

Mind Mapping and Students' Writing Performance

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Abstract

This study examines the potential effect of mind mapping strategy on developing Jordanian students' writing performance. The researchers claim that mind mapping strategy has the potential to improve Jordanian students' writing performance. The study follows a quasi- experimental design in which an experimental group and a control group were purposefully chosen from eleventh grade students at Al Hashymiah School for Boys, Zarqa in Jordan during the second semester of the academic year 2016/2017. In the experimental group, 20 students were taught by mind mapping strategy and 20 students of control group were taught by the conventional teaching method as outlined in the Teacher's Book. To collect the data, a pre-test and a post-test was utilized. ANCOVA was used to measure statistical differences in the mean scores of the participants of the study. The findings reveal statistically significant differences (at $\alpha \leq 0.05$) between the two mean scores of experimental and control groups in the post- test in favor of experimental group. The study recommends an integration of the mind mapping strategy into the English as a foreign Language (EFL) curriculum in Jordan as it facilitates developing students' writing skill. The study also recommends to examine the effect of using mind mapping strategy on EFL students' achievements in other language skills and sub skills. Teachers are also advised to use the mind mapping strategy to increase students' interest and motivation to write more often.

Keywords: EFL students, Jordan, mind mapping, writing performance

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Introduction

Generally, the role of writing skill is crucial for international communication with others in English along with succeeding in academic cores of study. Of particular interest, mastering writing skill enables EFL learners to acquire English words and sentences effectively (Bello,1997). Further, writing helps learners to keep track the learning process details (Ahangari& Behzady,2011). Nevertheless, it is reported as the most difficult skill to be acquired as it involves a number of skills and conventions (Nik, Hamzah&Rafidee, 2010; Yunus, Nordin, Embi&Salehi, 2013).

It's true that writing is an essential skill in learning English as a foreign language. In this regard, White (1987) states that writing is used to examine a student's performance in English. Rao (2007) also believes that writing helps to motivate students' thinking, organize ideas, and develop their ability to summarize, analyze and criticize as well as strengthening students' learning, thinking and reflecting on the English language.

It is claimed that writing is the use of symbols to form words and sentences according certain conventions (Byrne,1997). Such use of symbols can be developed to a skill of creating piece of written work, such as stories, essays, or articles (Cambridge Advance Learners' Dictionary, 2008). Here, students produce a sequence of sentences arranged in a particular order and linked together in certain ways.

How to write properly? Richard (1990) reports that writing is considered as a complex skill, and students should write a composition as a communicative activity. Wall (1981) assures that good writing needs realizing the target subject, controlling of grammar and being awareness of stylistic conventions in writing.

Mind mapping was derived from Ausubel's meaningful learning (Ausebel, Noval& Hanesian, 1978).The most important idea in Ausubel's cognitive psychology is that learning takes places when the learners have the assimilation of new concepts into existing concept and propositional frameworks. Woolfolk (1987) explains that the most important element effecting learning is what the learner already knows; according to Ausubel. Weinstein and Mayer (1986) argue that the cognitive approach to learning seeks to understand how the incoming information is processed and structured into memory.

Additionally, mind mapping is described as an instructional strategy where the student "places supra-ordinate concepts on paper and subsequently links sub-ordinate concepts as appropriate" (Buzan,1993; p. 59). Further, Buzan(2000) and Howitt (2009) define mind mapping as a visual tool that learners can use this strategy to generate ideas, take notes, organize thinking, and develop concepts.

Now, mind mapping has been used as a strategy for learning and teaching different language skills. Kyoko and Hiroko (2011) state that mind mapping was first proposed by Buzan in the late 1960s. Ahangari and Behzady (2011) mention that Joseph Novak and his research team at Cornell University developed mind mapping in the early 1970s.

Many researchers (e.g., Derbentseva, Safayeni& Canas, 2007; McGriff, 2007; Novak & Canas, 2006; Scarcella& Oxford, 1992) have expressed their own views about the effectiveness of mind mapping writing strategy. This strategy is considered helpful for students as it proved to activate students' writing performance. This strategy is claimed to make the writing process as meaningful as possible where students can express their thoughts appropriately. Here, mind mapping strategy is related to enabling students to think while using pictures and images demonstrated to them. Of particular interest, mind mapping can develop students learning English in general and the writing skills in particular in different setting worldwide (Ahangari& Behzady, 2011, Lee & Cho, 2010).

Some of the empirical evidence about mind mapping strategy contributes to the improvement of students' writing performance. Saed and Al-Omari (2014) investigate the effectiveness of a proposed program based on a mind mapping strategy in developing the writing skills of eleventh grade EFL students in Jordan, which involves 91 female students during the first semester of the 2013/2014 academic year at Sands National Academy, Amman. The study shows that students who use a mind mapping strategy to organize and summarize information in their drafts, produce more transformations of ideas in their summaries than the students who do not use this strategy. The researcher concludes that mind mapping gives students the opportunity to solidify their ideas before the writing where students are enabled to transfer meaning or to write summaries effectively. That is, students are able to write more complete and well-organized summaries. There also is no significant interaction between the method of instruction and students' general level of English.

Budiono, Degeng, Ardhana and Suyitno (2016) explore the effect of mind mapping strategy on writing short story learning skills. The participants of this study are 64 Indonesian students at private junior high school of nine grade in Mojoker. Findings of the study demonstrate that mind mapping strategy is beneficial in improving Indonesian students' writing of short story,

Ristwanto(2016) examines improving the students' ability in writing report genre through the mind mapping strategy. The participants are nine grade 43 students at Junior high schools in south Sumatra, Indonesia. The researcher uses observation, questionnaire and test to collect data. The results show that there is a good impact to the students' ability in writing report through mind mapping strategy.

Rahmah (2017) reports the effectiveness of using mind mapping strategy on students writing skill in descriptive text. The participants are 52 at the eighth grade of Negeri 1 Kota Tangerang Selatan. The instrument of this study is a written test, to score the students' descriptive text on pretest and posttest. The writer uses a rubric of an analytical scoring. The result shows that there is a positive effect of students' descriptive text after using the mind mapping strategy.

Thus, the study investigates the potential effect of mind mapping strategy on the Jordanian eleventh grade students' writing performance.

Statement of the Problem

Teaching writing can be a problematic skill for EFL teachers. Specifically, the researchers notice that eleventh grade students face difficulties in writing the required paragraphs and essays in their textbook. This problem may be due to the absence of the right teaching strategy.

In this concern, Al Khsawneh and Maher (2010) indicate that the lack of successful English writing is due primarily to weaknesses in the teaching method. In the same vein, other non-Jordanian researchers such as: AlHazmi (2006), Al- Samdani(2010) and Grami (2010) assert that the problem of poor writing may be attributed to the inadequate delivery of all language skills, in general, and to the lack of the delivery of the teaching skills, in particular. Therefore, mind mapping strategy may have potential positive effect on students' writing performance.

The Purpose and Question of the Study

This study aims to investigate the effects of mind mapping strategy on eleventh grade students' writing performance. In order to achieve the purpose of the current study, it attempts answering the following question:

1-Are there any statistically significant differences ($\alpha \leq 0.05$) in students' writing performance that are attributed to the mind mapping strategy use?

Significance of the Study

In their review of the related literature, the researchers could find only one study which investigate the use of mind mapping strategy to improve writing performance in the Jordanian EFL writing classroom. Hopefully, the results of the study may give teachers insights for bringing the real world into the classroom; thus they could make learning more meaningful and more exciting. Therefore, this study acknowledges the use of mind mapping strategy in the teaching writing skill research. As this strategy proves to be useful, then it goes without saying that it should be adopted by teachers to attain better writing performance by their students. Of course, better writing performance secures the academic future of the students and facilitates their educational progress.

Subjects, Instrumentation and Data Collection and Analysis

Forty eleventh grade male students' who were purposefully chosen from Al Hashymia School for Boys in Zarqa during the second academic year 2016-2017. An experimental group (n= 20), taught by mind mapping strategy and a control group (n= 20) students and taught by the conventional method as described by teacher's book. The researcher designed different writing activities based on the mind mapping strategy in order to achieve the objective of the Program.

This study adopts the quasi-experimental design to investigate the effect of mind mapping strategy on improving Jordanian eleventh grade students' writing performance due to the relevance and the nature of this study. A quantitative data is collected by using pre- and posttest.

Validity and Reliability of the Instruments

To achieve the purpose of the study, the researchers designed an instructional program based on mind mapping strategy which was taught to the experimental group, to improve the students'

writing performance. After deciding the writing performance, the researchers designed different writing activities in order to achieve the objectives of the program.

Moreover, mind mapping strategy has a number of activities, for example, it is involved writing down a central idea and thinking up new and related ideas which radiate out from the center. When students focus on key ideas, they write down in their own words and then they look for branches out and establish connections between ideas.

In experimental group, the students under study practiced the application of mind mapping strategy prior to writing paragraphs and essays at the planning stage. The students were taught to place the main idea as a nucleus around which their ideas extend in different directions. The students practiced writing paragraphs and essays using a concept mind mapping strategy in their brainstorming and planning processes at the pre-writing stage. The topics for the paragraphs and essays were introduced to the students as sequenced in the textbook. Similarly, the strategies for the paragraphs and essays were sequenced similar to their presentation order in the textbook such as comparison and contrast first, cause and effect second, generalization and qualification third, interpretation of data fourth, argument and conclusion last. Nevertheless, the control group wrote paragraphs and essays on the same topics in the light of the procedures suggested in Teacher's Book.

To ensure the content validity of the instrument program, it was given eight juries of EFL professors, EFL supervisors and teachers where all their comments were taken into consideration and reflected in the final version of the test.

To achieve the reliability of the pre-posttest, it was administered to an outside sample of 30 eleventh-grade students. Two weeks later, the same test was administered to the same sample. The reliability coefficient was found to be 0.95, which is appropriate for the purposes of this research.

Data Collection

The data were collected from one school (viz. Al Hashymia School for Boys) in Zarqa. The experiment lasted for three months in the second semester of the academic year in 2016/2017 for twelve class sessions. At the end of the experiment, the test was re-administered.

Data Analysis

The data was analyzed quantitatively to determine the potential effects of mind mapping strategy on Jordanian eleventh grade students' writing performance. The researcher used the following analyses to achieve the purpose of the study:

- 1- Descriptive statistics to compare means and standard deviations of the experimental and control groups.
- 2- ANCOVA was used to control the differences between the groups before the treatment and to find if there were any significant differences (at $\alpha \leq 0.05$) between the experimental and control groups due to the treatment.
- 3- Person correlation formula in order to gain test-retest reliability for the test.

Results of the Study

To review, the question was: Are there any statistically significant differences ($\alpha \leq 0.05$) in students' writing performance that are attributed to the mind mapping strategy use?

To answer this question, a timed pre-test and post-test of writing was administrated. The mean scores and standard deviations of the students' scores on the pre-test and the post-test were calculated, along with estimates mean scores and standard errors of the post-test scores based on the differences between the two levels of instructional delivery, mind mapping strategy, and conventional method as shown in Table 1.

Table 1. Means and Standard Deviation of Students' Writing Performance on the Pre-test and the Post-test per Mind Mapping

Group	Strategy	Pretest			Post test			Estimates Mean	Std. Error
		N	Mean	Std. Deviation	N	Mean	Std. Deviation		
A	Mind Mapping	20	13.70	3.83	20	19.45	3.10	19.29	0.62
B	Control	20	12.35	3.12	20	14.69	2.52	13.66	0.62

The test was out of 24

Table 1. shows the mean scores, standard deviation and the estimate means of the writing performance of mind mapping group A and the control group B on the pre-test and the post-test. Moreover, the Table shows difference in the estimate mean scores of mind mapping group and control group. Obviously, the Table demonstrates that students at group A outperformed their counterparts in group B; as the mean score for the post-test was 19.29 which indicates an improvement if compared to 13.66 for group B (the control). To ascertain this result further, an ANCOVA test was used in order to analyze the students' scores, as shown in Table 2.

Table 2. ANCOVA of the Students' Writing Performance on the Post-test per Mind Mapping

Source	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Pretest	26.722	1	26.722	3.566	0.067	0.088
Group	304.481	1	304.481	40.637	0.000	0.523
Error	277.228	37	7.493			
Corrected Total	657.975	39				

n=40

*Significant ($\alpha \leq 0.05$)

Table 2. shows a statistically significant difference in students' writing performance on the post-test ($F=40.637$, $df=39$, $P=0.000$). Provided by these scores, this study reports that mind mapping strategy has significant difference on Jordanian eleventh grade students' writing performance (at $\alpha \leq 0.05$).

Discussion of the Results

The question of the study is relevant to the potential effects of mind mapping strategy on the eleventh grade students' writing performance. The results of this question showed that there were statistical significant differences (at $\alpha \leq 0.05$) in favour of the experimental group A in students' writing performance on pre-post test scores.

One possible contribution to the superiority of mind mapping group (viz. A) was the sequence of mind mapping which was provided and closely implemented to facilitate learning. In this regard, Buzan (2007) and Edward (2011) state that mind mapping strategy could balance the brain by helping learners to organize thoughts or to improve the creativity performance or even to speed of their learning and memory.

Another possible explanation of the performance of the mind mapping group is relevant to the process of training per se. More specifically, the participating students were asked to write to down a central idea first; then they were asked to think up new and related ideas which radiate out from the center of the main idea. Here, when students focused on key of ideas, they were able to write down in their own words where they can look for branches out in order to establish connections between ideas. During the training classes, students were invited to use picture and cards that help them in organizing information on the topic in focus as they matched cards with proper topics. Another explanation of students' enhanced performance is related to the fact that students are used to write rather than discussing ideas or organizing them in bottle forms or any other visual forms.

The results of this study are in line with the general conclusions drawn from other studies in this regard which claimed that mind mapping strategy can enhance learners' writing performance. For example, Al-Jarf(2009) finds that the mind mapping strategy of prewriting helps students to produce better expository texts. Naqbi (2011) also states that using mind mapping improves the written product of students. Further, Darayesh (2003) proves that the mind mapping strategy can develop the scientific secondary students' English writing ability. Recently, Saed and Al-Omari (2014) report how mind mapping strategy improves the writing performance of eleventh grade EFL students in Jordan.

In the current study, the mind mapping strategy was demonstrated as an excellent and innovative strategy as it enabled the participants students to generate new ideas for essays and assignments writing. More specifically, the prewriting component of mind mapping helped the students in experimental group A to write a better quality essays for the prewriting strategy helped students to understand the assigned topic for the assigned essays. In this way, students had the chance to focus on ideas written down in their own words along with observing connections between ideas.

Interestingly, Freeman (2004) explains that mind mapping strategy enables students to construct new conceptualizations and to create abstract thoughts. In this concern, mind mapping used in the experimental group A reduced students' miscommunication and lack of clarity in written texts as it involved pictures and colours which, in turn, motivated students and inspired them to write essays. Most students actually enjoyed creating mind mapping as reported by Jones,

Ruff, Snyder, Petrich and Koonce (2012) who find that mind mapping is an entertaining and interesting strategy that enhances students' essays. Here, Sturm, Rankin and Erickson (2002) state that mind mapping assists students to write confidently. As such, this strategy made students proficient and confident enough to write essays in different topics. During the training, students had a chance to refer to the maps drawn at the planning stage and make the writing process work efficiently. To conclude, mind mapping strategy enables students to construct and organize their ideas in the pre-writing phase. This is in congruence with Sturm and Rankin and Erickson (2002) who report that mind mapping helps students enhance their writing skills.

The advantages of using mind mapping strategy to develop students' writing in the experimental group A were as follows. Firstly, most students enjoyed it as it contributed to develop their writing ability as reflected in the post test scores while being interested way. Secondly, the researchers noticed mind mapping strategy enhanced students' ability did not only help students to organize their ideas in a hierarchal structure, but also helped them to produce linked and better connected essays. Thirdly, students' understanding topics is superior as they were able to relate ideas effectively. Similarly, Bharambe (2012) claims that students become skillful in organizing their thoughts and ideas and thus become able to present information clearly and attractively by mind mapping. Although not measured, using mind mapping strategy in this study promoted students' creativity in writing. In this regard, Keles (2012) supports that mind mapping is an effective strategy in learning and promoting students' creative and critical thinking and in providing permanent learning. More specially, students at the experimental group A were able to understand the relationship between ideas they wrote and the writing topic. This is in alignment with Saed and AL-Omari (2014) who assure that mind mapping gives students the opportunity to solidify their ideas with adequate procedures before writing.

All through the training, students at the experimental group A applied mind mapping strategy in the pre-writing stage in order to explore ideas and generate thoughts on each writing topic under study. The researchers observed how mind mapping strategy allowed students to gather ideas relevant to the main themes in each essay. Such ideas gathered by this strategy were coherent without any linear or flexible structure of outlines. More specifically, mind mapping strategies involved using information with images, symbols, key words, codes and colour to the level each student wishes to use in the target essay. In Gardner's (1985, 1999) terms, such type of organization of ideas is capable of capturing the spatial and bodily-kinesthetic of students.

During the treatment, the researcher trained students to use color codes, pictures, key words, clues, in a proper hierarchal paragraphing structure. That is , their essays were organized in light of the entire main and sub ideas along with relevant supporting details on the topic. This application of the mind mapping proved successful when the results were evaluated. When the students in the experimental group A attempted the post-test after the treatment, a significant difference was found after the results of the pre-test and post-test were compared. It became evident through the improvement in the results of the students that the application of the mind mapping strategy enhanced the students' writing performance. Moreover, students were seen as motivated to write. Provided that, students started from anywhere as they were not afraid of making mistakes; they rather jotted down anything that come up in their mind. Due to the fact that they

were invited to get ideas together, students drew associative lines for required in forms essays by selecting relevant notes then sketching the figure of such essays.

Findings of the present study demonstrate the positive effect of the mind mapping strategy on eleventh grade students' writing performance. The reasons behind the results are due to the fact that using the mind mapping strategy provides opportunities for students to come up with original and useful ideas. These results are similar to some other studies (Budiono, Degeng, Ardhana& Suyitno, 2016; Ristwanto, 2016; Saed& Al-Omari, 2014) because the strategy provide students with strategies to organize their thoughts and develop their writing performance.

Conclusion

This study confirms that the mind mapping strategy improved students' writing performance in test scores. This result is similar to some other studies(e.g., Darayesh, 2003; Saed& Al-Omari, 2014 &Saqqa, 2006) because they provide students with strategies to organize their thoughts and develop their writing sub-skills. This strategy under study demonstrates students' engagement in thinking of the writing topics along with prior knowledge activation which, in turn, enables them to generate ideas through group work and oral discussion in an interesting way.

Recommendations

Based on the results of the study, the following recommendations are put forth:

- 1-Teachers are encouraged to use mind mapping strategy at their pre-writing phase which helps to organize their thoughts and broaden their writing skills. This, of course, motivates students and activates their prior knowledge; which is useful for generating ideas.
- 2-The Ministry of Education is invited to train teachers on mind mapping strategy. Of possible interest, improving students' writing reinforce their knowledge of grammar and vocabulary, and also develop other writing skills; as language, skills are integrative.
- 3-Curriculum developers and textbook writers may incorporate teaching strategies can help students write essays using the mind mapping strategy to help them develop in writing performance and motivate them. Four researchers are invited to conduct other studies to investigate the effect of mind mapping strategy on developing other language skills and a similar study should be conducted to investigate the effect of mind mapping strategy on writing skill of other classes in other parts of Jordan.

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