Effects of Schemata on Petra University Students' Reading Discourse

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Abstract

The purpose of this study was to compare the effects of providing background information on students' discourse of "Before Their Time" and "The Lottery" texts. The writer assigned these two short stories at intermediate readability level to 40 freshman and Sophomore students, chosen at random and divided into four groups. Each group was exposed to two treatment conditions. The two conditions were (a) providing background information necessary for understanding the upcoming texts, (b) a control condition in which no pre-reading instruction was provided. Results on multiple-choice tests showed strong positive effects of the background knowledge treatment; whereas students' responses to attitude questionnaire showed they generally respond positively to the experimental treatments. In fact the findings give a limited support for the background knowledge treatment. A large percentage of students indicated they would have explanations of difficult vocabulary, description of the characters of the stories, and some background information to better understand and enjoy the stories. The implications of the findings should encourage EFL teachers to give some background information to assist students in reading. Also the data from the two studies support the hypothesized facilitation of getting the students acquainted with western schemata, the better understanding of the texts given. Based on underlying theories of foreign language reading discourse and text discourse with background information, the writer has a variety of avenues for studying how learners comprehend text in a foreign language with the help of cultural schemata and background knowledge. It is worth noting that the Jordanian society, may reasonably, be presumed to be different from British or American culture. God's Word is an absolute, there is none of the liberalism demonstrated in Western Culture, where values are apparently more relative. Such differences may create misunderstanding of authentic reading discourse.

A review of the literature in EFL/ESL methodology shows that the role of cultural knowledge as a factor in reading comprehension has been as issue

for some time. Fries (1963) talked about meaning at the social-cultural level –that is, the meaning goes beyond the language code and is related to the background knowledge of the native speakers of that code. Reading comprehension occurs when the total meaning of a passage is fitted into this network of information, organized in ways meaningful to a society.

The following passage from an ESL reading text illustrated Fries' concept of social cultural meaning:

By voting against mass transportation, voters have chosen to continue on a road to ruin. Our interstate highways, whose much praised golden avenues built to whisk suburban travelers in and out of downtown have turned into the world's most expensive parking lots. That expense is not only economic-it is social. These highways have created great walls separating neighborhood from neighborhood, disrupting the complex social connections that help make a city livable (Baudoin et al. 1994:197)

In reading this discourse, some EFL students fail to see the connections between mass transportation and highways. According to Carrell et al. (1983:533-573) "in the United States, where individual ownership of cars results in an overabundance of highways and a reduced need for mass transportation, this text makes sense. Sometimes, however, students perceive that highways are built for mass transportation, which renders this passage rather incomprehensible."

The impact of schema theory on our understanding of the comprehension process has been tremendous. A reader , according to schema theory, plays and active role in reading, and comprehending a text is an interactive process which involves the reader's existing schemata (background knowledge) and the text (Stanovich (1980:32-71). The meaning of the text is not found in the material itself, but in the interaction that takes place between the reader and the text (Twist et al. 2004). Clearly, crucial to text comprehension is the reader's ability to organize information and relate new knowledge to the knowledge the reader already possesses. Can readers, for example, maximize their comprehension by activating their schemata?

Most discussions on schema theory have provided of the great importance of background in reading comprehension (Anderson et al 1986). The use of background knowledge becomes an important variable when we observe the students with a Western background of some kind learn English faster, on the average, than those without such a background (Coady 1979).

Literature shows the significance of culture in language learning for the achievement of meaningful communication and the understanding of a particular language. At the heart of all this is a recognition that a foreign

language learner may draw incorrect assumptions which are due to cultural misunderstanding when reading unfamiliar discourse (Gatbonton (1971). In some instances, the cultural schemata needed are not supplied by the discourse because the author assumes that the reader already has them. Where there is a gap between the author and the reader, readinG becomes rather impossible (Stefenson et al. 1979).

Because of the profound correlation between language and culture, successful teaching of any foreign language almost always lends itself to teaching about the culture of the language. Thus teachers can use pre-reading activities to provide necessary background information for specific reading tasks. The related pedagogical question is: "Can we improve students' reading by helping them build background knowledge on the topic prior to reading, through appropriate reading activities". Taglieber et al (1988) suggest that teacher use pre-reading activities such as pictorial context, field trips, demonstrations, debates and plays to activate appropriate knowledge structure and facilitate students' comprehension. Similarly, Carrell (1983) suggests pre-reading activities such as text previewing, pre-teaching unfamiliar vocabulary, and providing pre-reading questions for EFL students.

This paper focuses on one pre-reading activity which is providing background knowledge. Several L1 studies demonstrate that providing background information facilitates understanding of unfamiliar texts. For instance, Rowe et al 1(987) used purpose questions as cues to activate background knowledge . While Dole et al (1991) used a teacher-directed conditions and an interactive conditions to activate students' own background knowledge via discussion or reading from a prepared script. Based on the same schema-theoretic view, a few L2 studies which provided cultural background knowledge for readers also brought about significant results. A number of empirical investigations have produced findings that appear to support this theory (Anderson et al. 1977).

Hudson (1982) indicates that much of the research into the L1 effects of schemata and context is applicable to L2 reading. For example, Gatbonton et al.(1971) used the technique of cultural contrastive analysis about ordinary lives and experiences between Americans and Filipinos before Filipino high school students read American short stories. Johnson (1982) involved advanced foreign students from 23 countries in a Halloween Celebration before they read a passage on the topic of Halloween. Floyd et al (1987 taught intermediate-level foreign students appropriate background information about a typical Fourth of July celebration before they read a passage on the Fourth of July.

The results of the above studies confirm that background knowledge plays an important role in learning and remembering text information. These

findings provide convincing evidence for generalizing that students with well developed background knowledge.

Indeed the wide acceptance of schema theory by cognitive psychologists and reading researchers has resulted in its having a significant impact on the process of education. Although schema theory has been widely accepted as a theory of comprehension, its implications for teaching practice are less than clear. If students' existing schemata are crucial to comprehending a text, then how teachers help build students' prior knowledge in order to maximize comprehension of text? Researchers have made attempts to answer the above questions, but as Tierney et al (1984) have pointed out that no clear guidelines have been produced to inform teach practice.

The two hypotheses investigated in this paper are listed below.

1. **Did students, who received the background knowledge treatment, comprehend better than those who id not receive this treatment?**

2. **What were students' attitudes towards the treatment?**

Method

Subjects of the study

The population of the present study was 40 students selected from more than 100 Sophomore and Junior English majors attending University of Petra. According to records of unofficial TOEFL, the English proficiency of this university is equivalent to that indicated by scores of 450-500 on the TOEFL. 40 students were volunteers from two of my classes and several of my colleagues' Sophomore classes. These students were chosen because they were required to take Anglo-American literature through their reading of short stories, plays, and poems. Because of the difficult syntax, sophisticated vocabulary, cultural barriers and lack of an English social context, such materials are challenging to students.

Materials

The two selections were "Before their Time" (Science Research Associates, SRA Green Lab III a No.8) by Hamilton Cochran, and the "Lottery"(Baudoin et al. 1994 178-181) by Shirley Jackson . "Before their Time"(1965) is about 1850 words long and at the intermediate readability level. This is a very extraordinary story on piracy indeed.

To fully understand and appreciate the story, students need a historical background about such matters as pirates and the importance of slavery and violence adopted by them.

"The Lottery"(1948) is about 2500 words and at the intermediate readability level. When it was published in the New Yorker, letters flooded the Magazine expressing admiration, anger, and confusion at the story. Whatever readers may think of it, they all agree that it is unusual. To better understand the story, students need to become familiar with lottery and how it operates. If one does not understand the process or purpose of a lottery, then this short story about one woman, who "wins" and is then killed by her neighbours will be totally incomprehensible. In this case, a discussion of lotteries before assigning the reading would be absolutely necessary (Carrell et al. 1983).

The two selections were chosen to be challenging and relatively unfamiliar to most of the students. Both selections do presuppose specific information on piracy and lottery that most Jordanian students lack.

Background Knowledge Passages

Each background knowledge passage begins with the story's title, the author, and the year of publication. Next, a paragraph provided the historical background of the time when the story took place and the necessary background knowledge of the time when the story took place and the necessary background knowledge relevant to each one. Then a paragraph provided the difficult words and phrases used in the story. Finally, the last paragraph encouraged students to read the story carefully and to draw their attention that a test would follow the reading.

Attitude Questionnaire

There were two versions of the attitude questionnaire, one for providing background knowledge, and one for the control treatment. The survey was conducted using an attitude questionnaire to assess the students' overall feeling about the pre-reading treatment. The questionnaire consisted of 10 statements to which students respond on a five-point scale: strongly agree, agree, neutral, disagree and strongly disagree. Students completed the attitude questionnaire after they answered the questions on the second story.

Treatment Procedures

The procedures for the presentation of the two treatments were different: the background knowledge treatment, and the control treatment. In this treatment we ask the students to read the story silently and take the test without giving them any specific preparation. But regarding the background knowledge treatment, the instructor read the first few sentences of the treatment script, then motivated students to engage in a brief discussion prompted by relevant questions. Finally, the instructor read the remainder of the treatment script, and explained the difficult words.

Design and Analysis

Students were randomly assigned to four groups, all of which were exposed to one treatment condition. The treatment spanned two days: 1 day for each reading passage. The control treatment was presented during Week 1. The provisions of background knowledge treatment was presented during Week 2. These two passages were rotated through all the treatment, and classes, and teachers to counterbalance the effects of these variables. The dependent measures used to assess students' comprehension were scores on the multiple-choice tests, and those used to assess students' towards the pre-reading assistance they received were the semantic differential attitude items.

The scores on multiple choice test were analysed using a one-way repeated measures ANOVA. The following null hypotheses were tested the .05 level of significance; one way of analysis of variance (ANOVA) allows us to compare second group means simultaneously.

1. There is no difference between the scores obtained in the two passages for those who benefit from the treatment.

2. There is no difference between the scores obtained in the two passages for those who do not benefit from the treatment.

3. The performance of the students is not different from one another regardless of the treatment.

Students' response to the semantic differential attitude items were calculated and reported as percentages.

Results

Semantic Interpretation of Attitude Items

Examination of the background knowledge, and the experimental condition pointed out that these groups gave similar responses on the semantic differentials. Most students in each of the four groups expressed positive attitude about the treatment they received. Below is a summary of some of the positive responses expressed.

In the background knowledge group, 92% (Sophomore) and 91% (Junior) of the students pointed out that having some of the difficult words explained helped them read and understand the stories; 84% of the Sophomore students and 90 % of the Junior students indicated that background knowledge should be given before most difficult stories are read; 76% & 83% respectively pointed out that going over the background knowledge made reading more enjoyable; 76% and 83% respectively indicated that stories dealing with familiar cultures are easier to understand than those dealing with unfamiliar cultures.

Unlike students in the two experimental groups, students in the control groups indicated they would need a good deal more instruction in order to understand the stories. For example, 94% thought they needed some of the difficult words explained; 88% thought they needed to know the characters in the stories; 81% thought they needed some relevant cultural information, and thought they needed some information about the stories themselves. Moreover, about 48% of the students in this group indicated they experienced difficulty or lost interest when reading these cross cultural materials. For example, 45% indicated they did not like to read stories dealing with unfamiliar cultures, and 38% said that the stories were too difficult because they were relatively with the culture in which the stories took place.

Multiple –Choice Test

The analysis of variance on the multiple-choice test scores is shown in Tables 1 & 2. As can be seen, the main effects of treatment for Sophomore students were significant. Since F= 20.239 and 4.56, the value of Fo .05 for 1 & 9 degrees of freedom, the three null hypotheses can be safely rejected at the 0.05 of significance

Table 1

Analysis of Variance on the Multiple Choice Test for Sophomore Students

Two Way Anova-Block A:2 Groups B: Score on Attitudes

Source	DF:	Sum Squares	Mean Square	F-Test
A	1	1960	196044	20.239
B	19	8390	1.579	4.56
Error	19	1840	96.842	
Total	39	12190		

Probability:0001≤p≤005 Probability:001≤p≤005

As can be seen from Tables 5 & 6 Sophomore students, who were provided with background knowledge, scored higher on "Lottery" than on "Before Their Time." Similarly, the same applies to Junior students. For example, the mean percentage gain for questions answered in the treatment was 14% and 19.5% for Sophomore and junior students respect

Table 2

Analysis of Variance on the Multiple-Choice Test Scores for Junior Students

Two Way ANOVA- Block Design A:2 Groups B :Attitude Score

Source	DF	Sum Squares	Mean Square	F-test
A	1	3802.5	3802.5	39.106
B	19	4487.5	236.184	2.429
Error	19	1847.5	97.237	
Total	39	10137.5		

Probability:p≤p≤0001 Probability:025≤p≤05

The analysis of variance on the multiple-choice test scores is shown in Tables 1 & 2. As can be seen, the main effects of treatments for Junior Students were significant. Since F=21.038, the value of Fo05 for 1 & 19 degrees of freedom, the null hypotheses can be safely rejected at the 0.05 of significance.

Table 3

Corr. Coeff. X Sophomore Passage 1 Score Y: Passage 2Score

Count:	Covariance:	Correlation:	R- squared:
20	172.368	0.641	0.411

Table 3 shows the correlation coefficient between the scores obtained for passages "Before Their Time" and "Lottery" for the Sophomore students is a positive correlation which may be scaled as fairly considerable. However, Table 4 shows the correlation coefficient for the same passages for Junior students is fairly moderate as shown below.

Table 4

Corr. Coeff. X : Sophomore – Before Their Time Y: Sophomore - Lottery

Count:	Covariance:	Correlation:	R- squared:
20	69.474	.0417	0.174

Table 5

Means & Standard Deviation for Main Effects of Treatment on Multiple-Choice Text for Sophomore Students

Sophomore Passage 1 Score

Mean	Std. Dev:	Std. Error:	Variance:	Cief. Var:	Count:
32.5	16.819	3.761	282.895	51.752	20

Minimum	Maximum:	Range:	Sum	Sum Squared:	# Missing:
20	60	50	650	26500	0

Sophomore- Lottery Score

Mean	Std. Dev:	Std. Error:	Variance:	Cief. Var:	Count;
46.5	15.985	3.574	255.526	34.377	20

Minimum	Maximum:	Range:	Sum	Sum Squared:	# Missing:

20	80	60	930	48100	0

Table 6

Means & Standard Deviation for Main Effects of Treatment on Multiple-Choice Text for Junior Students

Junior-Before Their Time

Mean	Std. Dev:	Std. Error:	Variance:	Cief. Var:	Count;
44	12.732	2.847	162.105	28.936	20

Minimum	Maximum:	Range:	Sum	Sum Squared:	# Missing:
20	60	40	880	41800	0

Junior - Lottery

Mean	Std. Dev:	Std. Error:	Variance:	Cief. Var:	Count;
63.5	13.089	2.927	171.316	20.612	20

Minimum	Maximum:	Range:	Sum	Sum Squared:	# Missing:
40	90	50	1270	83900	0

Interpretation of the Findings

The basic question in this study was how background knowledge affected students' comprehension of short selections. The results give a limited support for the background knowledge treatment. As can be seen from Tables 1 & 2, there is a difference between the scores obtained in the two texts of the condition and experimental treatments. Therefore, the text which was provided with background knowledge, because a little bit easier than the text which was administered without background information. On the other hand, the students' achievements in the two texts with either background knowledge or without it are relatively low. The mean for both texts for the condition groups is 32.5 and 44 respectively. Whereas the mean for both texts for the experimental groups is 46.5 and 63.5 respectively.

The difference in text scores among the four groups indicated that those who received the background knowledge treatment and then read the stories comprehend better than the students in the control group. Sophomore students scored 14% higher than those who were

not provided with background information; whereas Sophomore students scored 19.5 % better than those who were not provided with background information. The most likely explanations of this result are that multiple choice items required more language skills. Thus background information is one among many factors that are needed to facilitate reading and understanding.

The first question focused on the relation of the scores obtained by Sophomore and Junior students. The statistical testing of the three null hypotheses revealed that there was a significant difference in the scores obtained by those students. The correlation coefficient of such students shows that the degree of relationship is highly and moderately positive, which means that there is a tendency that students perform significantly better than those who have not been provided with background information. The majority of students in the experimental groups thought that the explicit instruction they received helped them read the stories. On the other hand, students in the control groups indicated that they would need a great deal of instruction in order to understand the stories. The students' responses on the attitude survey provided support for the experimental treatment. A large percentage of students in the control groups indicated they would need explanations of the difficult words, descriptions of the characters of the stories, and some cultural background information in order to better understand and enjoy the stories. Similar finds were reported by previous researchers (Sainsbury et al. 2004). However, it is worth noting that the students' indifference and limited vocabulary and their span of attention may have contributed to the fact that students did not benefit more from the background information they received. Perhaps, the background information is insufficient and inappropriate. As Bernhardt (1991: 116) has stated, "Knowledge is elusive."Although knowledge is very important, "The question remains one of what is necessary knowledge, who has it, and who can use it in appropriate circumstances."

Implications in Foreign Classrooms

Given the limitations of the present investigation, the following are some of the implications that can be drawn from this study for foreign language learning:

1. The provision of background knowledge offers a promising option for EFL teachers to use in assisting students to read English texts. Since it is relatively easy to prepare background information on each text, teachers should be encouraged to provide it to help learners in reading.

2. Teaching methods should be carefully chosen to fit particular situations. It is whether to provide background knowledge or give some other sort of pre-reading assistance in a particular situation depends on the text to be read, the students who will read it, and the purposes of reading it. Also teachers need to know their students and the sort of texts students are reading well, and then construct some pre-reading activities that *will work for their students (Graves 19…).

3. As indicated in students' responses to the attitude questionnaire, students need assistance with difficult words. Because English vocabulary is likely to pose a problem for many EFL students, it is reasonable to spend class time teach vocabulary. Pre-reading activities that include vocabulary instruction should be particularly facilitative for difficult texts and with less competent and confident readers.

4. As students become better readers and increasingly familiar with the Anglo-American culture, the provision of background knowledge generally becomes less necessary. At the same time, whenever upcoming texts are likely to be challenging for students, providing background knowledge is one viable option to increase their comprehension and enjoyment of what they read.

5. There are other sources of difficulties: syntactic, semantic and discoursal, grammatical affixes, tense, aspect, modality, grammatical and lexical cohesion, correlatives, and a range of technical and sub-technical vocabulary. Because of their importance, these sources of difficulties will be dealt with in future research.

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