

The Effect of Background knowledge on reading comprehension

Saeedeh Mansouri

M.A. In ELT, Department of English, Islamic Azad University of Chaloos, Mazandaran, Iran
s3724m@gmail.com

Abstract: Many studies have shown that background knowledge can help students read and comprehend better. It helps students make successful inferences. Therefore, this study looks at the effects of background knowledge in a reading comprehension test. The study aimed to observe the effect of background knowledge on reading comprehension. The research question is: 'Is background knowledge effective on reading comprehension?' and the considered hypothesis is 'background knowledge isn't effective on reading comprehension. It can't help students comprehend the reading text better and faster'. The study was done by two tests (test 1 & test 2) with five passages of reading comprehension. In test 1, students had no prior knowledge about reading passages, but in test 2, the same students took the reading texts that they had prior knowledge about the reading passages. These two tests were administered one after another with 15 minutes break between them and 45 minutes was considered to answer the questions for each test. The same students participated in two tests. They were 40 students of Azad University, Chaloos branch. They were male and female students of general English classes that were selected after administering a placement test among 60 students. The placement test was administered one week before the main tests. Comparison the scores of two tests and analyzing them showed that the students answer test 2 (the students had prior knowledge about the reading passages) better than test 1 (the students had no prior knowledge about the reading passages). The result disapproved the hypothesis of the study and it can be said that background knowledge is effective on reading comprehension. On the other hand, it helps students comprehend the reading text better and faster.

[Saeedeh Mansouri. **The Effect of Background knowledge on reading comprehension.** *Researcher* 2014;6(10):78-81]. (ISSN: 1553-9865). <http://www.sciencepub.net/researcher>. 12

Key words: background knowledge, prior knowledge, reading comprehension

1. Introduction

Reading is a very complex process that requires many different skills. As is true for the other three language skills, reading is a process involving the activation of relevant knowledge and related language skills to accomplish an exchange of information from one person to another. Reading requires that the readers focus attention on the reading materials and integrate previously acquired knowledge and skills to comprehend what someone else has written (Chastain, 1988). The required knowledge that reader uses for comprehending a reading text is prior or background knowledge about topic of the reading. As the background or content knowledge about a subject or theme, prior knowledge is an important aspect to successful reading.

Background knowledge can affect reading comprehension both directly and indirectly. Perhaps the most well-known effect of background knowledge is its ability to directly influence the understanding of what is read (Stahl, Hare, Sinatra, & Gregory, 1991). It makes perfect sense—the more you know about a topic, the more likely it will be that you can comprehend what is written about it. For instance, when reading an abstract of a scientific article (considered to be the most difficult kind of text), educators are more likely to understand one from the

American Educational Research Journal than from the American Journal of Nursing. It isn't that you can't decode the words or read them fluently, but rather that you don't have the background knowledge to understand radiofrequency catheter ablation. The more extensive a reader's background knowledge is, the easier it is to acquire new information offered by the text (Alfassi, 2004). Background knowledge also acts indirectly on reading comprehension. Fluency, an important contributor to overall reading comprehension, is heavily impacted by the level of background knowledge one possesses about a topic (Klauda & Guthrie, 2008). The ability to infer meaning in social studies texts is positively influenced by the level of background knowledge the learner has (Tarchi, 2009).

In second language research, there is evidence that having prior knowledge plays a significant role in comprehension (Brantmeier, 2005; Hammadou, 1991, 2000; Johnson, 1982; Lee, 1986; Nassaji, 2003; Pulido, 2004, 2007). Background knowledge is widely discussed as a critical factor in learning, but in practice it is rarely addressed outside of assessment (Fisher & Frey, 2009; Kamil, et al., 2008). Yet it is an essential element of acquiring new knowledge. A study of students' reading comprehension found that background knowledge and vocabulary were the

strongest predictors of success, and these factors indirectly influenced whether a student would apply problem-solving strategies when meaning breaks down (Cromley & Azevedo, 2007).

One theory concerning why prior knowledge affects comprehension is the ability of the students to make inferences. According to Hammadou (1991), inference refers to a cognitive process used to construct meaning through a thinking process that involves reasoning beyond the text through generalization and explanation. In the study, Hammadou (1991) examines inference strategies used by students and finds that background knowledge affects the comprehension process. The results of the study show that beginner readers use a greater amount of inference in recall than advanced readers. Because greater inference is used by novice readers, this is an indication that the readers' background knowledge affects the comprehension process and that recall and comprehension are not the products of the text alone.

Eskey (1986) refers to the reader's prior knowledge as 'knowledge crucial to reading', which is then categorized into two types: 'knowledge of form' and 'knowledge of substance' (p. 18). The knowledge of form provides the reader with certain expectations about the language of the text and facilitates making accurate identifications of forms in reading. According to Eskey, knowledge of form is linguistic in nature, and it includes recognition of graphophonic, lexical, syntactic/semantic and rhetorical patterns of language. Knowledge of substance; on the other hand, encompasses cultural, pragmatic and subject-specific information and it provides the reader with certain expectations about the larger conceptual structure of the text. Whereas formal knowledge facilitates making accurate identification of forms from a minimum number of visual cues, subject-specific, cultural and pragmatic knowledge determines not only a personal reconstruction of the meaning of a text but also its depth and richness (Eskey, 1986).

The main purpose of the present article is to show empirical evidence of prior knowledge on reading comprehension that was approved by a study. The result of the study was that the students got higher scores in the reading comprehension test that they had prior knowledge about the reading passages.

2. Method

2.1. Subjects

The Subjects of the study were 40 students of Azad University, Chaloos branch that were selected by a placement test one week before administering main tests. The number of participants in the placement test was 60 that were selected randomly and 40 students with higher score in placement test were selected among them. They were male and female students with

different fields of study that took the course 'general English' and were participating in the general English classes. Sex (the state of being male or female) wasn't considered important in the study.

2.2. Instruments

The used instruments in this study are 3 tests:

2.2.1. English Placement Test

English Placement test was used to select subjects with the same level of ability in English language. The participants in this test were 60 students and finally 40 students were selected among them by comparison of their scores in this test. There were 100 items in this test. It was a multiple choice test. This test was administered one week before the main tests (test 1 & test 2).

2.2.2. Test 1

There were 5 passages in this test that the students had no prior knowledge about them and there were 30 multiple choices items in this test. The test included reading comprehension questions after each reading passage that was the related questions. The considered time to answer the questions was 45 minutes.

2.2.3. Test 2

Test 2 was administered 15 minutes after test 1 and the same students participated in this test. Test 2 was just like test 1, but the only difference was that the students had background knowledge about the reading passages. Test 2 also lasted 45 minutes.

2.3. Procedure

In order to test the research hypothesis, the study utilized the experimental paradigm by administering two tests. The design of this study is referred as the **pretest-posttest-control group design**. There was one group as both control and experimental group. In test 1, they are considered as control group and in test 2, they are considered as experimental group. It was hypothesized that 'background knowledge isn't effective on reading comprehension. It can't help students comprehend the reading text better and faster'.

At first, test 1 was administered. There were 5 reading passages that the students had no prior knowledge about them and there were 30 multiple choices items (including reading comprehension items) after each reading passage in this test. Test 2 was just like test 1. The only difference was that the students had background knowledge about the reading passages. There were 30 questions in each test. Each test lasted 45 minutes and 40 students (the same group) were participated in two tests. This group was selected after administering the English placement test. The placement test was administered among 60 students of Azad University, Chaloos branch that took the course 'general English' and were participating in the general English classes. They were male and female with

different fields of study and finally 40 students were selected after comparison of their scores. Sex (the state of being male or female) wasn't considered important in the study. There were 100 questions in placement test and 1 hour was considered to answer it. One week after administering the English placement test and selecting students, the main tests were administered.

3. Results

The analyzing the subjects' two test scores and comparison of them showed that students' scores in test 2 (the test that the students had background knowledge about the reading passages) were better than test 1 (the test that the students had no prior knowledge about reading passages); therefore, the hypothesis of the study was rejected. The researcher concluded that background or prior knowledge helps reader comprehend reading passages better and faster; on the other hand, there is direct relationship between background knowledge and reading comprehension. Because the scores were determined out of 30, the researcher calculated them out of 20. The frequency of the tests scores have been presented in the following Tables:

Table 1: Students' scores & their frequency in Test 1 & Test 2

| Test 1 | | Test 2 | |
|-----------|-----------|-----------|-----------|
| Score | Frequency | Score | Frequency |
| 29= 19.33 | 1 | 30= 20 | 3 |
| 28= 18.66 | 3 | 29= 19.33 | 7 |
| 27= 18 | 2 | 28= 18.66 | 3 |
| 26= 17.33 | 2 | 27= 18 | 3 |
| 25= 16.66 | 2 | 26= 17.33 | 6 |
| 24= 16 | 3 | 25= 16.66 | 1 |
| 23= 15.33 | 2 | 24= 16 | 1 |
| 22= 14.66 | 2 | 23= 15.33 | 4 |
| 20= 13.33 | 3 | 22= 14.66 | 3 |
| 18= 12 | 1 | 21= 14 | 2 |
| 17= 11.33 | 7 | 20= 13.33 | 1 |
| 16= 10.66 | 4 | 18= 12 | 1 |
| 15= 10 | 4 | 17= 11.33 | 2 |
| 14= 9.33 | 2 | 15= 10 | 1 |
| 13= 8.66 | 1 | 14= 9.33 | 1 |
| 11= 7.33 | 1 | 13= 8.66 | 1 |

Match-t-test Formula

Match-t-test was used in this study because the same group participated in two tests. When formulating research hypothesis, the study researcher determined the level of significance (α) .05 and since degree of freedom (d.f.) is 39, t-critical is 1.697. Now the observed **t** value should be checked against the critical **t** value by regarding the degree of freedom.

The results have been shown in Table 4.

Table 2. Differences between the scores of test 1 & test 2

| Test Score | Test 2 Score | D (differences between two scores) |
|------------|--------------|------------------------------------|
| 1- 19.33 | 20 | .67 |
| 2- 18.66 | 20 | 1.34 |
| 3- 18 | 20 | 2 |
| 4- 18 | 19.33 | 1.33 |
| 5- 17.33 | 19.33 | 2 |
| 6- 16.66 | 19.33 | 2.67 |
| 7- 16 | 18.66 | 2.66 |
| 8- 16 | 18 | 2 |
| 9- 15.33 | 19.33 | 4 |
| 10- 18.66 | 19.33 | .67 |
| 11- 14.66 | 17.33 | 2.67 |
| 12- 14.66 | 18 | 3.34 |
| 13- 13.33 | 15.33 | 2 |
| 14- 13.33 | 14.66 | 1.33 |
| 15- 13.33 | 17.33 | 4 |
| 16- 11.33 | 18.66 | 7.33 |
| 17- 11.33 | 18.66 | 6 |
| 18- 11.33 | 18.66 | 7.33 |
| 19- 11.33 | 15.33 | 4 |
| 20- 10 | 15.33 | 5 |
| 21- 10 | 14 | 4 |
| 22- 10 | 16 | 6 |
| 23- 10 | 15.33 | 5.33 |
| 24- 10.66 | 14.66 | 4 |
| 25- 10.66 | 11.33 | .67 |
| 26- 11.33 | 12 | .67 |
| 27- 11.33 | 13.33 | 2 |
| 28- 11.33 | 19.33 | 8 |
| 29- 10.66 | 16.66 | 6 |
| 30- 10.66 | 11.33 | .67 |
| 31- 12 | 14 | 2 |
| 32- 15.33 | 17.33 | 2 |
| 33- 16.66 | 14.66 | 2 |
| 34- 16 | 18 | 2 |
| 35- 18.66 | 17.33 | 1.33 |
| 36- 17.33 | 19.33 | 2 |
| 37- 9.33 | 17.33 | 8 |
| 38- 8.66 | 9.33 | .67 |
| 39- 9.33 | 10 | .67 |
| 40- 7.33 | 8.66 | 1.33 |

Table 3: The mean score and standard division of test 1 & test 2

| Categories | Number of Subjects | Mean | SD |
|------------|--------------------|-------|------|
| Test 1 | 40 | 13.66 | 2.22 |
| Test 2 | 40 | 14.66 | |

Table 4: The Results obtained by Match-t-test

| Categories | Mean | SD | Final SD | t- observed | t- critical | d.f. |
|------------|-------|------|----------|-------------|-------------|------|
| Test 1 | 13.66 | 2.22 | .35 | 2.85 | 1.697 | 39 |
| Test 2 | 14.66 | | | | | |

As shown in the Table 4, the observed **t** value is **greater than** the critical **t** value. So, the difference between the means is said to be statistically significant and then treatment in test 2 is effective and then the hypothesis is rejected.

Conclusion:

In the rush to teach new information, it can be tempting for educators to overlook background knowledge. But to do so is to build on an unstable foundation. Background knowledge has a profound influence on students’ ability to comprehend what they read. Its effect can be defined directly, as in knowledge of the topic, as well as indirectly, especially in the ability to resolve problems when meaning is lost.

This paper investigates the subjects’ perception of prior knowledge and its roles in reading comprehension. It is based on a survey conducted among 40 students

(male and female) of Azad University, Chalooos Branch that were selected by a placement test. Through the comparison of the student’s scores of two tests, the study showed that students got higher scores in test 2 that they had prior knowledge about the reading passages.

References:

1. Alfassi, M. (2004). *Reading to learn: Effects of combined strategy instruction on high school students*. The Journal of Educational Research 97(4), 171–184.
2. Brantmeier, C. (2005). *Effects of reader’s knowledge, text type, and test type on L1 and L2 reading comprehension in Spanish*. The Modern Language Journal, 89, 37–53.
3. Chastain, K. (1988). *Developing second language skills: Theory and Practice*. USA: Harcourt Brace Jovanich, Inc.
4. Cromley, J. G., & Azevedo, R.(2007). *Testing and refining the direct and inferential mediation model of reading comprehension*. Journal of Educational Psychology, 99(2), 311-325.
5. Eskey, D.E. (1986). *Theoretical foundations*. In F. Dublin, D.E. Eskey, W. Grab (Eds.), *Teaching second language reading for academic purposes*. (pp. 3±23). Reading: Addison-Wesley.
6. Fisher, D., & Frey, N. (2009). *Background knowledge: The missing piece of the comprehension puzzle*. Portsmouth, NH: Heinemann.

7. Hammadou, J. (1991). *Interrelationships among prior knowledge, inference, and language proficiency in foreign language reading*. The Modern Language Journal, 75, 27–38.
8. Hammadou, J. (2000). *The impact of analogy and content knowledge on reading comprehension: What helps, what hurts*. The Modern Language Journal, 84, 38–50.
9. Johnson, P. (1982). *Effects of reading comprehension on building background knowledge*. TESOL Quarterly, 16, 503–516.
10. Kamil, M. L., Borman, G. D., Dole, J., Kral, C. C., Salinger, T., and Torgesen, J. (2008). *Improving adolescent literacy: Effective classroom and intervention practices: A Practice Guide* (NCEE #2008-4027). Washington, D.C.: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from ies.ed.gov/ncee/wwc.
11. Klauda, S. L., & Guthrie, J. T. (2008). *Relationships of three components of reading fluency to reading comprehension*. Journal of Educational Psychology, 100(2), 310-321.
12. Lee, J. F. (1986). *Background knowledge and L2 reading*. The Modern Language Journal, 70, 350–354.
13. Nassaji, H. (2003). *Higher-level and lower-level text processing skills in advanced ESL reading comprehension*. The Modern Language Journal, 87, 261–276.
14. Pulido, D. (2004). *The effect of cultural familiarity on incidental vocabulary acquisition through reading*. The Reading Matrix an Online International Journal, 4, 20–53.
15. Pulido, D. (2007). *The relationship between text comprehension and second language incidental vocabulary acquisition: A matter of topic familiarity?* Language Learning, 57(1), 155–199.
16. Stahl, S. A., Hare, V. C., Sinatra, R., & Gregory, J. F. (1991). *Defining the role of prior knowledge and vocabulary in reading comprehension: The retiring of number 41*. Journal of Reading Behavior, 23, 487–508.
17. Tarchi, C. (2009). *Reading comprehension of informative texts in secondary school: A focus on direct and indirect effects of reader’s prior knowledge*. Learning and Individual Differences, 20, 415-420.