

THE EFFECT OF ELECTRONIC MIND MAPS STRATEGY ON THE DEVELOPMENT OF THINKING AND ACADEMIC ACHIEVEMENT IN SOCIAL STUDIES AMONG FIFTH-GRADE STUDENTS IN AL-SHAMLI GOVERNORATE OF THE KINGDOM OF SAUDI ARABIA

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ABSTRACT: *The research aimed to identify the effect of electronic mind maps strategy on the development of thinking and academic achievement in social studies among Fifth-grade students in Al-Shamli Governorate of the Kingdom Saudi Arabia. The study used quasi-experimental approach on a sample consisted of (56) female students distributed on two classes intentionally chosen from the Al-Shamli Primary School for Girls in Al-Shamli Governorate, in the Emirate of Hail, Kingdom of Saudi Arabia during the first semester of the academic year 2020/2021. Randomly, one of the two classes was appointed as a control group and the other class as an experimental group. To achieve the objectives of the study, the researcher prepared two tools, namely the Thinking Test and the Academic Achievement Test, and their validity and reliability were confirmed. The research concluded many results, the most important of which were: The existence of differences between the Arithmetic Mean on the Thinking Test as well as, on the Academic Achievement Test according to the use of the electronic mind maps strategy among the fifth grade students, where it was found that the students of the experimental group who studied using the electronic mind maps strategy had a higher responses compared to the responses of the students in the control group who studied by the traditional method. In addition, there is an effect of using the electronic mind maps strategy on developing thinking and improving academic achievement, in favor of students who studied using the electronic mind maps strategy. In light of the results, the researcher made many recommendations.*

KEYWORDS: thinking, academic achievement, electronic mind maps strategy, fifth-grade, Kingdom of Saudi Arabia

INTRODUCTION

In light of the rapid and continuous growth of scientific knowledge, especially with regard to the preparation and application of curricula, educators may not be able to contain the increasing amount of knowledge, which may lead to their inability to keep pace with all the knowledge, scientific and technological developments that are taking place, which is one of the most serious educational challenges facing education in our contemporary world. Therefore, many studies and research in the past years have been interested in searching for educational methods, strategies, and tools derived from some learning theories that focus on the cognitive processes that occur within the learner's cognitive structures, which relate to how he acquires knowledge,

organizes it, and stores it in his memory, and how he uses this knowledge in achieving more learning and thinking (Khataibah, 2005).

Mind maps are one of the constructivist strategies, and most important applications of Ausubel's theory of meaningful learning, where it plays an important role in organizing and controlling the learning process, by organizing the content of the curriculum, which highlights the role of concept maps in finding the appropriate way that shows the interconnected chains between concepts in the curriculum, which facilitates the assimilation of the study material for students and the achievement of meaningful learning. (Olimat & Abu Jalala, 2001).

The importance of mind maps comes from their multiplicity of uses in planning, implementation, and evaluation, they are used to assess students' prior knowledge of a subject, evaluate students' knowledge and understanding of new concepts, as well as, in planning, teaching, and summarizing the lesson material. in addition are also used as a tool for the evaluation of the lesson at the end of the lesson (Qatami & Al-Rousan, 2005). The mind map is of great importance to the learner and the teacher alike, as it helps the learner to search for relationships between concepts and the similarities and differences between them, linking new concepts with previous concepts, distinguishing similar concepts, and separating important information from unimportant information. It helps the learner to listen, classify, organize and arrange the concepts and helps him to reveal the ambiguity or inconsistency of the text material while preparing the concept map. (Ozdilek & Ozkan, 2009) have pointed out the great importance of the concept map in developing educational models that lead to improving students' achievement performance.

Social studies teachers at all school levels face many challenges that limit their ability to achieve the desired educational goals, the nature of this subject requires it to play a righteous role and contribute to the development of the thinking skills of learners, otherwise, it becomes devoid of facts and scattered information and this contradicts with its most prominent goals, and this will only be achieved through the adoption of modern methods, and strategies by social studies teachers, which help learners to raise the level of their cognitive achievement.

Study Problem and Questions:

Traditional teaching methods are no longer able to play their role in communicating the scientific material in a way that leads to its collection and retention, which aroused the researcher's interest to adopt new strategies such as the electronic mind maps strategy to identify the impact of this strategy on developing thinking and academic achievement in social studies specially for Fifth-grade students. Accordingly, the problem of the study is determined in answering the following main question:

What is the effect of using the electronic mind maps strategy on developing thinking and academic achievement in social studies for Fifth-grade female students in Al-Shamli Governorate of the Kingdom of Saudi Arabia?

To answer the main question, the following sub-questions were identified:

1. Are there statistically significant differences at the significance level of ($\alpha=0.05$) between the average scores of the experimental group students who studied using the electronic mind maps strategy and the average scores of the control group students who studied using the traditional method in the Thinking Test?
2. Are there statistically significant differences at the significance level of ($\alpha=0.05$) between the average scores of the experimental group students who studied using the electronic mind maps strategy and the average scores of the control group students who studied using the traditional method in the Academic Achievement Test?

Objectives of the Study:

1. Identifying the effectiveness of the electronic mind maps strategy and determining its impact on the development of thinking among the fifth-grade female students in Al-Shamli Governorate.
2. Identifying the effectiveness of the electronic mind maps strategy and determining its impact on the development of academic achievement in social studies for the fifth-grade female students in Al-Shamli Governorate.
3. Detecting the effect of the strategy used on thinking and academic achievement tests in social studies (high, medium, and low).

Importance of the Study:

1. This study may be useful for teachers to use the electronic mind maps strategy in teaching social studies in terms of encouraging students to express their needs and participate in planning activities to make learning meaningful.
2. This study may be useful for students to improve their level of thinking and academic achievement.
3. Provide models of lessons that include teaching social studies using the electronic mind maps strategy that benefits workers in this field.

Study Terms and Procedural Definitions:

1. **Electronic mind maps strategy:** An educational strategy that relies on diagramming and electronic design that combines drawing and writing information, as the teacher and his students organize what is written to make it easier for the mind to understand and remember (Buzan, 2009).

Procedural definition: It is an effective teaching-learning strategy that depends on organized steps, which the teacher follows in teaching the social studies course for the fifth grade class, which depends on linking information, facts, and ideas to words, shapes, and images, via the computer using mind mapping programs.

2. Thinking: a state of mind that pervades the individual in a situation, and towards a certain experience, which is a state, ability, and readiness, in which the individual's goal is to reach developmental completion, and in which the individual exercises advanced mental operations; It varies according to the final stage it is going through, and the extent to which it is used. However, training contributes to developing this ability and willingness to achieve the highest level of performance in a given position or experience. (Qatami, 2013)

Procedural definition: A form of thinking or mental activity for the subject of social studies, which depends on a set of skills (ordering of ideas, speed of remembering, creativity); This type of thinking occurs when the individual faces a problem that is difficult to solve by simple or direct methods.

3. Academic achievement: the level of the individual in performing a task, and the skilled person is the person who is worthy and capable in one of the fields of science that is related to the production process, which usually consists of several related or independent abilities, and this person can also be described as having a degree of efficiency and quality in performance. (Abu Hatab & Sadiq, 2002).

Procedural definition: It is the amount of knowledge acquired by fifth-grade students in social studies, measured by the degree they obtain through their answers to the achievement test items prepared for this study.

4. Fifth-grade: One of the primary school grades from the stages of education that start from the first-grade to the sixth-grade, and their ages range from (10-11) years.

Procedural definition: One of the primary school classes in the schools of Al-Shamli Governorate is affiliated to the Ministry of Education in the Kingdom of Saudi Arabia, starts from the first to the sixth grade, and their ages range from (10-11) years.

1.5 Study Limitations:

- **Spatial limit:** The study was applied in Al-Shamli primary school, in Al-Shamli Governorate, Emirate of Hail, one of the education schools in the Kingdom of Saudi Arabia.

- **Time limit:** The study was implemented at the beginning of the first semester of the academic year 2020/2021.

- **Human limits:** The study was applied to fifth-grade students at Al-Shamli Elementary School for Girls in Al-Shamli Governorate, in the Emirate of Hail, Kingdom of Saudi Arabia.

- **Objective limit:** Unit Two (Islamic history) of the social studies textbook (Part One) for the fifth grade of primary school, course deposit number (8639/1441).

THEORETICAL FRAMEWORK

Importance of Mind Maps in Education:

Mind mapping has an important role in the educational process, whether for the teacher or the student. It contributes to the presentation and clarification of ideas, especially in teaching and learning of social studies through:

1. Linking its topics to other subjects, current events, and life situations.

2. Demonstrate the learners' mental abilities to deal with a specific topic and employ their experience in drawing a mental map and their ability to apply it in new situations.

3. It gives the learner flexibility and freedom to review, and add new information at any time and in a short time, through computerized mind mapping programs. (Obeidat & Al-Masmad, 2005).

Mind mapping is the modern method that helps in arranging the learner's ideas, which leads to accelerating learning and discovering knowledge faster by drawing a diagram that shows the basic concept and the main and sub-ideas that the learner does on his own. (Buzan, 2009), (Marvin & Bill, 2013) identified its importance in the following points:

1. Increasing the learner's thinking speed and transcending the limits of traditional thinking.
2. Simplify the information and install it in the minds of the learners and integrate the new knowledge with the previous one.
3. Presentation of topics comprehensively.
4. Linking ideas and information in a coordinated manner in drawing one map.
5. Facilitate the study of difficult educational tasks.
6. Develop the learner's memory and increase his focus and creativity.
7. Ease of arranging ideas and retrieving information.
8. Make learning more enjoyable and effective.

The researcher believes that the importance of the strategy of electronic mind maps is that it is one of the modern and renewable strategies that have an effective impact on improving and developing educational processes, motivating the mind, and involving the student in the educational process. Solve them and contribute to that, which creates self-esteem, confidence in their abilities, and benefiting from peers in what is known as cooperative learning through direct communication through what is provided by modern technology and electronic mind map programs, in which the seeding of new and unfamiliar ideas, through which the learner learns skills that excite thinking, making it arrange the responses according to shapes, drawings, and schemes, and presenting them to the mind, and thinking in opposite ways that provide intellectual and cognitive conflict, and investing past experiences while serving the educational situation.

Mind maps originated based on the Osbel meaningful learning theory, which states that meaningful materials are easier to remember than meaningless materials, as we find that past experience and expectations help in acquiring new information related to the topic of learning, and that information related to the topic is remembered better. Information that is not relevant to the context of the topic. Accordingly, cognitive schemas act as a filter during the coding process to select, organize, and process information related to schemas, and filter out information that is not associated with cognitive schemas, so the contextual information will be better remembered because it is the information that has been purified. (Hussein, 2008).

(Buzan, 2009) defined the following steps of drawing a mind map:

1. The mind map starts from the middle of the paper (electronic work page) to give the human mind the freedom to move and express itself in all directions.
2. The use of colours while drawing the mind map, for its role in stimulating the mind and giving strength to the map.
3. The use of graphic shapes and images to express the idea helps to stimulate the imagination (a picture is better than a thousand words).
4. Linking sub-ideas to the main idea in a hyperlink that radiates from the main idea, because the mind works in the manner of mental linkage.
5. Design secondary ideas and branches or sub-ideas in the form of zigzag lines and not straight to keep boredom away, as zigzag lines are more attractive.
6. Use one keyword per line, for its power in giving mental flexibility and strength, which results in many mental connections.

The researcher believes that the teacher's and the learner's understanding of the steps of mind mapping helps to invest time and effort in completing the tasks of the learners, and increases the students' enthusiasm and motivation, their interest, and love for learning knowledge and learning the study materials, and increases the extent of students' interaction with the curriculum and study materials.

Advantages of Using Electronic Mind Maps:

There are many advantages of using mind maps, perhaps the most important of which are identified by (Abdel-Razak, 2016), (Fong & Lily, 2010), (Marks et al., 2014) as follows:

1. Arranging the information in the subject with the possibility of expansion and folding in its branches, and makes storing information much more than produced mental maps and thus can be used to create advanced knowledge models that could not be created through paper and pen.
2. Embed documents in the map, make links, notes, and other data within the map, and the ability to convert it into an equivalent of a powerful visual database, meaning that the map contains a wealth of abundant information stored in a word document, excel spreadsheet, web pages, or even emails, and all this can be moved to by simply clicking on it, which saves time as well as avoiding visual clutter by making sub-maps and linking them together into one controllable map.
3. Re-arranging topics and ideas by moving some icons and is difficult in traditional maps, which helps to generate new ideas and see the connections between existing ideas.
4. Updating the content of the map as needed, making it a powerful tool for continuous tracking and progress, and thus the current map can be developed so that it becomes another new map, and so on.
5. Export the ideas in the map to types of programs such as word processing, which allows the use of mind maps innovatively and creatively.
6. Providing the opportunity for collaborative work, and this is not provided by traditional maps, as it is possible to make an electronic mind map and send it by e-mail to others in the

collaborative work team to create a joint workspace in it and supplement the rest of the map where it can be modified and added to.

7. Updating the mind maps after turning them into a presentation with comments from the beneficiary audience, which helps their contribution to the dissemination of ideas.
8. Presenting ideas through brainstorming sessions using projectors. This is done by recording ideas with the ideas of others and presenting them at the same time.
9. Providing a panel for private information and consolidating the data that we need to manage and organize in one visual screen.
10. Flexibility whereby mind mapping programs can create a database of ideas, create to-do lists, and track their own progress.

Uses of Electronic Mind Maps in Teaching:

The electronic mind maps are one of the effective educational tools for implementing a large number of teaching activities in educational situations, as shown by (Abdul-Basit, 2016), (Genevieve & Maher, 2013), (Peterson & Snyder, 2013) as follows:

1. View: It consists in forming an integrated comprehensive and analytical view on the subject of the map.
2. Explanation: The map is an effective means of explaining the concepts, principles, theories, skills, ideas, and values included in the subject.
3. Recording: where the maps represent effective guides for the notes, instructions, steps, and organize them during attending lectures, conferences, and seminars, and in a way that is easy to remember.
4. Show: These maps constitute effective evidence in revealing the relationships, connections, ideas, and issues included in the study topic.
5. Rain seeding: These maps are a powerful tool for seeding experiences, examples, and ideas related to the study topic.
6. Planning: These maps are an effective tool for planning lessons within educational situations, as they ensure the provision of the largest amount of information and ideas related to the lesson, and organize them in a way that facilitates their study.
7. Organizing: When collecting a large amount of information and ideas on opposite or divergent study topics, these maps help in organizing that information and ideas and prioritizing their treatment.
8. Revision: Electronic mind maps help learners make strong and quick reviews in preparation for written and oral exams, or for individual or group interviews.

The researcher believes that by reviewing the features, uses, and importance of electronic mind maps and their relationship in teaching and learning, which confirms the importance of using traditional or electronic mind maps in various cognitive fields and that it is a highly effective strategy in developing many aspects of thinking, increasing achievement, and stimulating the learner's motivation, in making learning meaningful, and contribute to the arrangement of ideas, and the speed of remembering, and give a wide scope for creativity.

Previous Studies

The study of (Offour and Siam, 2017), aimed to identify the effectiveness of using electronic mind maps in improving achievement in social studies for fourth-grade students in the governorate of Damascus in the second semester of the year 2015/2016. The study sample consisted of (46) male and female students who were divided into two groups, an experimental and a control group, each of them consisted of (23) male and female students. The results revealed that there were statistically significant differences in favor of the experimental group that studied using electronic mind maps.

The study of (Al-Asmari, 2017), aimed to identify the obstacles of the use of computerized mind maps in teaching social studies at the primary stage from the point of view of teachers in the Asir region. The researcher used the descriptive approach and a questionnaire as a tool for his research. The study sample consisted of (90) teachers who were chosen randomly. The results revealed some obstacles that hinder the use of computerized mind maps in teaching social studies, the most important of which were obstacles related to the classroom environment, obstacles related to the student, obstacles related to the content, and obstacles related to the teacher, all of which are highly rated.

The study of (Bani-Faris, 2013), aimed to investigate the effect of using mind maps in acquiring historical concepts and developing creative thinking skills for primary school students in Madinah Al Munawwarah schools in the Kingdom of Saudi Arabia. The study sample was distributed into two groups - control and experimental - where the results showed statistically significant differences between the means of the two groups in the post-measurement of historical concepts test and creative thinking skills in favor of the experimental group.

The study of (Makled, 2011), aimed to identify the effectiveness of using mind maps enhanced by multimedia in teaching social studies on cognitive achievement and the development of inferential thinking among middle school students. The study used the experimental method, and the sample consisted of (83) male and female students, the study tools were an achievement test for social studies, and a scale of inferential thinking for data collection.

The study of (Abdel-Mawla, 2009), aimed at showing the effect of using mind maps on achievement in geography for third-year secondary school students, and found a statistically significant difference between the average achievement scores of the experimental group students who were taught using mind maps, and the experimental group who were taught using the traditional way for the benefit of the experimental group.

The study of (Al-Fawry, 2009) aimed to identify the effectiveness of the mind maps strategy in the achievement of social studies for ninth-grade female students in the Sultanate of Oman and their attitudes towards it. The sample of the study consisted of (60) ninth-grade students from Zainab Al-Thaqafia Basic School, and the sample was divided into two groups: the

experimental group studied using mental maps and consisted of (30) students, and the control group consisted of 30 students who studied traditionally and the experiment took Four weeks, and the study tools were an achievement test and a measure of trends, and the test consisted of (30) items divided into three levels of knowledge: knowledge, comprehension, and application. The attitude scale consisted of (31) items, and the stability scale was measured using Cronbach's alpha coefficient, which amounted to (0.89). The results of the study indicated that there were statistically significant differences at the significance level ($\alpha = 0.05$) between the control and experimental groups, in favor of the experimental group in the achievement of female students at all cognitive levels, and the presence of positive trends towards the use of mind maps in teaching social studies.

The study of (Abdel-Rahman, 2008) aimed to identify the effect of using geographical mental maps to develop spatial visualization abilities and achievement among first-year preparatory students. The mental processes of the ability to visualize spatial, and academic achievement, and that the use of mental maps in the formulation of the content of social studies helped to provoke the thinking of students and motivate them to participate actively in learning, the study also recommended the need to use mind maps in teaching.

Previous studies have shown diversity in the applications of the electronic mind map and the level of students to whom the experiments were applied from different stages of study. In developing several learning outcomes such as achievement, attitudes, and developing thinking skills.

METHOD AND PROCEDURES OF THE STUDY

This part includes a description of the study methodology, study population and sample, a description of the study tools, the validity and reliability of the tools, as well as a description of the study's variables and procedures, and the statistical measures used by the researcher to reach the results and recommendations.

Study Methodology

The researcher used the quasi-experimental approach to conduct the study. Al-Shamli Primary School located in Al-Shamli Governorate in the Kingdom of Saudi Arabia was selected in which there are two classes for the fifth grade, the groups were designed (the experimental group, the control group), by selecting two identical groups and applying the experimental factor (independent variable) represented in the strategy of electronic mind maps on the experimental group, while withholding it from the control group, then noticing the difference between the two groups.

The necessary statistical processing of the data was done for the sample and their responses to the tests, where T-test was used to check the equivalence of the independent experimental and control groups, while the Univariate Analysis of Variance was used to isolate the pre-tests

differences for the experimental and control groups, and the Marginal Estimated Means to answer its questions, using the Statistical Package for Social Sciences (SPSS).

Study Population and Sample:

The study population consisted of all fifth-grade primary school students, while the study sample was chosen intentionally and consisted of all fifth-grade primary school students in Al-Shamli Primary School in the first semester of the academic year 2020/2021, totaling (56) students divided into two classes (28) students in each class. The researcher considered each class as a study group, one of them as the experimental group and the other as the control group, as shown in Table (1).

Table (1): Distribution of the Study Sample of the Fifth-Grade Students in Al-Shamli Primary School in the Academic Year 2020/2021

Class	Group	No. of Students
A	Experimental	28
B	Control	28
Total		56

Study Variables

This study included the following variables:

1. **Independent Variables:** The teaching method: has two levels: the electronic mind maps strategy and the traditional method.
2. **Dependent Variables:**
 - A. Thinking.
 - B. Academic Achievement.

Study Tools and Educational Materials:

The following tools were used to achieve the objectives of the current study:

- I. The teacher's guide according to the strategy of electronic mind maps:
- II.

The researcher prepared a guide for the educational material explaining how to implement the activities of the Islamic history unit from the social studies textbook for the fifth-grade primary school according to the strategy of electronic mind maps. In preparing the educational material, the researcher followed the following steps: reviewing the applied social studies curriculum, analyzing the content of the study unit (Islamic history unit).

The educational material was distributed to the subject of Islamic history, and each of them was allocated several lessons, totaling (9) classes during three weeks, at the rate of (3) classes per week, the researcher reformulated the activities of the Islamic history unit according to the steps

and stages of the electronic mind maps strategy in its final form, where the guide included several steps, including the goal of the guide, which shows the teacher how to implement the strategy, the content of the guide, which consists of the Islamic history unit for the fifth grade of primary school, and building the guide according to the strategic steps, which contains the objectives of each topic and the educational tools and aids from the course plan: the subject matter, the learning planning phase, the learning assessment phase, and the implementation schedule for the guide.

The Thinking Test:

The researcher studied the social studies courses for the fifth grade of primary school and the previous grades to find out the abilities possessed by fifth-grade students to design the test items. Two tests of thinking (pre and post tests) were designed according to the three skills used (order of ideas, remembering speed, creativity), then examined the appropriateness of each paragraph of the field on the one hand and the level of fifth-grade students on the other hand. The test in its final form consisted of fifteen questions divided into the three fields - (5) items for each field - each question measures a specific thinking skill, using the multiple-choice method.

The Academic Achievement Test:

After reviewing the educational literature, previous studies on the acquisition of academic achievement, and reviewing, studying, and analyzing many standards and tools, the researcher built two academic achievement tests (pre and post tests), in preparing the tests, the researcher followed the following steps: Referring to the educational material (the Islamic history unit) that was studied during the experimental period, where an analysis of the content was conducted in terms of concepts and information included in this unit and preparing the initial image for the test, which consisted of 15 paragraphs, using the multiple-choice method.

Validity and Reliability of the Study Tools:

To ensure the validity of the study tools, the tools were presented in their initial form to (6) arbitrators with expertise and experience, where their observations and suggestions were taken in terms of the formulation, clarity, and suitability of the questions to the levels of the students to reach its final form. The researcher calculated the stability of the tools using the test and retest method, where the researcher applied the tools to an exploratory sample from outside the study sample (20 female students of the fifth grade of Hafira Primary School in Al-Shamli Governorate) and then repeated the same test on the same sample with a different time period of three weeks. The stability coefficient between the results of the two exploratory studies for the thinking test was (0.83), and for the academic achievement test was (0.86), which are considered appropriate stability coefficient and an indicator of the validity of the tests for application and meets the purposes of the study.

Equivalence Test:

To check the equivalence between the two groups, the two tests were applied to the study individuals and extracted the arithmetic means and standard deviations of the pre-test for the two groups and the T-test for the independent groups for the differences in the pre-test in thinking and academic achievement according to the experimental and control groups as shown in Table (2). The case of equivalence comes from the fact that the female students are of the same age, from the same school, within the same educational conditions, and the same teacher of social studies.

Table (2)**Pre-Test' Arithmetic Means and Standard Deviations of The Two Groups and The T-Test**

Test	Group	No.	Arithmetic Means	Standard Deviations	T Value	Sig.(2-tailed)
Pre-test (Academic Achievement)	Control	28	7.65	3.832	-2.048	.021
	Experimental	28	10.75	4.826	-2.048	.021
Pre-test (Thinking)	Control	28	7.06	3.986	-1.632	.067
	Experimental	28	9.64	4.875	-1.632	.067

Group Statistics and Independent Samples Test

Table (2) shows that there are no statistically significant differences in the two tests, which indicates that there is equivalence between the control and experimental groups.

STUDY RESULTS

The current study aimed to answer the main question: what is the effect of using the electronic mind maps strategy on developing thinking and academic achievement of social studies for fifth-grade female students in Al-Shamli Governorate of the Kingdom of Saudi Arabia? by answering its sub-questions.

Results related to the first sub-question:

Are there statistically significant differences at the level of significance ($\alpha=0.05$) between the average scores of the experimental group students who studied using the electronic mind maps strategy and the average scores of the control group students who studied using the traditional method in the Thinking Test?

To answer the first sub-question the arithmetic means and standard deviations of the Post-Test of thinking for the two experimental and control groups were extracted, as shown in Table (3).

Table 3: The Arithmetic Means and Standard Deviations of the Post-Test of Thinking for The Two Groups

Group	No.	Arithmetic Mean	Standard Deviation
Control	28	13.23	7.009
Experimental	28	19.12	5.011

Table (3) indicates that there are apparent differences between the arithmetic averages on the thinking test according to the use of the electronic mind maps strategy for fifth-grade students, where the results show that the responses of the students of the experimental group who studied using the electronic mind mapping strategy are high (19.12) compared to the responses of the students of the control group who studied using the traditional method (13.23). To find out whether these differences between groups are statistically significant, the results of the Univariate Analysis of Variance test were extracted to isolate the pre-differences as shown in Table (4).

Table (4): Univariate Analysis Of Variance Associated With The Group Impact Of The Post-Test Of Thinking And Isolating The Impact Of The Pre-Test

Source of Variance	Sum of Squares	df	Mean Squares	F	Sig.	Eta Squared η^2	Effect Size
Intercept	2632.167	1	2632.167	58.867	.000	.323	High
Group	896.125	1	896.125	22.753	.000		
Post-test of Thinking	8.715	1	8.715	.231	.583		
The Error	2175.360	53	41.431				
Total	18446.000	56					

Table (4) shows that there are statistically significant differences at the level ($\alpha = 0.05$), where the calculated value of (F) was (22.753), at the significance level of (.000), which is less than the significance level ($\alpha = 0.05$), which means that there are differences in the responses of the fifth-grade female students to the thinking test between the members of the control group who studied the content in the traditional way and the experimental group who studied the content using the electronic mind maps strategy. By calculating the Eta square to find the effect size: it was found that the value of the Eta square is (.323) which is greater than (.14), which indicates that there is a large size effect according to the classification of the levels of impact assessment in the Eta square.

To find out in favor of any of the two groups these differences are, the Estimated Marginal Means were extracted, as shown in Table (5).

Table 5: The Estimated Marginal Means And The Standard Error Of The Post-Test Of Thinking And Isolating The Effect Of The Pre-Test By Group

Variable	Group	Adjusted Mean	Std. Error
Thinking	Control	13.23	7.009
	Experimental	19.12	5.011

The results of the Estimated Marginal Means for the differences between the experimental and control groups in Table (5) show that there is an effect of using the electronic mind maps strategy in developing thinking among fifth-grade female students, where the Estimated Marginal Means on the total degree of thinking for the experimental group is (19.12), while the Estimated Marginal Means for the total score of the control group is (13.23), which confirms that there is a difference of (5.89) in favor of the experimental group.

Results related to the second sub-question:

Are there statistically significant differences at the significance level of ($\alpha=0.05$) between the average scores of the experimental group students who studied using the electronic mind mapping strategy and the average scores of the control group students who studied using the traditional method in the Academic Achievement Test?

To answer the second sub-question the arithmetic means and standard deviations of the Post-Test of Academic Achievement for the two experimental and control groups were extracted, as shown in Table (6).

Table (6): The Arithmetic Means and Standard Deviations of the Post-Test of Academic Achievement for The Two Groups

Group	No.	Arithmetic Mean	Standard Deviation
Control	28	14.12	7.641
Experimental	28	21.68	6.058

Table (6) indicates that there are apparent differences between the arithmetic averages on the Academic Achievement Test according to the use of the electronic mind maps strategy for fifth-grade students, where the results show that the responses of the students of the experimental group who studied using the electronic mind mapping strategy are high (21.68) compared to the responses of the students of the control group who studied using the traditional method (14.12). To find out whether these differences between groups are statistically significant, the results of the Univariate Analysis of Variance test were extracted to isolate the pre-differences as shown in Table (7).

Table 7: Univariate Analysis Of Variance Associated With The Group Impact Of The Post-Test Of Academic Achievement And Isolating The Impact Of The Pre-Test

Source of Variance	Sum of Squares	df	Mean Squares	F	Sig.	Eta Squared η^2	Effect Size
Intercept	2538.625	1	2538.625	43.776	.000	.162	High
Group	587.244	1	587.244	9.967	.002		
Post-test of Academic Achievement	80.451	1	80.451	1.323	.220		
The Error	2863.321	53	56.653				
Total	22645.000	56					

Table (7) shows that there are statistically significant differences at the level ($\alpha=0.05$), where the calculated value of (F) was (9.967), at the significance level of (.002), which is less than the significance level ($\alpha = 0.05$), which means that there are differences in the responses of the fifth-grade female students to the Academic Achievement Test between the members of the control group who studied the content in the traditional way and the experimental group who studied the content using the electronic mind maps strategy. By calculating the Eta square to find the effect size: it was found that the value of the Eta square is (.162) which is greater than (.14), which indicates that there is a large size effect according to the classification of the levels of impact assessment in the Eta square.

To find out in favor of any of the two groups these differences are, the Estimated Marginal Means were extracted, as shown in Table (8).

Table 8: The Estimated Marginal Means And The Standard Error Of The Post-Test Of Academic Achievement Test And Isolating The Effect Of The Pre-Test By Group

Variable	Group	Adjusted Mean	Std. Error
Academic Achievement	Control	14.12	7.641
	Experimental	21.68	6.058

The results of the Estimated Marginal Means for the differences between the experimental and control groups in Table (8) show that there is an effect of using the electronic mind maps strategy in developing Academic Achievement among fifth-grade female students, where the Estimated Marginal Means on the total degree of Academic Achievement for the experimental group is (21.68), while the Estimated Marginal Means for the total score of the control group is (14.12), which confirms that there is a difference of (7.56) in favor of the experimental group.

CONCLUSIONS AND RECOMMENDATIONS:

Conclusions:

Based on the previous results about the effect of using the electronic mind maps strategy on developing thinking and academic achievement in social studies for fifth-grade female students in Al-Shamli Governorate of the kingdom of Saudi Arabia, and after analyzing the data, and answering the test of the study questions that were mentioned in it, this study a number of conclusions as follow:

There are apparent differences between the arithmetic means on the thinking test according to the use of the electronic mind mapping strategy among the students of the fifth grade of primary school. The results show that the students of the experimental group who studied using the electronic mind mapping strategy had high responses compared to the responses of the female students in the control group.

There are statistically significant differences at the level ($\alpha = 0.05$), where the calculated (F) value reached (22.753), at the significance level (.000), which is less than the significance level ($\alpha = 0.05$), which means that there are differences in the responses of Fifth-grade female students on the thinking test between the members of the control group who traditionally studied the content and the group who studied the content using the electronic mind maps strategy, and by calculating the Eta square, the results indicated that there is a large size of effect according to the classification of the levels of impact assessment in the Eta square.

There is an effect of using the electronic mind maps strategy in developing thinking for fifth-grade female students, where the adjusted arithmetic mean on the total degree of thinking for the experimental group was (19.12), while the adjusted mean on the total score of the control group was (13.23), which confirms that there is a difference of (5.89) in favor of the experimental group.

There are differences between the arithmetic averages on the academic achievement test according to the use of the electronic mind mapping strategy among the students of the fifth-grade of primary school, as it is clear from the results that the students of the experimental group who studied using the electronic mind mapping strategy had high responses compared to the responses of the students in the control group.

There are statistically significant differences at the level ($\alpha = 0.05$), where the calculated (F) value reached (9.967), at the significance level (.002) which is less than the significance level ($\alpha = 0.05$), which means that there are differences in the responses of Fifth-grade female students on the academic achievement test between the members of the control group who studied the content in the traditional way and the group who studied the content using the electronic mind maps strategy. By calculating the Eta square, the results indicated that there is

a large size of the effect according to the classification of the levels of impact assessment in the Eta square.

There is an effect of using the electronic mind maps strategy in developing the academic achievement of the fifth-grade female students, where the adjusted arithmetic mean on the total score of achievement for the experimental group was (21.68), while the arithmetic average adjusted on the total score of the control group was (14.12), which confirms that there is a difference of (7.56) in favor of the experimental group.

The use of the electronic mind maps strategy in teaching social studies for fifth-grade students plays a clear role in developing students' thinking and academic achievement, as it provides students with opportunities to practice thinking skills through their implementation of the three tasks: arranging ideas, speed of remembering, and creativity. It also helps to create an atmosphere of positive interaction between students and works to consolidate information and facilitate learning for students.

Employing the electronic mind mapping strategy works to increase the various activities that help students' thinking at each stage of the strategy.

Recommendations

Based on the results of this study, the researcher recommends the following:

1. The necessity of paying attention to the strategy of electronic mind maps and inspiring those in charge of preparing and developing social studies curricula to include them within the social studies curricula so that students and teachers can benefit from such strategy.
2. Inspiring teachers to use the electronic mind maps strategy.
3. Preparing a clear guide for the teacher and a training program on how to use the strategy to develop thinking and academic achievements in social studies.
4. Strengthening social studies textbooks at all levels, especially the fifth grade, with appropriate and sufficient thinking skills for learners.
5. Encouraging studies and research to focus on the electronic mind maps strategy and conduct more studies on it using different variables from the current study variables.

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