

**ORIGINAL ARTICLE****Implications of Schema-based Pre-Reading Tasks in Facilitating Comprehension****Yohannes Tefera Mengesha\*****Abstract**

*The study investigated the implications of schema-based pre-reading tasks on reading comprehension. A One-Group Pre-Test-Post-test Design (Creswell, 2009:160) was used to test the significance of schema-based pre-reading tasks (SBPRT) in facilitating reading comprehension. The subjects of the study were 56 students taking the Reading Skills (FLEn 103) course who formed one section of a summer in-service degree program at Jimma University. Of these students, 17 'high achievers' and 17 'low achievers' were selected and two groups were identified using their scores from a pre-test. The pre-test was a 'control condition' and did not have schema-based pre-reading tasks. It was meant to identify the level of achievement of the students in reading comprehension. Then a post-test and a final exam were administered that had 'treatments' with different combinations to both groups. The results of the tests revealed that both groups performed better in the post-test as well as in the final exam than they did in the pre-test. This implies that the treatment had facilitated their reading comprehension in general. Further analysis, however, indicated that the treatment brought about a statistically significant effect only on the 'low achievers', not on the 'high achievers'.*

**INTRODUCTION**

Learning English is compulsory in Ethiopian secondary and tertiary education where the language is the medium of instruction at high schools, colleges and universities across the country. English is a

means to enhance one's educational development, to facilitate communication and to further enrich cognitive abilities of students in other academic subjects as well. Academic excellence and scholarship success in

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general all point to the advantages of a good command of the English language in general and good reading skills in particular.

The available research on reading suggests that reading comprehension is one of the main purposes of EFL/ESL teaching/learning (Anderson & Pearson, 2004; Dole et.al, 1991; Nuttall, 1996). From a more pedagogical standpoint, suggestions have been made to use certain pre-reading activities for activating readers' existing schema or at least providing learners with crucial information about the topic they will be reading (Ajideh, 2003; Brown, 2001). This would help readers integrate the new information from the text into their pre-existing schemata (Wallace, 2001). According to Harmer (2001), it is only after the schemata is activated that one is able to see or hear, because it fits into patterns that he/she already knows. When students are familiar with the topic of the text they are reading (content schema), aware of the discourse level and structural make-up of the genre of the text (formal schema), and skilful in the decoding of features needed to recognize words and realize how they fit together in a sentence (language schema), they are in a better position to comprehend their assigned reading (Carrell, 1988 in Brown, 2001; Shen, 2004; Pulido, 2004). Therefore, understanding the role of schema in the reading process provides insights as to how reading comprehension could be facilitated and why students may fail to comprehend text materials.

### **STATEMENT OF THE PROBLEM**

As a language instructor, the researcher frequently observes that our students encounter difficulties in reading

comprehension tests, and this is confirmed when their test scores are not as good as their grammar test results. The problem could emanate from the reading strategies students employ, and the study specifically investigated the extent to which SBPRT facilitates the reading comprehension of our students.

The aim of pre-reading tasks is to activate schema. Much empirical research asserts that schemata (background knowledge) are important for EFL/ESL readers (Ajideh, 2003). Researchers describe schema theory as a process through which readers combine their own background knowledge with the information in a text for better understanding. The closer the match between the reader's schema and the text, the more comprehension occurs (Wallace, 2001; Brown, 2001). If the reader lacks appropriate schemata or fails to activate them, comprehension may be impaired. Successful reading comprehension, therefore, depends on readers' ability to access such schemata (Casanova, 1988:23) which influence how we understand what we read. Thus, schema-based pre-reading tasks are often designed to build or activate the learners' schemata (Carrell and Eisterhold, 1983; Carrell, 1988) and enhance their comprehension and recall (Anderson and Pearson, 2004; Ajideh, 2003). These researchers stated that such background knowledge should be activated and constructed through schema-based pre-reading tasks (SBPRT). Empirical studies support the hypothesis that content schemata (in the form of culturally familiar and unfamiliar content) influence second language reading comprehension. Studies by Steffensen et.al. (1979) on two groups of Indians and Americans with two different passage contents, by Johnson (1981) on Iranians and Americans with two authentic folktales; by Carrel (1981) on Japanese and Chinese with different

cultural folktales, demonstrated that pre-reading tasks enabled the readers to comprehend better, recall information and produce appropriate cultural elaboration.

Similarly, an investigation carried out by researchers on 40 undergraduate Brazilian EFL students revealed that SBPRT produced a significant effect on reading comprehension (Taglieber et.al., 1988). Thus, the students' comprehension scores would become higher when the reading was preceded by any of the three schema-based pre-reading tasks (pictorial context, pre-teaching vocabulary and pre-questioning) than when reading was not preceded by a pre-reading activity (Taglieber et.al., 1988). This finding has been recently tested also in a wide variety of pedagogical and research settings. For example, Ajidh (2003) as an ESL instructor in Tabriz University in Iran, worked with a group of intermediate level students for one academic term with a special focus on SBPRT (previewing, semantic mapping and questioning) and the result of his retrospective study showed that SBPRT significantly improved students' reading comprehension.

The discussion above clearly shows that SBPRT facilitates reading comprehension; however, which students does it significantly benefit, 'high achievers' or 'low achievers' was not addressed. This study was motivated by this concern and investigated the effect of schema-based pre-reading tasks on the reading comprehension of the students in the 'Reading Skills' course classes at Jimma University (JU), Ethiopia.

### **Objectives of the Study**

The main objective of this study is to investigate the implications of schema-

based pre-reading tasks (SBPRT) in reading classes by assessing the extent to which SBPRT facilitates the reading comprehension of our students. Thus, the study addressed the following research questions:

- a. Does SBPRT improve students' reading comprehension?
- b. Who benefits more: the 'high achievers' or the 'low achievers', or both from SBPRT?

### **Definition of Terms**

1. 'Schema-based pre-reading tasks' means language tasks which activate or construct schemata (background knowledge) during the pre-reading stage, for example, previewing, semantic mapping and asking questions (Ajidh, 2003).
2. 'Purpose focused study' is a case study that examines only the topic mentioned, i.e., schema-based pre-reading tasks (previewing, semantic mapping and asking questions) on reading comprehension (Wallace, 1998). It doesn't refer to the patterns of teaching and learning of the 'Reading Skills' (FLEn 103) course as a whole.

## **RESEARCH METHODOLOGY AND PROCEDURE**

### **Study Design**

The study employed One-Group Pre-Test-Post-test Design (Creswell, 2009:160) and used non-randomized samples. The samples were not randomly selected, but identified using pre- test to assess students' reading comprehension ability before conducting the study (Nunan, 1992;

Trochim, 2005, Creswell, 2009). This design enables the researcher to select a comparison group with the help of a pre-test, and then implement a treatment. After the treatment, the researcher can provide a post-test to both groups and see the 'cause-effect' relationship of the variables - in this case the effect of schema-based pre-reading tasks (independent variable) on reading comprehension (dependent variable).

### **Subjects of the Study**

The subjects of the study were 56 English major summer students taking the '**Reading skills**' (FLEn-103) course at JU. Of these, 48 were males and 8 were females. The sampling technique was non-probability (purposeful) sampling. The course is offered to first-year second semester English majoring students. The University is selected because of its convenience and familiarity to the researcher. The Reading Skills course was also selected because of its relevance to study the implications of pre-reading tasks compared with other English courses. There is no any other reading course to be taken as a prerequisite.

### **Data collection instruments**

#### **Pre-test**

The main purpose of the pre-test was twofold: to identify the "high achievers" and the "low achievers" in the study as well as to compare and contrast the test scores of the groups with a post-test to be administered afterwards. This was essential for the study because we could not identify whether progress in reading competence is the effect of SBPRT unless we determine the starting point of the students' level of reading.

In selecting texts for the pre-test and the final exam, an attempt was made to find

materials that are appropriate to the students' grade level and contextual familiarity (Atkins, et, al. 1996). Three English instructors were consulted in selecting the reading passages (one for the pre/post-test and another for the final exam) in terms of their content familiarity and language complexity. Finally, the passage 'Tomorrow's Disasters' was taken from two sources: Improve Your English (Face-to-Face material -2), and Contact 4 Pupil's Book for grade 12 for the pre/post-test. This was used for the pre/post-tests. Another reading passage 'Give me an A or Give me Death' was used for the final examination.

#### **Post-test**

The main objective of the post-test was to measure whether SBPRT significantly improves the reading comprehension of the students or not. To this effect, the researcher administered the same reading passage that was used for the pre-test for both groups. The difference is no treatment was given in the pre-test whereas SBPRT was given as treatment in the post-test so as to examine its effect in facilitating their comprehension. The treatments used as SBPRT were 'asking questions', 'semantic mapping' and 'key vocabulary'. The purpose of this task was to help students relate the text they were supposed to read to something that is familiar to them, to create awareness towards the purpose of reading, to predict what was to follow and to facilitate comprehension at large (Hudson, 1982; Anderson & Pearson, 2004). The treatment was given to examine if SBPRT enabled readers to comprehend better as compared to the test score of the pre-test. Thus, if substantial change follows it is likely to be the variable that caused the change. However, to increase external validity, it was important to repeat the experiment 'under different conditions' Trochim (2005). This necessitated the administration of another

exam so as to investigate the validity of the treatment (SBPRT) in this case.

**Final exam**

As discussed above, an additional exam was administered to check further if SBPRT facilitated the reading comprehension of the students. Thus, a final exam was given using a reading passage ‘Give me an A or Give me Death’ to ascertain the validity of the independent variable in bringing change on students’ reading comprehension. SBPRT treatments were not explicitly discussed by the researcher at this time; instead they were attached to the exam paper itself assuming that the schema-based pre-reading tasks would be done “under different condition” (Torchim 2005).

**Data collection procedure used**

The pre-test was administered as part of the Reading Skills course one week after the summer classes began. This served as a control condition in which there were no pre-reading tasks. Three weeks after the pre-test, a post-test was administered using SBPRT as treatment. The treatment consisted of different pre-reading tasks: previewing, questioning and key vocabulary which lasted for 15 minutes.

Every sample, therefore, was exposed equally in the post-test. The assisting teacher then distributed the question papers which had comprehension questions. Similarly, the third test (the final exam) was again administered three weeks later towards the end of the summer programme. What made this test different from the post-test was that SBPRT were attached to the exam papers ensuring that the schema-based pre-reading tasks are done “under different condition” (Torchim 2005). Each of the tests was scored out of 40.

**Validity and reliability**

All the test items were checked and refined by fellow instructors at JU. After this, the tests were given to five high school teachers in Jimma (all were diploma holders) who had more or less the same academic status with the subjects of the study (diploma holders working towards their BA). This was meant to test the level of difficulty of the instrument and check its validity. It was, therefore, assumed that every item included in the test was attemptable by the students under this study. In addition, a reliability test was carried out using a test-retest method as indicated below. The test scores of average students were taken for this purpose.

**Table1: Test-retest for paired samples**

Variable	Sample	Mean	Standard deviation	T-test	Remark
Test	17	24	1.36	0.0857	Not significant
Retest	17	25.05	1.71		

The data in the above table show that there is no significant difference between the two test scores and this suggests the reliability of the test. The pre-test post-test questions

were scored by two teachers and the average scores were taken to produce the final score.

As far as the validity of SBPRT is concerned, what is important is the procedures followed before students read the passage. The procedure was taken from Tagliaberi (1988) who studied the effects of pictorial presentation, pre-teaching vocabulary and pre-questioning on reading comprehension. Taking the procedure from the source mentioned lent credence to the validity of the treatment (SBPRT) in the post-test.

#### Data analysis procedures used

Based on their pre-test scores, 'high achievers' and 'low achievers' were identified. This was followed by a post-test.

The results of the post-test were analyzed to explore whether SBPRT significantly improved the test results of both groups. Next, the analysis examined which of the two groups showed significant improvement as a result of SBPRT. Then mean, standard deviation and t-test were administered for this purpose.

## RESULTS AND DISCUSSION

#### Findings of the study

The pre-test was a 'control condition' and didn't have SBPRT but the other two tests, the post-test and the final exam, had treatments (i.e., SBPRT). The test scores are compared and analyzed in the next table.

**Table 2: Empirical Results of Pre-test, Post-test and Final Exam**

Test	No. of high plus low achievers	Mean	St. Deviation	Standard error	T-value	Remark
<b>Pre-test</b>	34	22.9	6.4	1.1	0.0001	Not significant
<b>Post-test</b>	34	24.9	5.4	0.93		
<b>Final Exam</b>	34	23.6	4.45			

As indicated in Table 2, the mean scores of the pre-test, post test and final exam are  $\bar{X}=22.9$ ,  $\bar{X}=24.9$  and  $\bar{X}=23.6$  respectively. Here, we observe that the students have performed better in the post test and final exam than in the pre-test. This means, there is a good deal of progress in students reading comprehension scores. Similarly, the standard deviations of the pre-test post-test and final exam are,  $std(X)$ : 6.4, 5.4 and 4.45 respectively. These results imply that SBPRT enabled students to become closer in their test scores. That is, in the pre-test it was  $std(X)$ : 6.4 but when treatments in the post test and final exam were given, the

standard deviation became  $std(X)$ : 5.4 and 4.45. This means that initially there was a wide gap between the test (pre-test) scores of the 'low achievers' and 'high achievers' but after treatments these variations became increasingly narrow. The assumption behind this is that the more SBPRT (i.e., repeated each time) the better the results and the smaller the variation between students.

Nevertheless, in order to establish whether or not there is any significant change in reading comprehension among the tests and whether or not the improvement could be

attributed to SBPRT, statistical support was needed. In this particular case, the t-test for the significance of the difference between the tests (i.e., pre-test vs. post-test, pre-test vs. final exam and post-test vs. final exam) made it apparent that the two means are not statistically different at  $p=0.05$ . That is, the mean difference between the tests is not significant at 5%. This may sound a little odd and it should be interpreted with caution. After all, there is a mean difference between the tests and there is variation between students. What then could be the cause of this change? There is no evidence to justify the significance of these tests statistically. One may, therefore,

assume that the difference between the tests might be due to chance, but this is definitely a hasty generalization (Hurley, 1994). According to Bluman (1995), this implies that further evidence is required to make any claim about SBPRT. Thus, it would be imperative to examine the matter from another perspective. What is the degree of significance of the means of the scores between ‘high achiever’ and ‘low achiever’ groups? The following table demonstrates the scores of paired (intra group) and independent (inter-group) samples.

**Table 3: Empirical Results of ‘High Achievers’ Versus ‘Low Achievers’ in the Pre-test, Post-test and Final Exam**  
3(a) Paired Samples

Group	Test	No. of students	Mean	Standard deviation	Standard error	T-value	Remark
Pre-test	High	17	28.7	1.82	0.44	3.14	Significant
	low	17	17.1	3.03	0.73		
Post-test	High	17	29.3	2.34	0.56	4.96	Significant
	low	17	20.4	3.84	0.93		
Final team	High	17	25.8	3.81	0.92	0.0067	Not Significant
	Low	17	21.7	4.17	1.01		

High = ‘high achievers’; low = ‘low achievers’

**Table 3(b): Analysis of the Results of the ‘High Achievers’ and the ‘Low Achievers’ Scores**

Group	Test	No. of students	Mean	Standard deviation	Standard error	T-value	Remark
high achiev.	Pre-test	17	28.7	1.82	0.44	0.2058	Not significant
	Post-test	17	29.3	2.34	0.56		
Low ach.	Pre-test	17	17.1	3.03	0.73	0.28	Significant
	Post-test	17	20.4	3.84	0.93		

A further comparison was made between ‘high achiever’ and ‘low achiever’ groups in their test results. As indicated in Table 3(b), the mean scores of ‘high achiever’ and ‘low achiever’ groups in the post-test are  $\bar{x}=29.3$  and  $\bar{x}=20.4$  respectively. The

‘high achiever’ students are still ‘strong’ and the ‘low achiever’ students are still ‘lower’ in their test scores. However, the result tells us another story. The ‘low achievers’ group demonstrated significant progress in their reading comprehension

scores (from  $\bar{X}=17.1$  to  $\bar{X}=20.4$ ), more so than the 'high achiever' group (from  $\bar{X}=28.7$  to  $\bar{X}=29.3$ ). There must be something which caused this difference despite the provision of the same course, the same tasks, the same treatments, with the same teacher. There is a difference in the progress the two groups made. The mean difference of the 'low achievers' group (3.3) is found to be significant at 5% level of confidence. From this evidence, it can be concluded that SBPRT significantly helped 'low achiever' students in comprehending the reading passage.

On the other hand, the mean difference of the 'high achiever' group (0.6) is found to be not significant at 5% level of confidence. The implication is that the students are almost as good in the pre-test as the post test. That is, SBPRT helped them better in their reading comprehension but it was not statistically significant. Furthermore, there is one group of data for which the statistical parameters can properly explain the findings of this research at the end which is the results of the final exam. As mentioned in Table 4(a), the mean values of the 'high achiever' and 'low achiever' are  $\bar{X}=25.8$  and  $\bar{X}=21.7$  respectively. While the 'high achiever' performed better than the 'low achiever'; the difference between the mean scores of the two groups becomes closer than the previous cases. This implies that SBPRT is narrowing down the gap between students' reading comprehension scores. Furthermore, the final exam results are not statistically significant at  $P<0.05$ . This means there is no significant difference in reading comprehension scores between the 'high achiever' and the 'low achiever' group. This did not happen by mere chance or sampling error but by an independent samples test computation ( $t=0.0067$ ,  $df(N-2) 15$ ,  $p<0.05$ ). The calculated value of the

test statistics ( $t=0.0067$ ) is less than the tabulated 't' ( $t'=2.132$ ) with the above given value of degree of freedom (df) and confidence level. This means there is no statistically significant difference between the test scores of the 'high achiever' and the 'low achiever' group in the final exam.

## DISCUSSION OF THE TEST

### RESULTS

The findings of this study indicated that both groups of students generally performed better in the post-test than in the pre-test. This is attributed to the SBPRT used in the post-tests. Providing students with some assistance before reading can help them understand a text. Research done on pre-reading tasks supports the effectiveness of SBPRT on reading comprehension (Carrel, 1988; Grabe & Eskay, 1988; Ajideh, 2003). Therefore, pre-reading tasks facilitate students' reading comprehension. Equally, the study also indicated that SBPRT helped 'low achiever' students bring about statistically significant progress in their comprehension test scores.

### CONCLUSIONS

This study explored whether SBPRT significantly improved reading comprehension of both 'high achiever' and 'low achiever' students. The results of the tests revealed that students in both groups performed better in the post-test and final exam than in the pre-test. This implies that there was a considerable SBPRT treatment effect on students' reading comprehension scores. On the other hand, further analysis indicated a statistically significant effect only on the 'low achiever' students but not on the 'high achiever' ones. Above all, SBPRT enabled 'low achiever' students to reach closer each time to the 'high achiever' students.



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