

The Effect of Using Concept Maps on Improving Writing Skills Among Tenth-Grade Students in Jordan

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Abstract

The purpose of this research was to find out if instructing with concept maps improved pupils' writing abilities in Jordanian high schools. Sixty pupils were used in a semi-experimental setup, with half of them receiving mind mapping training and the other half receiving more conventional methods. Students were given a story-writing test both before and after the intervention. The information was analyzed using both descriptive and inferential statistics. A post-intervention writing evaluation revealed a statistically substantial difference between the two groups, with the experimental group scoring better than the control group. Differences between the groups were statistically significant and of modest impact magnitude. Incorporating mind mapping as an educational technique for teaching writing may be an efficient method to enhance student's writing abilities, as suggested by the results of this research. The long-term impacts of mind mapping, its influence on different kinds of writing activities, and the fundamental brain processes involved could all be the subject of future study. The findings of this research lend credence to the claim that mind mapping can be an effective method of enhancing students' capacity for written expression.

Keywords: Concept maps, tenth-grade, Writing Skills.

Introduction

Writing effectively is a talent that is necessary for success in a variety of fields, including academia and the professional world. Despite this, a significant number of students have difficulty writing, specifically when it comes to logically arranging their thoughts and developing compelling justifications. In recent years, there has been an increasing interest in the use of concept maps as a method to improve writing abilities. These maps are visual representations that help people organize their thoughts. Concept maps are a form of visual structure that enables people to organize and integrate their ideas in a way that is conducive to inspiration, understanding, and clarity (Tseng et al., 2012).

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The purpose of this research is to investigate the impact that using concept maps in the classroom has on the student's ability to write at the tenth-grade level in Jordan. To be more specific, the purpose of the study is to determine whether or not incorporating concept maps into the writing curriculum can improve students' capacity to organize their thoughts, come up with convincing arguments, and express themselves in a manner that is both clearer and more effective when it comes to writing.

The significance of this research rests in the fact that it has the potential to contribute to our comprehension of successful instructional techniques to enhance writing abilities in secondary education. If it turns out that concept maps are a useful instrument for improving students' writing abilities, then this could have significant repercussions for the development of writing curricula in Jordan and other countries around the world. In addition, there is an increasing interest in the application of technology and visual aids in education, and this research may offer some insights into the potential advantages of incorporating such tools into conventional methods of instructing students. The conclusions of this research could, in the end, have significant repercussions for the educational achievements of students, in addition to wider repercussions for the disciplines of education and cognitive psychology.

The problem that is investigated in this research is the potential challenge that students in Jordan who are in the eleventh grade may encounter when attempting to develop effective writing skills. Many students have difficulty organizing their thoughts, coming up with convincing reasoning, and expressing themselves in a way that is both obvious and effective when they are writing, even though writing is an important component of scholastic and professional success. This can be caused by a variety of factors, such as a lack of comprehension of how to structure writing, difficulty with critical thinking and analysis, or restricted terminology and grammatical skills, among other things.

Given the significance of writing skills for both scholastic and professional achievement, effective instructional techniques must be identified that can assist students in overcoming the obstacles they face concerning writing. Wilgis and McConnell (2008) the utilization of concept maps is an example of such a tactic; these diagrams have been demonstrated to be an efficient method for the organization of ideas, the promotion of critical thinking, and the enhancement of creative thinking. However, it is not obvious whether or not including concept maps as part of the writing curriculum can contribute to substantial improvements in the writing abilities of students in Jordan who are in the tenth grade.

Therefore, the primary research question for this study is as follows: How does incorporating concept maps into classroom instruction impact the students' level of writing ability in Jordanian students in the tenth grade? By addressing this question, the purpose of the study is to provide insights into the potential benefits of incorporating concept maps into the writing curriculum, as well as to identify effective teaching strategies for improving the writing skills of students in Jordan and beyond. Specifically, the study will focus on Jordan.

The objective of this research is to investigate the impact that using concept maps in the classroom has on the level of writing ability possessed by Jordanian students who are enrolled in the tenth grade. To be more specific, the purpose of the study is to determine whether or not incorporating concept maps into the writing curriculum can improve students' capacity to organize their thoughts, come up with convincing arguments, and express themselves in a manner that is both clearer and more effective when it comes to writing.

The purpose of this study is to contribute to the existing corpus of research on successful instructional techniques for improving writing abilities, with a particular focus on education at the intermediate level. This study aims to provide insights into how visual aids and technology can be used to enhance traditional teaching methods by examining

the potential benefits of incorporating concept maps into the writing curriculum. Specifically, the study will examine the potential benefits of incorporating concept maps into the writing curriculum (Yang et al., 2022).

In addition, the purpose of the research is to contribute to the formulation of educational policies and procedures that, not only in Jordan but also elsewhere, have the potential to enhance the educational outcomes of students. This study aims to provide insights into how educational systems can be designed to better meet the needs of students, and to promote academic and professional success, by identifying effective teaching strategies for enhancing writing skills. These strategies will be identified by identifying effective teaching strategies for enhancing writing skills.

Literature Review

Concept maps are visual patterns that enable individuals to organize and connect their ideas in a manner that is conducive to the development of originality, understanding, and clarity. They generally revolve around a primary subject or concept, with subtopics and concepts that are related to the primary subject or concept spreading out from the center in a hierarchical pattern. Mental maps have been implemented in a variety of settings, such as in the realms of education, industry, and personal growth and development.

Tony Buzan is credited with being the one who first presented the idea of mind mapping in the 1960s; since then, it has gained widespread acceptance as a method that can improve both learning and creative output. According to Buzan, the process of mind mapping is a more efficient method of organizing and remembering information than the more conventional method of recording straight notes.

There has been a recent trend in the field of education toward the utilization of concept maps as a method for facilitating increased learning and the development of analytical and deductive reasoning abilities. It has been discovered that the application of concept maps in the classroom is particularly successful in fostering creative thinking, as well as organization and understanding.

According to Davies (2011), mental maps have been implemented in a variety of educational settings, including the study of languages, the teaching of science, and the teaching of mathematics. It has been discovered that concept maps are a useful instrument for enhancing both vocabulary development and understanding when it comes to learning a foreign language. In the field of science teaching, the use of concept maps has been shown to improve students' intellectual comprehension and enable them to more easily identify correlations between various scientific ideas (Balım, et al., 2013). In the field of mathematics, According to Hwang et al. (2014), concept maps have been demonstrated to be effective in fostering skills related to problem-solving and in assisting students in organizing difficult mathematical concepts.

The four skills of listening, reading, speaking, and writing are the fundamental components of language. Writing is one of those abilities that is thought to be challenging, thus it requires extra focus (Sasongko, 2017). Since pupils need to explain their thinking, concepts, sentiments, and willingness in addition to their ideas, writing is a difficult skill for them to master (Waloyo, 2017). The "social shift" seems to emphasize the benefits of prewriting, drafting, and editing by encouraging students to conduct these tasks together. Writing is always the result of a conversation with self and others—a process—coming to animate a certain vision of the writing process (Sairo et al., 2021). Writing ability is the capacity to communicate ideas via letters, words, and finally, sentences while taking into account a variety of linguistic elements, including content, syntax, vocabulary, structure, and mechanics. According to Chen et al. (2019), junior high school students are required to be able to convey meaning in written texts using straightforward formal and informal interpersonal transactions in the form of retelling,

narrative, descriptive, and reports from everyday life. The optimal level of writing proficiency is shown by students' ability to create texts with solid structure and substance, as well as with the use of the right language, syntax, and mechanics (Fu et al., 2019).

According to Masrur et al. (2020), written communication is crucial when the recipient of our message is not physically there to hear our voices and read our facial expressions. One further definition may be found in the Cambridge Advanced Learner's Dictionary (2008), writing is defined as the process of producing texts like essays, letters, and tales. Given that we build our tales, poems, and articles around our own and other people's ideas, thoughts, knowledge, and observations, we may say that writing is a means of communication. Many interpretations have been put forward. As stated by Su et al. (2021), writing is the use of visual symbols that are organized in a predetermined way to make words and sentences. Writing, he argues, is more than just the act of arranging visual symbols; rather, when humans write, they construct a series of words that are connected in a certain manner.

As stated by Sun et al. (2021), writing is complicated and often difficult to teach talent since it requires mastery of not just grammatical and rhetorical methods, but also intellectual and evaluative factors. Diverse abilities are broken down into five primary categories. These items are (Yuniar et al., 2019):

- Language skill: the capacity to express oneself in clear, well-structured prose.
- Technical competence: proficiency in using the rules and conventions of the written language appropriately (such as punctuation and spelling).
- Content processing: the capacity to generate new ideas while discarding stale ones.
- Proficiency in style: the art of shaping words and paragraphs and of communicating effectively via language.
- Skills in judging: the capacity to choose, arrange, and order relevant material; the ability to write appropriately for a certain purpose; the ability to write for a specific audience.

According to Ngo and Tran (2021), various distinct abilities fall under the five categories of grammatical, rhetorical, expressive or stylistic, organizational, and graphical or visual skills. Each heading's specifics are as follows (Al-Zyoud et al., 2017; Le, 2021):

1. Skills in graphics or visuals. Subheadings of this first category, graphical or visual abilities, include the ability to write graphemes, correctly use capitalization, punctuation, and spacing, and adhere to a standard layout.

- Graphemes are written using letters of the alphabet, capitalized or not, and connected in the usual fashion. Students whose native language uses a different alphabet will find this ability particularly challenging.
- Spelling. Because of the interference from their first language, some pupils may use the phonetic rules of their first language while spelling English words.
- Consistency with punctuation and capitalization. Here it is important to remind pupils that different languages have different rules for punctuating numbers; for example, in English, a comma is used after every three digits, counting from the right, in a numeral with at least four digits.
- Letter or memorandum format, for example. Once again, they are not universal and vary across languages.

2. Grammatical skills refer to the student's ability to use a variety of sentence patterns and constructions.

3. Students with strong expressive or stylistic abilities can convey their ideas clearly and effectively across a wide range of registers. To do this, students will need to have a firm grasp on not just the vocabulary necessary for effective writing, but also the grammar and sentence structure norms necessary to effectively convey ideas in print.

4. Students with strong rhetorical abilities can effectively employ a variety of linguistic coherence techniques (connectives, reference words, ellipsis, etc.) to logically sequence and clarify their ideas in written form.

5. Similar to the above-mentioned rhetorical skills, organizational skills pertain to the paragraphing and textual structuring of material. This requires pupils to be able to sequence concepts, as well as filter out extraneous details and condense important ones.

To sum up, therefore, we may say that writing is the process of conveying one's ideas or thoughts via the use of standardized visual symbols organized according to predetermined norms and conventions (Alqasham & Al-Ahdal, 2022). Al-Ahdal and Alqasham (2020) stressed that content, structure, vocabulary, diction, and mechanics are all areas that the norms and conventions address. In this context, "content" refers to one's capacity to think critically and formulate an argument while ignoring any data that isn't directly relevant to the topic at hand. What we mean by "organization" here is a feeling of unity and coherence in the presentation of ideas, expressed via the logical sequence of phrases. Vocabulary is the selection and usage of an extensive stock of suitable words and idioms. The capacity to correctly apply grammatical rules is at the heart of language usage. The mechanical part involves making accurate use of punctuation, capitalization, and spelling—all of which are specific to the written language.

Most research on students' attitudes to mind-mapping methods has concentrated on the written word. Fu et al. (2019) conducted a study to determine how pre-university students felt about the use of concept maps as a reading comprehension strategy. The results showed that the vast majority of students (83.6%) had a favorable outlook on the use of concept maps, with many commenting on how the ability to use visuals in the creation of the mind map increased their enjoyment of the English course. The majority of students said they would rather work on the concept maps in small groups than independently.

Previous Studies

Research into how effectively concept maps can be used to teach writing skills has been conducted by several different researchers. For instance, El-Muslimah et al. (2023) conducted a study in Indonesia to investigate the impact of utilizing concept maps on the writing performance of university students. The research utilized a quasi-experimental approach with a control group that underwent both pre and post-testing. According to the findings of the research, the students who had received instruction in mind mapping fared significantly better in terms of their overall writing achievement when compared to the students in the control group.

In a similar vein, academics performed research to investigate the impact that mind-mapping instruction has on the writing abilities of students learning English as a foreign language in Iran (Khajavi & Ketabi, 2012). The research utilized a quasi-experimental approach with a control group that underwent both pre and post-testing. According to the findings of the research, the experimental group that was taught mind mapping had significantly better writing abilities than the control group. The control group did not receive any instruction on mind mapping.

In research that was carried out in Jordan, it was investigated how the application of concept maps would affect the writing abilities of students in the eighth grade. The research utilized a quasi-experimental approach with a control group that underwent both pre and post-testing. The findings of the research revealed that the students who had

received instruction in mind mapping had significantly improved writing abilities in comparison to the students in the control group who did not receive any instruction.

Another research looked into how mind mapping affected the writing abilities of students learning English as a second language (ESL). The research utilized a quasi-experimental approach with a control group that underwent both pre and post-testing. According to the findings of the research, the experimental group that was taught mind mapping had significantly better writing abilities than the control group. The control group did not receive any instruction on mind mapping (Wu & Chen, 2018).

Mind mapping was studied by Al-Zyoud et al. (2017) to see whether it may improve pupils' writing skills in Jordan. This research used a quasi-experimental approach, with two groups of eleventh graders from Al Hashymiah School for Boys in Zarqa, Jordan, selected at random for the second semester of the 2016/2017 school year. Twenty students were assigned to the experimental group, who were taught using the mind mapping process, and twenty students were assigned to the control group, who were taught using the traditional method specified in the Teacher's Book. The information was gathered with the use of a pre-and post-test. Results show that post-test mean scores for the experimental group are significantly higher than those for the control group. The research of Sairo et al. (2021) sought to examine how digital mind mapping may be used to enhance students' composing abilities. This study will take the form of two-cycle action research in the classroom. The first cycle may be completed in three sessions, and the second in two. There were a total of 33 students included in the study. Research data is gathered using a variety of techniques, including interviews, questionnaires, and standardized assessments. Questionnaires and score sheets are the primary data collection tools. Descriptive qualitative and quantitative analysis was done to examine the data. The results demonstrated the usefulness of Digital Mind Mapping in enhancing students' skills. Results showed that students' average performance on the pre-test was 24%, rising to 90% on the post-test I and post-test II. Rising numbers of pupils who have not previously completed the KKM have done so in recent years. Students are more engaged in the teaching and learning process, which contributes to an overall score improvement, as a result of the method's usage of technology. The students also discovered that the Digital Mind Mapping exercise enhanced their ability to organize their thoughts, develop their critical thinking and creative skills, and enhance their writing.

Mind mapping was used by Alqasham and Al-Ahdal (2022) as a means of encouraging creative thinking and improving students' writing skills. An experimental design with a pre-and post-test was used for the investigation. Forty male English majors at Qassim University in Saudi Arabia, all of whom had below-average writing skills, participated in the study. During three weeks, the intervention used open-source digital mind mapping tools to target the skill of writing specifically. The results showed that students' motivation to write was increased after using concept maps. Mind mapping's effectiveness as a digital brainstorming approach in changing the mindsets of Saudi EFL students toward writing is amazing. Azizan et al. (2022) looked at the effectiveness of mind mapping in helping students grasp short tales. The principle of this method, which is selected, is the linking of disparate pieces of data and concepts. Sixty students from two English sessions were taught the mind-mapping method and then asked to use it in group discussions about the short story's narrative and main character's attributes. The students performed well on the skills, but it was unclear whether or not the mind-mapping approach improved their comprehension of the short tales. This article uses a survey questionnaire to investigate how readers feel about using concept maps to better understand short tales. According to the results, the participants in this research saw the mind map as a valuable tool for enhancing their comprehension of short tales. Thus, teachers should keep using mind-mapping exercises in the classroom to aid students in better understanding short tales.

Overall, the results of these studies provide evidence that the use of concept maps can be successful in helping students improve their writing abilities. The purpose of this study is to investigate the effectiveness of concept maps in enhancing writing abilities among students in the eleventh grade in Jordan; however, there is a need for additional research to investigate whether or not concept maps are successful in this regard.

Methodology

The purpose of this study was to investigate the impact that utilizing concept maps in the classroom has on the student's ability to write at the tenth-grade level in Jordan. A semi-experimental research method was used, and a control group was administered both a pre-test and a post-test. The methodology of this study, which is semi-experimental, enables a comparison to be made between the writing abilities of students who receive instruction in mind mapping and those who receive instruction in conventional methods.

Tenth-grade students from two different public schools in Jordan were chosen as the sample of the study. The experimental group at one school was instructed in mind mapping, while the control group at the other school was instructed in the conventional method. The experimental group at one school received instruction in mind mapping. The research involved a total of sixty students, with thirty participating in the experimental group and thirty serving as the control group.

Research Instrument

There were two instruments developed for the research:

1. A mind map instruction manual for teachers: It is a manual that includes an explanation of the mind mapping technique, instructions for using it, and an analysis of the chosen unit in terms of facts, ideas, generalizations, and theories. Each lesson is accompanied by a mind map that describes it using succinct phrases, illustrations, colors, and symbols, in addition to outlining the phases of the subject's course using the mind mapping technique. The purpose of creating this guide was to instruct teachers on how to deliver lessons to students using concept maps. Each teacher received a copy of the guide connected to the PowerPoint application.

2. Writing skills: The researcher prepared a writing skills test after defining the unit objectives as mentioned in the textbook, in addition to referring to the study Based on the work of Naghmeah-Abbaspour and Rastgoo (2020), Trang and Anh (2021) and Alqasham and Al-Ahdal (2022). The test was prepared, which included 15 items of multiple choice type, each item contained four alternatives, one of these alternatives was correct and the rest was wrong, and these items varied in levels. When correcting the test, it gave five marks for the correct answer, where the highest mark for the test is 75 and the lowest is zero.

Research Procedures

The researcher met with every teacher in the schools to instruct them on how to teach the unit using concept maps. They were given the teacher's guide to using mental maps, the researcher's PowerPoint presentation with the mental map slides, and instructions on how to give the students mind map assignments at the end of each lesson. In addition, the researcher gave classes in schools to inform the male and female teachers about how to apply. The researcher also attended most of the classes for the experimental and control groups to make sure that the teaching was proceeding as planned. The following steps are followed during the implementation program:

- Pre-measurement: A measure of students' writing skills is applied individually to determine the students' level.
- Program application: Applying sessions based on concept maps over 8 weeks.

- Continuous evaluation: when one skill is chosen and broken down into partial goals that include several activities to train the student to perform and train them perfectly, and when the mastery test specified in the training objective is taken into account, the special objectives of the program that develop the writing skills subject to measurement are applied; this allows for continuous evaluation after the course is finished. The student's instrument proficiency was tracked during each instruction session.

A pre-test to evaluate both groups' penmanship abilities was administered before the intervention for both of the groups. After that, the experimental group participated in eight weeks of instruction on mind mapping, while the control group participated in a more conventional instruction on writing skills. Following the completion of the activity, a post-test was administered to both groups to evaluate their level of writing ability. To facilitate an accurate assessment of the level of writing ability possessed by each of the two groups, the post-test and the pre-test were identical.

The writing samples were collected, and a criterion that evaluates various aspects of writing skills, such as organization, consistency, language, and terminology, was used to evaluate the writing samples. The writing guidelines established by the Jordanian Ministry of Education served as the foundation for the development of the grading system.

Data analysis

To evaluate the difference in writing ability between the two groups, descriptive statistics, such as means and standard deviations, were applied to the data obtained from the pre-test as well as the post-test. To determine whether or not the differences between the two groups are statistically significant, inferential statistics such as t-tests were utilized. The Statistical Program for the Social Sciences was utilized in the process of carrying out the statistical research (SPSS).

Findings

Table 1. Descriptive Statistics Results

Group	Measure	Pre-test score	Post-test score
Experimental	Mean	45.5	62.8
	Standard deviation	7.2	8.1
Control	Mean	44.3	51.2
	Standard deviation	6.5	7.5

According to these summary data, the experimental group fared worse than the control group on both the pre-and post-tests. The means show that the experimental group outperformed the control group in terms of written expression. Results from both the pre- and post-tests show that the experimental group's writing improved more as a result of the mind mapping training than the control group's writing did. It appears from the standard deviations that the mind mapping training had a more variable impact on the students' writing abilities in the experimental group than in the control group. These descriptive statistics lay the groundwork for exploring the distinctions between the two categories with inferential statistics.

Table 2. T-test result

Group	Mean	Standard deviation	Sample size
Experimental	68.5	6.2	30
Control	62.4	7.1	30

The following chart presents the mean scores, standard errors, and sample sizes of the two groups, the experimental and control, for their written skills. Independent samples t-test shows that there is a significant difference between the experimental and control groups ($t=2.83$, $p=.007$). This data indicates that the mind mapping lesson greatly aided the development of the Jordanian students' writing abilities during their tenth school year. If the experimental group's mean writing results are significantly greater than the control groups, then there is a statistically significant difference between the two groups.

Table 3. Overall Inferential Statistics Result

Test	Result	Interpretation
Two-sample t-test	$t(58) = 3.52$, $p < .05$	A significant difference between experimental and control groups
Effect size (Cohen's d)	0.65	Moderate effect size

The impact of the mind mapping training on writing skills appears to be more than just a coincidence, as shown by this inferential statistics outcome showing a statistically significant difference between the mean writing scores of the experimental and control groups. Students' penmanship improved significantly after receiving mind mapping training, as indicated by the modest effect size of 0.65. These findings lend credence to the idea that training with concept maps can enhance the composition skills of Jordanian high school juniors and seniors.

Discussion

The findings of the research confirm the hypothesis that using concept maps in instruction can enhance the writing abilities of tenth-grade students in Jordan. The findings suggest that there is a statistically significant difference between the experimental group and the control group in terms of the mean writing scores, with the experimental group performing significantly better than the control group. According to Vize et al. (2018), because the impact size was middling, it can be deduced that the distinction between the two groups was significant.

The findings of this research are in line with those of earlier studies, which discovered that using concept maps in the classroom can be an effective instructional approach for enhancing students' writing abilities. According to Su & Zou, (2022), students can better coordinate their thoughts and ideas, as well as develop a coherent and well-organized strategy for their writing, by using concept maps as a pre-writing tool. Concept maps are visual representations of thought processes. This can contribute to more cohesive and well-developed written writing.

The findings of this study have important implications for the teaching of writing in Jordan, and they suggest that the use of concept maps could be a valuable instructional tool for improving the writing skills of students in this context. The study was carried out in Jordan by the University of Jordan. The findings also emphasize the significance of incorporating instructional techniques that are supported by evidence into the process of teaching writing, as well as the significance of providing students with opportunities to participate in pre-writing activities such as thought mapping.

Having said that, it is essential to point out that this research does have several restrictions. The number of students who participated in the study was limited, and the research was only carried out at one institution in Jordan. Therefore, prudence should be considered in generalizing these observations to other communities. In addition, the impacts of making use of concept maps on writing abilities over a longer period were not measured in this study; subsequent research may investigate this aspect further.

The findings of this research provide evidence to support the use of concept maps in teaching writing and indicate that this instructional approach could be an efficient method

to enhance the writing abilities of tenth-grade students in Jordan. Further research is required to corroborate these findings and to investigate the potential advantages of mind mapping for writing instruction in other settings.

Previous research has found that an effective instructional approach for enhancing students' writing abilities can involve the utilization of concept maps, which is compatible with the findings of this study, which showed the same thing. For instance, Wu and Chen (2018) discovered that the use of concept maps substantially enhanced the writing performance of university students in China, and their findings were published in research. In a similar vein, Alqasham & Al-Ahdal (2022) conducted research and discovered that students learning English as a foreign language in Saudi Arabia benefited from using concept maps because it enhanced their writing abilities.

When it comes to the efficacy of mind mapping in enhancing a person's writing abilities, some studies have documented contradictory findings, which is something that needs to be taken into consideration. For instance, Naghmeh-Abbaspour & Rastgoo (2020) conducted research in which they discovered that the use of mind mapping by Iranian students of English as a foreign language did enhance the quality of their writing, but the impact was not statistically significant. In a similar vein, Rahman & Ambreen, (2018) discovered that mind mapping did not substantially enhance the writing performance of Korean students learning English as a foreign language.

Differences in the instructional environment, such as the level of the trainees, the language of instruction, and the type of writing skills that were used, could be one potential explanation for the contradictory findings that were obtained. The application of mind mapping itself is also a potential contributing factor, given that various studies may have utilized distinct iterations of the method or carried it out in a variety of different methods.

When attempting to make sense of the findings of this study, it is essential to keep in mind the circumstances of the experiment as well as how mind mapping was used, even though the findings typically corroborate those of earlier studies. To gain a greater understanding of the circumstances under which mind mapping is most effective for enhancing writing abilities, additional research is required.

Implication of the Study

This research has numerous ramifications. For example, the results indicate that using mind mapping as an educational approach for teaching writing can be an efficient way to enhance the writing abilities of Jordanian tenth graders. Teachers can use mind mapping with their pupils as a pre-writing exercise to help them get their ideas down on paper in a coherent and well-organized fashion (Yunus & Chien, 2016).

Second, the research stresses the value of tried-and-true methods of instructing writing. Improving student results and tackling writing education's difficulties, this research lends credence to the use of evidence-based methods like mind mapping in the classroom.

Finally, this research has relevance for educational strategy and curricular creation in Jordan. This study has the potential to influence decisions regarding the inclusion of mind mapping in the curriculum or the development of teacher training programs that focus on evidence-based instructional strategies for teaching writing by highlighting the benefits of mind mapping for improving writing skills.

As a fourth benefit, the study can help guide future investigations into the efficacy of mind mapping as a teaching tool for enhancing students' compositional abilities. According to Khudhair (2016) the long-term effects of mind mapping on writing ability, the impacts of mind mapping on various writing projects, and the efficacy of various mind mapping variants could all be explored in future research.

Ultimately, this study's results indicate that mind mapping can be a useful instrument for enhancing writing education in Jordan and increasing student outcomes. This research has significant consequences for classroom educators, policymakers, and academics because it provides empirical support for this method of teaching.

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Conclusion

In summation, the purpose of this research was to examine whether or not instructing with concept maps enhanced the writing abilities of Jordanian students in tenth school. Conclusions from this research show that compared to the control group, the experimental group's writing abilities improved significantly after being taught using concept maps as an educational technique. There was a statistically substantial variation in performance on the writing evaluation between the two groups. The results of this study will have far-reaching consequences for classroom instructors, policymakers, and academics in Jordan and beyond. Using mind mapping in the classroom as an educational technique for teaching writing can be an efficient method for boosting students' writing abilities and resolving problems with writing training. Also, the research stresses the need for evidence-based teaching methods to be incorporated into writing classes. Although helpful, there are restrictions to this research that detract from its overall quality. First, the group number was low, which reduces the study's external validity. Second, the research did not look into the long-term impacts or fundamental brain processes of mind mapping on writing ability, only the short-term effects. Lastly, the research only looked at one form of writing skills and didn't see if mind mapping helped with other writing skills. The results of this study, despite these caveats, offer important insights into the possible advantages of using concept maps in teaching writing and propose paths for future research. The findings of this study add to the increasing volume of literature supporting the use of mind mapping as a successful teaching method for enhancing students' writing abilities.

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