

**The effectiveness of Using Concepts Maps strategies in the
development of reading and writing skills in English among the
basic education students in Jordan**

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Abstract

The present study aimed at developing the the seventh grade female students' English reading and writing through the use of a proposed program based on Concepts Maps . The study adopted the quasi-experimental pre-post test control/experimental group design. The study sample consisted of 50 students at the seventh grade in public schools ,in Karak governorate. and was equally divided into two group: an experimental group and a control one. Students of the experimental group received training through the proposed program based on Concepts Maps (Knowledge Navigation), while students in the control group received regular instructions, Tools of the study including reading skills checklist, writing skills checklist, a pre-post-reading and writing skills test a scoring rubric and a program satisfaction questionnaire. The study results revealed that there were statistically significant differences at 0.01 level between the mean scores of the control and the experimental group s on the post test in favour of the experimental group in overall reading and writing skills as well as in each reading and writing sub-skill. There were also statistically significant differences at 0.01 level between the mean scores of the experimental group in the pre-administration and post- administration of the reading and writing skills test in favour of the post- administration in overall reading and writing as well as in each reading and writing sub-skill .

Key words: Concepts Maps , reading and writing

1. Introduction

In light of challenges, scientific, industrial and technological revolutions of change and continuous development in scientific knowledge of different kinds and all the spheres, and in ways leading to them, as well as the enormous scientific advances, and the great acceleration in the teaching-learning process, leading to the emergence of a scientific movement active in the overall development of the field of education, and the development of curricula and teaching methods and strategies in particular. Therefore, this requires doubling the efforts exerted by teachers and specialists in the field of educational learning process development to keep pace with renewable changes in scientific knowledge, and ways leading to them. However, the old curricula and traditional teaching methods are no longer meeting the learners' needs on the one hand, and do not take into account the linkages and relationships between different types of this knowledge on the other hand.

The main objective of the educational-learning process is the ability of the teacher to meet the challenges and innovate teaching varied methods in commensurate with students' tendencies and their needs and abilities, including the achievement of the primary goal of education, included as follow: Giving learners different skills and their development in order to help them solve problems and forecasting, conducting experiments, and self-learning and teaching, and ensure the continuity of self-learning (Ataya, 2014)

The diversity in the use of teaching methods and strategies is the basic role upon which the responsibility of the teacher is based to achieve the high efficiency in the teaching-learning process, and in the application of the curriculum, including English curriculum. There is no doubt of the need to learn English, as a matter of utmost importance, due to what marked English language of the global value. In addition, its substantial role in the development and refinement of the student's personality in the ability to

keep up with the age, and through what is acquired by the students of the English language skills, he shall have the opportunity review other cultures, and used in the scientific fields, communication, science and technology, and scientific research. English language is no different from other languages in that it is based on coherent knowledge structure consists of a set of systems, audio system, and grammar system, the written system. Thus, through teaching English, the teacher seeks that the students shall acquire the basic skills, including reading skill, and the skill of writing, and listening skills, and the skill of the conversation.

Here comes the role of researchers by focusing on the modern teaching methods and strategies that focus on the transmission of the impact of learning, and encouraging thinking of all kinds.

Mapping strategies are used to teach and learn many skills in different fields. The work involved in map-making requires more active engagement on the part of the learner, and this leads to greater learning (Twardy, 2004). The use of mapping enhances, retains and improves knowledge. Evidence from cognitive sciences shows that visual displays enhance learning (Shuster, 2002; Vekiri, 2002). In other words, processing information verbally as well as pictorially helps learning as a result of using more than one modality.

1.2. Statement of the problem

The basic problem of the study is summarized in that the students of English have difficulties and problems that stand as barrier in their ability to learn English, grasping abstract concepts and complex ones, and understanding the relationships between them that shall have a negative impact on their acquisition of reading skills and writing skills. In addition, limiting some of the teachers to use the traditional non-exciting teaching methods and strategies of thinking and do not take into account individual differences which will reflect negatively on students' attitudes toward learning material in English.

Moreover, the primary goal of learning English is to help students acquire all kinds of English language skills (the skill of reading, the skill of writing, the skill of conversation, and the skill of listening) as well as employing all of these skills in their daily lives, to be able to communicate, and learn about other cultures, in addition that learning the universal language has become difficult to be dispensed with at the present time in all fields, and areas, as well as the labor market.

Therefore, the researcher is trying to apply an existing program to use modern and diverse teaching strategies (Concepts Maps strategy) as ways to contribute to modify and address shortcomings in learning the English language in general, and working to improve and develop the level of reading and writing skills among learners in particular.

The role of the researcher is represented is using what characterizes these strategies of properties in the teaching-learning process, to achieve the learning objectives that lie in creating students capable of self-learning, and capable of decision-making, self-confidence, and responsibility bearing , as well as raising the motivation toward learning, and making them the focus of learning process, and their drawing ling of the joy of learning.

1.2 Objectives of the study:

The current study seeks to achieve the following objectives:

Investigating the impact of teaching effectiveness by using conceptual diagram in the development of reading and writing skills in the subject of English among the basic education students in Jordan

1.3. Hypotheses of the study

Based on the discussion of literature and related studies, the following hypotheses were derived:

1. There would be statistically significant differences between the mean scores of the experimental group (CM), and the control group on the overall post reading and writing skills test in favour of the experimental group.
2. There would be statistically significant differences between the mean scores of the experimental group (CM) on the overall post reading and writing skills test.
3. There would be statistically significant differences between the mean scores of the experimental group (CM) on the post reading skills subtest.
4. There would be statistically significant differences between the mean scores of the experimental group (CM) on the post writing skills subtest.

1.4. Purpose of the study

The purpose of the study was two fold:

1. Investigating the effectiveness of CM in developing reading and writing skills (reading and writing).
2. Comparing the effectiveness of CM in developing reading and writing skills (reading and writing).

1.5. The limitations of the study:

The study limitations are as follows :-

1. Temporal limitations: the first quarter of 2016/2017 seventh grade female students in public schools, in Karak governorate.
2. Spatial limitations: the Educational Directorate of Palace Brigade / Karak province / Jordan.
3. Human limitations: the seventh grade female students in Jordan.

, second year preparatory stage, the first term.

1.6. Definition of terms

1- Concepts Maps strategy:

It is defined as it represents a set of concepts contained in the subject, and are arranged hierarchically, as we can provide a clear and comprehensive picture of the concepts through it (Al Najdi, 2000)

And some of them define it as a diagnostic tool to evaluate student learning and the extent of the students' understanding of the structural form of the subject (Al-Mutairi, 2009)

Hence, the researcher defines the Concepts Maps strategy as a "diagram represents a set of concepts that are organized and arranged in a conceptual framework based on prior knowledge of the learner and linking them to new experiences undergone by the learner and working to employ them, thus contributing to raising the efficiency of the learner to understand information and promote higher levels of thinking. "

It can be defined operationally as the teaching plan to be prepared by the researcher according to the Concepts Maps strategy.

2- Reading skills:

It is the building of the meaning process from the written texts, which is a complex skill requiround a number of interrelated sources of information, this process is carried out by receiving both written texts by the brain and the eye in the form of letters and recognizing them (Smith, 1994)

3- The writing skill:

It is defined as one of the linguistic communication skills, which is a process through which ideas and opinions, are presented and connecting them in precise sequence through visible means of expressing meaning (Byrne, 1979)

1.7. Review of literature

The following section sheds more light on the main variables of this study which are CM, and reading and writing skills :

Concept Mapping

Derived from Ausubel 's theory (1968) of meaningful learning, CM that was developed by Joseph Novak in the 1960s, uses hierarchical order to link concepts together with propositions or linking words between concepts. These propositions are units of meaning that highlight the relationship between concepts (Irvine, 1995), and cross-links that demonstrate relationship between concepts that would otherwise be unrecognized using a non-mapping learning strategy (D'Antoni, 2009). The fact that the concepts are linked with the arrows and labeled is a distinctive feature which does not appear in other kinds of maps (Novak, & Canas, 2008).

CMs are considered as the spatial representation of concept and their interrelationships that are intended to represent the knowledge structures that humans store in their minds (Jonassen, Beissner, & Yacci, 1993). CM also enables the elements of learning to relate to how cognitive knowledge is developed structurally by the learners (Mass, & Leaby, 2005, p.77).

This strategy has been extensively investigated in a variety of contexts which include reading comprehension, recall of information, writing skills, science education, and testing, with different age group (Dias, 1998).

CM is primarily centered on teaching conceptual structures (Figuerido, Lopez, Firmino, & desSousa, 2004; Gallenstein, 2003) or facilitating meta-cognitive control processes such as planning, monitoring

and evaluation (Cassata, & French, 2006). It forces students to think meaningfully about the content domain so as to identify and verify important concepts, classify concepts, describe the relationship between concepts and assess its meaning, analyze the nature of the relationship which develop their critical thinking (Jonassen, 1996). The key features of CMs are shown in figure 2:

Figure 2. A concept map showing the key features of CMs.

Source: Novak and Canas (2008, p.2).

CM has been used to facilitate students' learning of science content (Asan, 2007; Guastella, Beasley, & Sinatra, 2000; Duru, & Gurdal, 2002; Derbentseva, Safayeni, & Canas, 2007; Boujaoude, & Attieh, 2003), develop critical thinking (Daley, Shaw, Balistrieri, Glasenapp, & Piacentine, 1999; Ferrario, 2004), improve students' reflection (McAleese, 1998) and prove its validity and reliability as an assessment tool (McClure, Sonak, & Suen, 1999). The use of CMs was also associated with increased knowledge transfer and retention (Nesbit, & Adesope, 2006).

Concerning writing, Pishgadam and Ghanizadeh (2006) showed that as a pre writing activity, CM improved EFL learners' writing ability in terms of quantity and quality of generating, organizing, and associating ideas. This is in accordance with Zipprich's finding (1995) regarding the positive influence of CM on students' narrative writing in terms of components of a good story without any considerable effect on sentence structure. In addition, Daley (2002) revealed that CM developed students' thinking ability and helped them to better plan, organize, and write. Moreover, Lin, Strickland, Roy, and Denner (2004) examined the effects of computer based CMs versus paper-and pencil CMs on the quality of the middle school students' persuasive writing. Contrary to their expectation, students in the latter group obtained higher scores than students in the former group.

CMs have been used in reading activities to aid students' comprehension of texts. For example, ready made CMs may be presented as semantic summaries of texts that students need to comprehend (Hauser,

Nuckles, & Renkl, 2006), or students may be asked to construct their own CMs to address specific questions (Chang, Sung, & Chen, 2002). It also activated students' prior knowledge and helped them understand relationships with newly introduced

vocabulary (Hibbing, & Rankin–Erickson, 2003). On the other hand, Han (2006) showed that there were no statistical difference between CM group and traditional methods group on reading comprehension test.

Concerning the similarities and differences between MM and CM, it is clear that both of them are active learning strategies that engage the learner in the learning process, and ultimately, allow the learner to actively integrate information on a meta-cognitive level (Freeman, & Jessup, 2004; Willingham, 2007). Therefore, both MMs and CMs are identical in their meta-cognitive mechanism.

These two learning strategies differ in the structure and organization used to create the actual maps. D'Antoni (2009) argues that the added dimensions of pictures and colors that are unique to MMs have not only been shown to facilitate memory, but may appeal to a wide range of students who have visual- and linear- oriented learning styles. Consequently, as he adds, the advantage of using MMs is that this strategy may benefit students with diverse learning styles compared to CMs, which may only appeal to students with a linear-oriented learning style.

The difference between MM and CM is also at the level of precision and formality. According to Eppler (2006), MMs are less formal and structured as they emphasize diagrams and pictures to aid recall of association. But CMs generally use hierarchical structure and relational phrases to aid understanding of relationships. In other words, MM allows students to imagine and explore associations between concepts; CM, on the other hand, allows students to understand the relationships between concepts and hence understand those concepts themselves and the domain to which they belong.

The main disadvantages of CM are that they require some expertise to learn; they can be idiosyncratic in terms of design; and because of their complexity they may not always assist memorability, with learners faced with designing CMs often feeling overwhelmed and demotivated (Kinchin, 2001). Others have noted that the rigid rules used for identifying concepts and their multiple relationships do not make the process easy to learn. They do not enable easy separation of concepts of critical importance from those of secondary importance (Daley, 2004). On the other hand, MM could be time consuming for the teacher to present and for the student to grasp, especially if the student is inexperienced, or uncreative (Buzan, & Buzan, 1996).

It is clear that MM and CM can be used to present a lot of information. Although these mapping strategies have been used in many fields, there are different points of view concerning the advantages and disadvantages of each of them. They also have different characteristics concerning structure and organization. These differences may enable each mapping strategy to be more effective than the other one in developing specific skills.

1.8 Methodology

8.1 Participants

In this study the quasi-experimental method is used. It is called quasi experimental because the sample is not randomly chosen.

8.2 Sample and population of the study

The population consists of all the first intermediate grade students in seventh grade female students in public schools, in Karak governorate. The study sample consisted of the first intermediate class students from Jordan

consisted of (87) Seventh grade female students in public schools, in Karak governorate from the first intermediate class, the sample is selected purposefully because of its relevance to the researcher regarding the procedures used. The study sample was distributed to an experimental group that included (42) students from the first intermediate class, and a control group that included (45) students Seventh grade female students in public schools, in Karak governorate. The table below shows that :

Table (1)
Sample of the study

The group	The Numbers
Control	45
Experiments	42

8.3. Instruments of the study:

instruments used in this study were:

The Teaching Material Using Concept Maps, It consist of (3) lessons from the text books of the first intermediate appendix C. Material was prepared as follows:

a- Six lessons(1-3) were chosen for the material from the text book.

The rules of simple present tense were chosen and analyzed into concepts.

From these concepts general and specific goals were derived focusing on the students' acquisition of the four skills.

The concept of simple present was developed into a concept map.

A- The reading and writing skills questionnaire

In light of the study questions, an instrument was prepared to measure the attitudes of the first intermediate grade students towards the English language, The instrument was built according to the review of the related studies on attitudes towards the English language. It consisted of (20) items. according to the Likert scale, for each item five marks were assigned: strongly agree (5) agree (4) neutral (3) disagree (2) strongly disagree (1) .

Attitudes toward English were considered as follows:

If the students' attitudes percentage is between 71-100, this means that they have positive attitudes.

If the students' attitudes percentage is less than 50%, this means that the students' attitudes are negative.

If the students' attitudes percentage is between 51-70 this means that they have average.

B- Achievement Test (Appendix A)

A test was prepared to measure the students' achievement in the English language in the four skills according to Blooms Taxonomy (Knowledge, understanding, comprehension, application, analyzing, synthesis, and evaluation), the achievement test included (30) questions, each correct answer was giving one (1) mark with a total of (30) marks, to the whole test the test passed a set of phases:

- 1- Content analysis of the English language subject taught to the first intermediate grade for the school year 2016-2017 in Jordan.
- 2- Forming a list of educational goals for the selected concepts.
- 3- Preparing the achievement test that includes the elements of the basic cognitive content of the key concepts distributed according to Blooms' six levels (knowledge, understanding, comprehension, application, analysis, synthesis and evaluation). The test items were formulated reaching (30) items of multiple choice question.

The student' achievement was determined by the following :

0 – 14 weak.

15 – 20 Average.

21 – 30 Excellent.

8.4 The Validity of the Three Instruments

The achievement test teaching, materials, and the attitudes questionnaire were introduced to seven university professors, and educational supervisors, Modification were made according to their advice. Members of jury are attached in (APP.E)

8.5 Reliability of the Three Instruments

- A pilot study was carried out on a chosen sample of student from the first intermediate class other than the sample of the study consisting of 30 students. They were subjected to the lessons, the achievement test, and the attitude questionnaire in order to assure the reliability of the instruments.
- The achievement test revealed a result of (81.9) on Crookback Alpha, the attitudes, questionnaire revealed a level of (80.1) on Crookback Alpha, both are considered acceptable for the current study.

1.9 The Statistical Treatment

To answer the study's two questions and testing the relating two hypotheses, the students mean scores were calculated for each variable in each group: the experimental and the control groups, then the uni-variance analysis by (ANCOVA) was carried out to compare the post means after naturalizing the pre-test effect.

1.10 Procedures of the Study

After choosing the topic of the study, the researcher read a number of previous studies on the application of teaching conceptual maps .

The researcher indentified the population and selected the samples on which instruments were applied.

The researcher then put up the questions of the current study depending on the review of literature, and thus the dimensions of the study were established.

The test and the questionnaire were designed.

Validity and reliability of the designed questionnaire and questions of the test were verified.

Letter of permission was obtained
from the Ain-Shams University

to facilitate the research and administer the questionnaire and conduct the test.

The test was administered after having taught the 6 lessons, and the questionnaire was distributed and collected by the researcher in the second semester, during May 2017.

The researcher trained the chosen teachers on the study instruments in the second semester during May, 2017.

Results were analyzed and the questions of the study were answered.

The researcher presented recommendations and suggestions for future studies.

The list of references was written in alphabetical order using the APA style.

1.11. Results and discussion

4.1. Results

This chapter presents findings of data analysis in order to answer the following two question

- 1- What is the effect of applying the strategy of conceptual maps in development of reading and writing skills in English among the basic education students in Jordan ?

Question one

What is the effect of applying the strategy of conceptual maps in teaching English on the first intermediate class students' achievement?

To answer this question, the means and standard deviations were obtained for the performance of the study's two groups (The experimental and the control groups) on the pre and post achievement tests and their scores. Table (2) below explains this.

Table (2)

Means and standard deviations of the study's two groups' results on the pre and post achievement test

The group	Number	Upper end	Pre- test		Post test	
			Mean	Variance	Mean	Variance
Control	45	30	13.15	2.99	22.15	3.91
Experimental	42		10.20	1.24	28.30	3.70
Total	87		11.68	2.10	25.22	4.88

It is noticed from Table(2) that the mean of the experimental group that was taught by using the conceptual maps in the post test was higher than the mean of the pre-test, since it reached (28.30), while the mean for the control group that was taught by the traditional method reached (22.15). To determine if there was any significant difference between the means of the study's two groups at the level ($\alpha \leq 0.05$) in the achievement test , the researcher applied the uni-variance analysis (ANCOVA).

Table (3) illustrates results of data analysis between the two groups.

Table (3)

Results of (ANCOVA) analysis of the difference between the means of the study's two groups on the post achievement test.

Source	Type III sum of squares	Df	Mean square	F	Sig	Partial Eta squared
Corrected	841.098a	2	420.549	28.493	.000	.404
Model						
Intercept	2180.334	1	2180.334	147.724	.000	.673
Pretest	13.403	1	13.403	.908	.343	.011
Post test	473.152	1	473.152	32.057	.000	.276
Error	1239.800	84	14.152			
Total	57017.340	87				
Corrected Total	2080.898	86				

The hypothesis was tested as shown in table (3), where the (F) value regarding the strategy reached (32.057) with significance level of (0.000) , which means the presence of differences with statistical significance between the means of the two study groups on the post achievement test in favor of the experiential group , this means rejecting the null hypothesis that states: there are no differences with statistical significance at the level ($\alpha \leq 0.05$) in the students' achievement in the first intermediate grade in the English language attribute to the used teaching strategy (the concepts maps), the traditional method, the results obtained were in favor of the experimental group.

It is noticed from the above table that the means of the experimental group that was taught by using the concepts maps strategy was higher since it reached (28.18), while the means of the control group that was taught by the traditional way, was lower as it reached (22.27). This indicates that the difference was in favor of the experimental group that learned by using the concepts maps strategy, which means that the use of the concept maps strategy had the effect on the achievement of the first intermediate grade students in the English language subject compared to the traditional method, which is the answer question one.

1.12 Discussions, Conclusions and Recommendations

Discussion

Discussion of the Findings of Question one

1- What is the effect of applying the strategy of conceptual maps in teaching English on the first intermediate class student's achievement?

The results showed the presence of differences with statistical significance between the means of the results of the two groups on the post achievement test, and the difference was in favor of the experimental group that were taught using the concepts maps. The strategy had an effect on the achievement of the first intermediate grade students in the English language topic, compared to the normal method. It is possible to explain that there were several factors affecting the use of conceptual maps. The most important effect is that the use of the concepts maps had the interactive advantage on the experimental group students participation for many phases on the learning of the students, in which they started to investigate and determine problems, formulate new guesses about them, then wording the issue in a logical, then specifying the learned concept. These results go in agreement with empirical studies of Macfall (1999), Chei (2008), Brain(1998), Al-debai(2000), Anahita, et al.(2013)), though the interest was in knowing the usage of the conceptual maps in the academic achievement .

but the results were similar to some other studies in its sample that was limited to the males population.

Using the conceptual maps strategy has contributed in fixating the concept that the experimental group students have arched, enhancing the concept meanings, specifications and levels. Also it helped the student in the achievement process through their rapid progress in learning. This is what the normal learning method lacks, for it totally depends on the teacher, also the concepts maps focus on the importance of the learners' awareness of the skills and the strategies that they learn in the learning, as well as controlling their attempts to use them, made the learning of the experimental group a systematic and strategic learning. Focus of the concepts maps on demonstrating the concept in the form of a problem solving, made the experimental groups students more sensitive to the problem they encounter, and more involved in its solving process, providing new ideas and solutions, that led to achieving high scores. The concepts maps dependence on demonstrating the teaching content relevant to the logical organization of the content, based on the concepts sequence of the process of the experimental students group and the ability to achieve better due to the sequence in demonstrating the concepts and clarifying them enabled them to decode, synthesize, and evaluate, because it depends on the higher thinking processes. Also students participation has led to solving problems though passing a set of basic phases to the concepts adaptation with the students' abilities that helped in increasing their achievement.

Concepts maps have led to the students' possessing the self-control skills, self learning, verbal comprehension and reading, that increased the students' achievement. It helped develop the ability to modify, organize and control comprehension; that also helped in the appropriate understanding and perceiving the concepts, re-organizing the learning situations in perceptual forms or perceptual models, generalizations or new relations that helped the ability to reach deeper understanding of the concepts with meaning, and more semantics and more applicability in new life situations and problem solving.

Referring to the literature review, it is seen that the current study's results go in agreement with the results of the previous studies .

Recommendations

In light of the results that the study has reached, the researcher recommends the following:

- Jordanian Ministry of Education should work on the concepts maps in the English language lessons that focus on developing the achievement, and the students' different thinking skills.

- Conducting training for English language teachers programs on preparing the educational programs based on concepts map strategy, and using them in the teaching- learning process, because of their effect on increasing the students achievement, and developing their thinking skills in the English language.

- Encouraging the researchers to continue in conducting research on the usage of preparing the educational programs based on the concepts maps strategy and its usage in developing the different mental processes in fields other than the English language subject.

- Conducting the experimental and semi-experimental studies to show the effect of the educational teaching programs based on the concepts maps strategy in developing thinking skills through the English language subject.

- Conducting experimental and semi-experimental studies similar to this study to show the effect of meta-cognitive teaching strategy on the students' achievement, and developing the thinking skills in different grades and subjects.

Suggestions for further research

- 1- Conducting studies to use CM with EFL learners at various educational levels and in different language learning contexts.

- 2- More research is needed to compare the effect of CM on developing different language skills like listening and speaking.

3- More research is needed to examine different mapping strategies that help learners develop reading and writing skills.

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