
The Effect of Using Semantic Map Technique in Teaching Reading Comprehension on Students' Achievement

Assistant Lecturer Ramziya Khaleel Ismael
Master in Methods of Teaching English
College of Education for Humanities
University of Mosul
Email: ramziyahsaad@uomosul.edu.iq

DOI: [10.31973/aj.v2i137.1186](https://doi.org/10.31973/aj.v2i137.1186)

ABSTRACT:

The positive effect that innovative techniques have has been a broad debate in recent years especially in the matter of teaching reading comprehension. Semantic map is one of the latest techniques used to develop reading comprehension. The current study attempts to provide a more detailed investigation regarding the effects of using semantic map on students' reading comprehension achievement. To investigate the objective of this paper, a null hypothesis is used claiming that there is no statistically significant difference between the mean scores of the experimental group, which is used semantic map technique in teaching reading comprehension and those of the control group which is taught by traditional techniques. A sample of 60 students has been chosen randomly to be divided into equal groups. After 10 weeks of experiment, a posttest is applied for both groups. Then the T-test is used to collect and analyze the data. The findings from this investigation proved that there is a statistically significant difference between the mean scores of the experimental group and those of the control group in the reading comprehension achievement posttest for the benefit of the experimental group.

Keywords: Semantic Mapp, Reading Comprehension, Achievement

1. Introduction

To become a well-rounded communicator, one needs to master the four basic skills of language learning. One of these four skills is reading that needs much effort to be accomplished. Reading as a skill, is described as a passive activity because students do not need to produce language to achieve it, they just need to receive and understand it. Without understanding the meaning of a text, students will fail in getting and analyzing what the writer means. In this respect, Teele (2004:92) listed three steps taken for better comprehension. The first step focuses on the fact that students must understand what they read. The second highlights the importance of

reading as a complex process that involves recognition, comprehension and perception of a written text. The last one concentrates on comprehension as an activity of understanding the meaning of written words.

Furthermore, Day and Bamford (1998:194) concluded that the process of reading deals with the form of a language, whereas the activity of comprehension deals with the content of a language. It means that the ability to understand the elements of a language such as phonological, morphological, syntactic and semantic has an active role in identifying the meaning of a text in any language. For Leech (1981:109), meaning can be classified into two categories: denotative and connotative. Denotative meaning is the real meaning of words given in the dictionary, whereas connotative is a kind of meaning whose response has emotional values. It is one of the various implication or association that a word conveys. However; when it comes to deal with reading comprehension, it is asked what factors enable students to interpret the text, what the available clues are there to catch the meaning of a text or surrounding sentences and what are the best techniques used to improve students' reading comprehension.

1.1. The Problem and its Significance

The process of reading comprehension is an interaction between students' prior knowledge, language proficiency, understanding the real meaning and information encoded in the text. During reading process, sometimes students fail to grasp the content and structure of the text due to the various problems. To be more specific, some students face difficulties in the following points: (A) using prior knowledge correctly; (B) finding out the difference between common text structures ;(C) decoding phrases; and (D) identifying vocabulary. The problem may also take the form of difficulty in using comprehension strategies which help students to make predictions about the text depend on their previous knowledge.

According to Pressley (2002:297), students may fail to proceed through a text because they focus on the parts of the text that are usually related to their aim. They read the rest of the text quickly with less attention. A good reader is a person who tries to integrate the ideas in a text to identify important information, then to find out how information in a text relates to previous knowledge .

The significance of the problem considered in the present investigation found the need to use new techniques to help Iraqi students improve their reading comprehension skills. Therefore; the researcher realized that one of the ways that may have a significant effect on students' achievement is using semantic map technique because it can be easily taught and applied by the students. In addition, semantic map can be used to help students understand the

meaning of the text depending on their own experiences and previous information.

1-2. The Objective of the Research

The objective of the present work paper is to investigate the effect of using semantic map technique on students' achievement in teaching reading comprehension .

1.3. The Hypothesis of the Research

It is hypothesized that there is no statistically significant difference between the achievements of the experimental group taught reading comprehension by using semantic map and that of the control group who taught reading comprehension through the traditional technique.

1.4. The Limits of the Research

The current research is limited to the following aspects:

1. The population selected for the current paper consists of all first- year students in the Department of Educational and Psychological Sciences, College of Education for humanities, University of Mosul.
2. The experiment is carried out in the first semester of the academic year 2018/2019.
3. The material includes four passages from textbook, New Headway by John and Liz Soars

1.5. The Definition of the Basic Terms

Semantic Map is described as a technique used to construct visual displays of categories and their relationships. It is a categorical structuring of ideas in graphic form, in which, students relate new words to their own experiences and previous knowledge Dilek and Yürük (2013:1533).

Reading Comprehension is a multi-component, highly complex process that involves the ability to comprehend the full meaning of a text and to interact with context through the combination of previous knowledge, experience and information in the text (Klingner, et al.,2007: 7-8).

Achievement is defined as the learning that takes place during a definable course of instruction. It means that achievement can be considered as skills developed in the school subject measured by test scores which the students set on the final achievement test (Dwyer, 1982: 12).

2.Theoretical Background

The theoretical background of the current research includes three basic important issues. The first issue deals with the basic components of reading process, the second is about the role of schemata in reading comprehension while the last one talks about the concept of semantic map.

2-1. The Basic Components of Reading Process

In each linguistic skill, there are certain components that form the skill. The same applies for the skill of reading. There are five different components that each reader develops through time either in a direct way or naturally. These components include phonics, phonemic awareness, fluency, vocabulary and lastly comprehension. The reader might not be aware but his mind simultaneously performs different tasks to do the act of reading. This paper will give a brief description to each of the components and how they play a critical role in our reading experience .

Let's begin with the first component which is phonics. Each word has a collection of phonemes. The combination of these phonemes gives us the pronunciation of a word. Moreover, phonics involves written symbols. It can be defined as process of studying the relationship between sounds and symbols in the purpose of reading and spelling (Savage, 2007: 7).

The second component is phonemic awareness. According to Yopp (2000:130), phonemic awareness is one element of phonological awareness, in which, the focus is how to segment, blend, or manipulate individual sounds in words. It is an understanding about the smallest unit of sounds that are used in speech communication. It is a phoneme that determines the difference between the words dog and hog.

The third component is the vocabulary. Until now we have established that words have segments of sounds that make up a word. However, the sound itself is not enough to give that word meaning, thus, there is a definition for each word and this falls in the category of vocabulary. To construct a mental representation of text, one has to be able to decode the printed message in order to understand text meaning as well as to be able to process various reading text. (Zhang and Annual, 2008:54).

Moving forward to the fourth component, which is fluency. It describes the user ability to engage in the text that he or she is reading by creating different sounds and creating vivid images to experience the meaning of that text. Fluency is defined as "reasonably accurate reading at an appropriate rate, with suitable expression, that leads to accurate and deep comprehension and motivation to read". On the other hand, reading fluency is the ability to read words correctly and easily by mastering the four aspects of fluency: accuracy, speed, expression and comprehension (Hasbrouck and Glaser 2012: 13).

Last of all, the fifth component of reading is comprehension which is simply the ability to fully understand the text and therefore fulfill the purpose of reading. In a review by Moore (2014:852) on the importance of comprehension in reading process, he posited that

readers need to have some basic reading skills in order to comprehend any written text, they require prior knowledge, working memory, decoding, vocabulary, inferencing and motivation .Thus, the reader can understand and summarize the message that the author of that text is trying to convey.

2-2.The Role of Schemata in Reading Comprehension

To understand the reason why there is a link between schemata and reading comprehension we will first define the concept of schemata and how it is affecting students' reading comprehension. Let's start with the first point which is schemata. The singular form of schemata is a schema which defined as a sort of plan, thought, behaviour, or mental structure that arranges categories of information and the relationships among them in a planned way. However, schema concept is attributed to Bartlett (1932:170) who assumed that student's understanding and remembrance of ideas are formed by their expectations or previous knowledge and these expectations are stored mentally in some sort of schematic forms .

Furthermore, a number of theorists like Smith (1978: 94) had developed interactive theories related to reading. Schema theory is depended on the fact that every act of comprehension involves one's knowledge. The importance of schema theory in comprehension cannot be ignored for being used to guide students to comprehend written material. In addition, schema theory posited that written material does not carry meaning by itself. The written material provides directions for students to construct meaning from their own acquired knowledge. The previous knowledge is called the readers' prior knowledge and the acquired knowledge structures are called schemata.

According to Carrell (1984: 98), schema can be classified into two types: formal and content. The first type is described as abstract, encoded, coherent pattern of metalinguistic and textual organization like rhetorical patterns or story grammar that help students to understand a meaningful piece of language .The second one is defined as the physical world of discernible object and actions. It is the one which decides students' understanding of a written passage (Bransford,1985: 389). Understanding how students can easily acquire new knowledge is linked with content schemata. To be more specific, reading is a multi-faceted process that helps students to build new and correct content schemata. The use of schema is one of the interacting processes related to reading comprehension.

2-3The Concept of Semantic Map

The concept of semantic map has been developed by a number of researchers. One of the greatest researchers is David Ausubel who stressed on the idea that learning new concepts needs to link some

concepts to schemata. Schema theory hypothesizes that information is stored in the brain as networks or what is called schemata. When new information is received, the person is going to link this new information to his proper schemata (1963:30).

Similarly, Prof. Joseph D. Novak at Cornell University in the 1960s had developed the concept of semantic map based on the theories of Ausubel. He focused on the importance of prior knowledge to acquire new knowledge. It means pervious knowledge is a prerequisite to add new vocabulary and concepts. As procedures, Semantic map is developed by Hanf to be used in many different ways (1971:88).

In addition, Johnson, et al (1986:779) described semantic map as a categorical structuring of information in a graphic form, in which, students need to relate new words to their own prior knowledge. Completed semantic map supplies a teacher with information about the students have and discover which new concepts can be established. According to an investigation by Antonacci , semantic map means a visual representation of knowledge, a picture of conceptual relationship. It reveals how new information and words are related to each other within a text (1991:74).

3. Research Methodology

3.1. Research Sample

Two groups from the first class have been randomly selected to be the sample of the current research. The first group was chosen as the experimental group namely class A (including 16 male and 14 female) and the second one as the control group namely class B (including 14 male and 16 female). The total number of the sample was (60) students divided into two equal groups: (30) students in each class. In order to make the present research as valid as possible, the researcher equalized both classes A and B in terms of certain variables which were supposed to have great effect on the experiment. These variables are students' age counted in months, students' achievement marks in English subject for the previous academic year and the intelligence quotient test scores of students. T-test formula for the two independent groups and a chi- square formula were used to compare between the two groups.

As illustrated in table (1), it is found out the computed T-value is less than the tabulated one at (0.05) level of significance and under (59) degrees of freedom. Therefore, there is no statistically significant difference between the two classes, i.e., they are equivalent on the variable of age, achievement and intelligence.

Table (1) T-Test Statistics for the Equivalence of the Sample

Variables	Classes	Mean Value	Standard Deviation	T-Value	
				Computed	Tabulated
Age	A	184.3862	10.57863	0.906	2.002
	B	186.6677	10.54805		
Achievement	A	68.5907	12.79235	1.842	2.006
	B	64.2666	11.98232		
Intelligence	A	86.8715	8.86834	1.806	2.021
	B	84.1066	4.94972		

3.2. Research Instrument

The posttest of reading achievement was utilized as an instrument of the research. It is used to see the differences occur after applying the semantic map technique in teaching reading comprehension. The reading achievement posttest comprised (20) objective items distributed among three questions as shown in table (2). The first two questions are multiple choice and completion items. Each one contains five items and each item would take one mark if it is correct and zero if it is not. Whereas the last question is a short answer-question that includes ten items and each item would receive two marks if it is correct and zero if it is not.

Table (2) Description of Reading Achievement Questions

Number of Question	Number of Item	Type of Question	Marks
Q.1	5	Multiple Choice Items	5
Q.2	5	Completion Items	5
Q.3	10	Short Answer-Question Items	20

3.3. The Validity and Reliability of the Reading Achievement Test

The two most important features of a good test are validity and reliability that show the quality and usefulness of the test. The test items have been given to a jury of experts in language and linguistics to evaluate the suitability of the test for applying. The jury members verify the validity of the reading achievement test with some recommendations that have been taken into consideration.

To test the reliability of reading achievement items, the Kuder-Richardson Formula 20 (K-R20) was used after piloting the test. The computed reliability coefficient of the test was (0.86) which indicates that the test as a whole is a reliable, suitable to the students' level and ready to be applied.

3.4. Applying Semantic Map Technique

By applying the procedures of semantic map, students start to improve their skills in understanding the meaning of written texts. Students of experimental group are provided with the steps on how to

use semantic map correctly. The following steps are the instructional procedures of semantic map strategy in reading comprehension.

1. Students are asked to reread the passage many times after reading it by the teacher.
2. During the process of reading, the key concepts are selected to be written on the whiteboard.
3. Students are divided into groups. Each group consists of six students.
4. Students in each group start to work together; they brainstorm words related to the topic.
5. The difficult and new words are classified into categories in the form of a map. Each category contains key concepts.
6. Students together discuss the words on the semantic map and visualize the relationship between key concepts in a systematic way.

4. Results

4.1. Analysis of the Results

After ten weeks of semantic map exposure, T-test for two independent samples was adopted to analyze the results of both groups with the help of (SPSS) software. Both the experimental and control group sat for the same format of the reading achievement posttest. As illustrated in table (3), the mean score of the experimental group was 23.12 and that of the control group was 13.6. It was also shown that the calculated t-value was 3.245 which was more than the tabulated value 2 at 0.05. This means teaching reading comprehension by semantic map technique is more effective than the traditional one. So the null hypothesis is rejected and an alternative hypothesis is accepted. The alternative hypothesis states that there is a statistically significant difference between the two groups in the reading comprehension achievement posttest for the benefit of the experimental group.

Table (3): Description of Two Groups Scores in Reading Comprehension Achievement Post-Test

Groups	Number of Participants	Mean Value	Standard Deviation	T-Value	
				Computed	Tabulated
A	30	23.12	4.698	3.245	2
B	30	13.6	5.256	Level of Significance = 0.05	

4.2. Discussion of the Results

The most striking result to emerge from the data comparison is that there is a clear superiority of the experimental group upon the control group. Students of the experiment group got more scores than those of the control group according to the results of the posttest. The

findings of the present study reveal that the semantic map technique is a successful tool in teaching reading comprehension. It is a simple and applicable technique which requires a little of time and effort. However; the suggested technique for improving students' reading comprehension has proved to be useful and effective in teaching reading comprehension.

4.3. Conclusions and Recommendations

From the results of the discussion and the hypothesis verification, it could be drawn an important conclusions. One of the most important conclusions is that there is a significant effect of using semantic map technique on the first class students' achievement in reading comprehension. The second major conclusion is that experimental group got better marks than control group. It means that students of experimental group have dealt positively with the new technique (semantic map), showing high interest and motivation .

Since Semantic Map Technique had a significant effect on students' reading achievement, the researcher proposed some suggestions to be taken. Future research should concentrate on the investigation of using semantic map to improve writing skills . Hopefully, the findings of this work can be used as a reference and evidence for the future researchers to accomplish scientific researches dealing with the use of semantic map technique in teaching different language skills for different level of students.

BIBLIOGRAPHY

- Antonacci, P. A. (1991). Students Search for Meaning in the Text through Semantic Mapping. **Social Education**, Vol.55, No.5, PP. 174 -194.
- Ausubel, D. (1963). The Use of Advance Organizers in the Learning and Retention of Meaningful Verbal Material. **Journal of Educational Psychology**, Vol. 51.
- Bartlett, f.C. (1932). **Remembering**. Cambridge: Cambridge University Press.
- Bransford, J. (1985). Schema Activation and Schema Acquisition. In H. Singer and R. B. Ruddell (Eds.), *Theoretical Models and Processes of Reading*, 3rd. Newark, DE: **International Reading Association**, Vol. 22
- Carrell, P.L. (1984). Evidence of a Formal Schema in Second Language Comprehension. **Language Learning**, 34, 87-112.
- Day, R.R.,and Bamford,J.(1998). **Extensive Reading in Second Language Classroom** . Cambridge: Cambridge University Press.
- Dilek,Y.,Yürük,N.(2013).Using Semantic Mapping Technique in Vocabulary Teaching at Pre-intermediate Level. **Procedia - Social and Behavioral Sciences**, Vol.(70),PP.1531-1544.
- Dwyer, A. (1982). **Achievement Testing**. In *Encyclopedia of Educational Research*, Vol.1, edited by Mitzel. 5thed. New York: the free press, Macmillan publishing Co., Inc.
- Hanf, M. P. (1971). Mapping: A technique for Translating Reading into Thinking. **Journal of Reading**, Vol. 14.
- Hasbrouck, J., and Glaser, D.R. (2012). **Reading Fluency: Understanding and Teaching this Complex Skill**. Austin ,TX: Gibson Hasbrouck and Associates.
- Johnson, D. D., S. D. Pittelman, and J. E. Heimlich (1986). Semantic Mapping. **The Reading Teacher**, Vol. 39, No. 8, P.778-783.
- Klingner, J. K., Vaughn, S., and Boardman, A. (2007). **Teaching Reading Comprehension to Students with Learning Difficulties**. New York, NY: The Guilford Press.

- Leech, G. (1981). *Semantics: The Study of Meaning*. London: Penguin Books.
- Moore, A.L. (2014). *Reading Comprehension: Cognitive Skills, Strategies, and Interventions*. Available at <http://download.learningrx.com/reading-comprehension-research-paper.pdf>.
- Pressley, M. (2002). *Metacognition and Self-Regulated Comprehension*. In Farstrup A. and Samuels S.(Eds.), *What Research Has to Say About Reading Instruction?*(3thed.). Newark: International Reading Association.
- Savage, J. F. (2007). *Sound it out! Phonics in Comprehensive Reading Program*. Boston: McGraw Hill.
- Smith, F. (1978). *Understanding Reading: A psycholinguistic Analysis of Reading and Learning to Read*. New York: Holt, Rinehart and Winston.
- Teele, S.(2004). *Overcoming Barricades to Reading a multiple Intelligences Approach*. Thousand Oaks, CA: Corwin Press.
- Yopp, H.K., and Yopp, R.H.(2000). Supporting phonemic Awareness Development in the Classroom. *The Reading Teacher*, Vol. 54, No. 2 , PP. 130–143.
- Zhang, L.J. and Annual, S.B.(2008). The Role of Vocabulary in Reading Comprehension: The Case of Secondary School Students Learning English in Singapore. *Regional Language Centre Journal*, Vol 39(1) 51-76.

أثر استخدام تقنية الخريطة الدلالية على تحصيل الطلبة في تدريس الفهم القرائي

المدرس المساعد رمزية خليل اسماعيل

كلية التربية للعلوم الإنسانية

جامعة الموصل

المستخلص

لقد كان التأثير الإيجابي للتقنيات المبتكرة محل نقاش واسع في السنوات الأخيرة خاصة فيما يتعلق بتدريس مهارة الفهم القرائي. تعتبر الخريطة الدلالية واحدة من أحدث التقنيات المستخدمة لتحسين مهارة الفهم القرائي. تهدف هذه الدراسة الى التعرف بشكل أكثر تفصيلاً على اثر استخدام الخريطة الدلالية على تحصيل الطلبة في تدريس الفهم القرائي. ومن اجل تحقيق هدف الدراسة ، تم استخدام الفرضية الصفرية والتي تستند على عدم وجود فرق ذو دلالة احصائية بين متوسط درجات المجموعة التجريبية التي تدرس القراءة وفقاً لتقنية الخريطة الدلالية والمجموعة الضابطة التي تدرس وفقاً للطريقة التقليدية. تألفت عينة البحث من ستين طالباً تم اختيارهم بشكل عشوائي ليتم تقسيمهم إلى مجموعتين متساويتين. وبعد مرور عشرة اسابيع من اجراء التجربة تم تطبيق اختباري لكتا المجموعتين. حيث تم استخدام الاختبار التائي لجمع وتحليل البيانات احصائياً واكدت النتائج على وجود فرق دال احصائياً بين متوسط درجات مجموعتي البحث في الاختبار البعدي للفهم القرائي ولصالح المجموعة التجريبية.

الكلمات المفتاحية: الخريطة الدلالية ، الفهم القرائي ، التحصيل