficiency participants.

**Table 5:** Correlations between comprehension and recall in low-proficiency and intermediate-proficiency groups

	Low Proficiency	Intermediate proficiency
L2 Comprehension* L2 Recall	0.51	0.38

## DISCUSSION

The results presented in the previous section clearly confirms no statistically significant difference in comprehension between low-proficiency EFL readers receiving the three top-down paratextual aids (titles, prefaces, and pictures) and those receiving no aids. This shows that low-proficiency readers are not sensitive to these aids to gain background knowledge to enhance their top-down processing of a text.

One possible explanation is that low-proficiency readers lack the ability to transfer their effective L1 strategy of benefiting from paratxtual background knowledge to the L2 reading comprehension task. Furthermore, it can be argued that EFL readers will be deficient in gaining advantage of paratextual information until they reached a threshold level of linguistics competence (Cummins, 1979; Coady, 1979), and that limited control over the language “short circuits” (Clarke, 1980) low proficiency readers' ability for top-down processing. This causes them to revert to poor reading strategies and text-boundedness (Coady, 1979; Hammadou, 1991b). Finally, the availability of background knowledge through the three paratextual aids may not be sufficient; it must be activated by resorting to the discussion, explicit teaching, and/or active presentation of the aids (Bransford et al., 1984).

The findings from the current study also showed significant difference in comprehension between intermediate-proficiency readers receiving the three paratextual aids and those receiving no aids. The intermediate-proficiency learners in the experimental group, who received the text accompanied with the three paratextual aids, significantly outperformed those in the control group. These findings

lend support to the three arguments put forward earlier as to the comprehension-related results in the low-proficiency subjects. They offer clear evidence to Clarke's (1980) "short circuit hypothesis" and Cummins' (1979) "threshold level of linguistics competence." Reaching an intermediate level, the learners were able to draw on paratextual information to bridge the gap in their comprehension of the text. This result confirmed previous findings on the impact of pictures on reading comprehension (Brookshire et al., 2002; Captu, 2009; Free, 2004; Gerrard, 2008). However, it was not in line with those studies which found no effect for pictures, including Pike (2008) and Willows (1978). These contradictory findings may be due to variation in learners' proficiency levels, their age, or the context of learning English.

The results related to the impact of access to paratext showed no significant difference in recall between low-proficiency readers receiving the three paratextual aids and those receiving no aids. The conclusion to be drawn from these results is that the three paratextual aids are not beneficial to low-proficiency students to improve their ability to recall propositions from texts. This failure to utilize the aids for the improvement of recall may be accounted for in terms of Clarke's (1980) "short circuit hypothesis" and Cummins' (1979) "threshold level of linguistic competence," as previously presented in relation to comprehension. It would appear that low-proficiency students' incapability to capitalize on the paratextual aids for substantially better comprehension also mars the contribution of the aids to better recall.

Based on the findings, there was no significant difference in recall between intermediate-proficiency readers receiving the three paratextual aids and those receiving no aids. The simple conclusion from the results is that, like the low-proficiency level, the contribution of the three top-down processing aids does not occur at intermediate-proficiency level. This finding is of considerable importance because it further demonstrates that the facilitating effect of the aids on recall does not happen when readers reach intermediate-proficiency, while the data from the comprehension study suggest a significant effect at the same proficiency level. It is hard to explain the lack of significant recall-related differences in the low-intermediate-proficiency readers. Two possible explanations can be offered. First, the kind of paratext or the type of presentation thereof utilized in this study cannot improve intermediate-proficiency readers' ability to recall EFL texts. Second, for the very recall task, these readers are below a "threshold level of linguistic



competence,” which causes a major stumbling block to the facilitating effect of the aids. There are studies which lend confirmation to this argument.

The results of this study produced confirming evidence in support of the proposition that recall and comprehension are significantly correlated in low-proficiency students: that is, the better these students comprehend, the more they will recall and vice versa. Many explanations may account for such a significant correlation between comprehension and recall. First, as suggested by some researchers (e.g., Wanner, 1974), it appears that what readers intend to recall is some product of their comprehension of it. Second, in both comprehension and recall, readers utilize their linguistic knowledge, world knowledge, and conventions of discourse. Third, the process of both comprehension and recall is affected by the memory and memory structures when the sentence is being processed or recalled.

The results falsified rejected the existence of any significant correlation between comprehension and recall in intermediate-proficiency students. These results do not fit those pertinent to low-proficiency students. This suggests that the significant correlation between comprehension and recall ceases to exist across proficiency levels ranging from low to intermediate. What can explain the results? One possible reason is that the improvement of comprehension across proficiency levels and within individuals may not be proportional to that of recall. The second reason may concern the fact that participants in the experimental group significantly enhanced their comprehension, but not their recall, which resulted in a different rank distribution among all intermediate-proficiency students for the comprehension task and consequently brought about a reduction in the correlation rate.

## **CONCLUSION AND IMPLICATIONS**

The findings of this study allow certain conclusions and suggest implication. First, low-and lower-intermediate-proficiency EFL readers are not able to utilize the three top-down paratextual aids to facilitate recall. This supports Clarke’s (1979, 1980) notion of a “language competence ceiling” which interferes with the application of the top-down paratextual aids to the recall task. In other words, bottom-up processing strategies are largely made use of by low-and lower-intermediate-proficiency students for the recall task.

Second, the fact that the experimental subjects with lower-intermediate proficiency, but not of low proficiency, scored significantly higher than the control subjects of equal language proficiency on the comprehension measure suggests that the mere presentation of the three paratextual aids can come to be facilitating when EFL readers reach lower-intermediate level of proficiency. This lends support to Clarke's "short circuit" hypothesis, and against the notion that the presentation of the paratextual aids for the sake of furthering top-down processing can override the effect of language proficiency limitation on reader's use of effective top-down strategies (Hudson, 1982).

Finally, the fact that lower-intermediate proficiency was the threshold level of linguistic competence needed to be achieved for the comprehension task, but not for the recall task, confirms the caveats of Cummins(1979) that there is no one single phenomenon or state called a "threshold level of linguistic competence." The threshold cannot be defined in absolute terms, but it is actually likely to vary depending upon the demands being placed upon the reader by any given task.

While top-down processing is certainly an important mode in EFL reading comprehension, limited language proficiency appears to exert a powerful effect on the readers' utilization of this mode and its strategies; thus, there are differences in the ability to form content schemata from the three paratextual aids between students at low and lower-intermediate levels of proficiency. Consequently, the results of the present study support the continued use of the three paratextual aids in EFL texts read by lower-intermediate-proficiency readers for the comprehension task.

On the contrary, the fact that the three top-down paratextual aids fell short of significantly contributing to the comprehension of the text read by the low-proficiency subjects suggests that EFL material bottom-up processing strategies for the comprehension task at low-proficiency level or exhibit more explicit, active presentation or teaching of the paratextual aids to tap the reader's top-down processing for possibly more effective comprehension.

The results of the recall protocols do not support the use or continued use of the three paratextual aids for the significance enhancement of recall from EFL texts in low-and lower-intermediate-proficiency readers. As stated before, EFL teachers should attempt to influence these readers' recall by (a) instructing them to be more effective top-down strategy users; (b) utilizing more efficient presentation of the three aids; or (c) improving text-bound, bottom-up

strategies in such readers until they become able to capitalize on the content knowledge provided through the aids.

## Bio-data

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