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**ORIGINAL**

# The effect of the formal organizer strategy on the achievement and visual thinking skills of first-year intermediate female students in social studies subject

## El efecto de la estrategia del organizador formal sobre el logro y las habilidades de pensamiento visual de las estudiantes de primer año de intermedio en la materia de estudios sociales

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## ABSTRACT

Due to Large number of criticisms directed at educational institutions such as being negligent in developing students' ideas and teaching them how to develop these ideas, this paper came to fill in the gap by tackling the strategy of formal organizer and to show how effective this strategy was on the achievement and visual thinking skills among first-year intermediate female students in social studies subject. The current research was applied to sample of intermediate schools for girls in Iraq composed of (282) female students chosen randomly from number of intermediate schools for girls in the city of Diwaniyah for (2023-24) to identify the range of this strategy effectiveness in teaching the subject of social studies. The result indicated that there was a statistically significant difference between the average grades of the female students of the experimental group who studied social studies according to the formal organizer strategy, and the average grades of the female students of the control group who studied the same subject in the usual way in the achievement variable in favor of the female students of the experimental group. In light of the results, the researcher concluded teaching social studies based on the strategy of formal organizer raised the level of achievement, worked to give students a positive role in the learning process and raised visual thinking skills.

**Keywords:** Formal Organizer Strategy; Visualization; Graphic Organizing.

## RESUMEN

Debido a la gran cantidad de críticas dirigidas a las instituciones educativas, como ser negligentes en el desarrollo de las ideas de los estudiantes y en enseñarles cómo desarrollarlas, este artículo vino a llenar el vacío abordando la estrategia del organizador formal y mostrando cuán efectiva es esta estrategia. trataba sobre el rendimiento y las habilidades de pensamiento visual entre estudiantes de primer año de nivel intermedio en la materia de estudios sociales. La investigación actual se aplicó a una muestra de escuelas intermedias para niñas en Irak compuesta por (282) estudiantes elegidas al azar de varias escuelas intermedias para niñas en la ciudad de Diwaiyah durante (2023-24) para identificar el rango de efectividad de esta estrategia en impartir la materia de estudios sociales. El resultado indicó que hubo una diferencia estadísticamente significativa entre las calificaciones promedio de las estudiantes del grupo experimental que estudiaron estudios sociales según la estrategia del organizador formal, y las calificaciones promedio de las estudiantes del grupo de control que estudiaron la misma materia. de forma habitual en la variable rendimiento a favor de las alumnas del grupo experimental. A la luz de los resultados, el investigador concluyó que la enseñanza de estudios sociales basada en la estrategia del organizador formal elevó el nivel de rendimiento, trabajó para darle a los estudiantes un papel positivo en el proceso de aprendizaje y elevó las habilidades de pensamiento visual.

**Palabras clave:** Estrategia de Organizador Formal; Visualización; Organización Gráfica.

## INTRODUCTION

The large amount of criticism directed at educational institutions has led to accusations that they are negligent in developing students' ideas and teaching them how to develop these ideas. Among these problems, the usual teaching methods and methods in our schools are those that depend on memorization and indoctrination on the part of the teacher, where the teacher is the transmitter of information and knowledge and the student is Just a passive recipient of it.[1] This leads to female students' lack of interest in the academic subject and their aversion to it, which leads to a low level of academic achievement, so teachers must change their strategies and methods of teaching. It is worth mentioning that the Fourth Annual Scientific Conference (2015), which was held at Al-Qadisiyah University, stressed the importance of developing the educational process and learning about modern methods and strategies that are compatible with the scientific revolution, as well as the first international scientific conference held by the Department of Psychological and Educational Sciences - College of Education - Al-Qadisiyah University for the period (15 - June 16, 2022) which emphasized attention to the educational process, the use of modern teaching methods that care for students, keeping up with modern developments, motivating them to participate actively, and developing their intellectual and mental abilities. The importance of a thing is determined by a person's desire for it, its connection to society, and the impact of its effectiveness in this life and its future. Since education is an integral part of society, it provides the person with knowledge and skills and has an essential role in forming the learner's personality so that he becomes able to adapt socially and develop his abilities and attitudes. In order to establish the lives of developed and developing peoples alike. Education has become an indispensable social and individual necessity. Thinkers and scholars differed in giving a definition of education. Plato defined it as "training the child's first instinct for virtue through his acquisition of appropriate habits." Aristotle defined it as "preparing the mind for education as the land is prepared for plowing to sow seed." Likewise, John Dewey defined it as "the set of processes by which he can Society or group must transfer its acquired goals in order to continue. Despite the multiplicity of viewpoints, they unanimously agreed that education is "social upbringing intended to develop the learner's integrated personality to make him a good citizen for his nation and society".

### Research Significance

The importance of a thing is determined by a person's desire for it, its connection to society, and the impact of its effectiveness in this life and its future. Since education is an integral part of society, it provides the person with knowledge and skills and has an essential role in forming the learner's personality so that he becomes able to adapt socially and develop his abilities and attitudes. In order to establish the lives of developed and developing peoples alike. Education has become an indispensable social and individual necessity. Thinkers and scholars differed in giving a definition of education. Plato defined it as "training the child's first instinct for virtue through his acquisition of appropriate habits." Aristotle defined it as "preparing the mind for education as the land is prepared for plowing to sow seed." Likewise, John Dewey defined it as "the set of processes by which he can Society or group must transfer its acquired goals in order to continue. Despite the multiplicity of viewpoints, they unanimously agreed that education is "social upbringing intended to develop the learner's integrated personality to make him a good citizen for his nation and society".

Education takes an active role in bringing about positive change and the desired development in the behavior of female students, because it is an intentional and planned process that aims to prepare the individual, male or female, for a happy life in the environment, society, and era that keeps pace with him according to his developments and emotional, mental, and skill capabilities, and strives to achieve full maturity throughout life. Therefore, education is learning and teaching at the same time, and since the development that life and society has witnessed requires every individual to learn, education and upbringing have become an urgent necessity as a pollination that turns the flowers represented by the emerging generations to ripe fruits that emerge over time. Thus, education is the tool of education that achieves the learner's goals make him a person with characteristics that differ from those he had before learning. Since education is an integral part of education, as change and development go hand in hand with life, education goes hand in hand with life as well, as it is considered the ultimate goal and the goal to be achieved in the educational and learning process so that society becomes able to build a pioneering civilization that illuminates the way for generations. The curriculum constitutes an important input into education, and it translates the goals of education and society. It is considered the best means and the best entrance to reform and education through continuous development. Hence, studying, developing and planning curricula has become an essential process that keeps pace with current development according to a civilized understanding based on modern foundations that keep pace with

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progress. The current development in the reality of society, which takes into account the individual differences of female students, gives events and activities a major role, and also contributes to developing the intellectual and mental abilities of female students, and directing their emotions and inclinations to suit the desired educational goals.[2] The curriculum has now become viewed as an educational plan, content, educational activities, and evaluation procedures that work to achieve the integrated personality of the learner and evaluate the extent to which the learner's goals are achieved. It is worth noting that the rapid changes in social and economic life have made the curriculum an important necessity of life in achieving its desired goals. (The social studies subject is one of the basic subjects for the first intermediate grade because it is a means of building the new Iraqi human being, as he is the heir to the ancient civilizations that appeared on the land of Mesopotamia and neighboring countries. Therefore, studying it provides a rare opportunity to learn about the experiences of previous nations, and because Iraq is the country of ancient human civilizations, The presence of antiquities spread throughout Iraq is the best evidence of the Committee from the Iraqi Ministry of Education (2012).

**Research Significance**

The current research aims to identify the impact of the formal organizer strategy on:

1. Achievement among first-year intermediate school students in social studies.
2. Visual thinking skills among first-year intermediate school students.

**Research Hypotheses**

To achieve the research objectives, the researcher formulated the following two null hypotheses:

1. There are no statistically significant differences at the level of significance (0,05) between the average scores of female students in the experimental group who will study the social studies subject according to the formal organizer strategy and the average scores of the female students in the control group who will study the same subject according to the usual method in the achievement test.
2. There are no statistically significant differences at the significance level (0,05) between the average score differences of female students of the experimental group who will study the social studies subject according to the formal organizer strategy and the average score differences of the female students of the control group who will study the same subject according to the usual method in testing visual thinking skills.

**Research Limits**

1. Human Limits: first-grade intermediate school girls in the Al-Qadisiyah Governorate Center.
2. Time Limits: second semester (2023-2024).
3. Spatial Limits: preparatory and intermediate schools for girls affiliated with the Al-Qadisiyah Education Directorate.
4. Cognitive Limits: (chapters four and five) from the social studies book for the first intermediate grade.

**The Concept of Cognitive Structure**

Ausubel is considered one of the first educators to link the information that the learner receives with what is present in his mental cognitive structure, so that the material he receives has meaning and significance. Ausubel realized that the teacher must take into account the learner's cognitive structure and mental processes if he wishes to Understanding and absorbing the impact of learning on him, so Ausubel came up with this theory to increase information processing and the ability to absorb and understand knowledge, and to link it together in an integrated, comprehensive and comprehensive knowledge structure. It is worth noting that, in this model, Ausubel relied in his efforts on an important hypothesis, which is the most important and useful in influencing the learning process, the amount of organizer and clarity of knowledge present to the learner. Ausubel called present knowledge that consists of an organized set of concepts, facts, and raw cognitive data that is available. With the learner at a certain moment.[3] Ausubel also points out that the information and ideas an individual possesses are what can affect what he can learn, and that what the individual learns depends mainly on what he knows, as it includes understanding new information within the already existing cognitive structure of the learner.[4] Ausubel explained learning as the process of creating relationships and connections between the information already present in the learner's cognitive structure and the new information presented.[5] Ausubel believes that cognitive theory is based on four cognitive processes: receptive-memorial learning, meaningful receptive learning, and exploratory-memorial learning. Receptive learning is strongly linked to the learner's previous experience, and the material has meaning when it is based on previous experience, while the reflective learning stage comes after the material becomes meaningful. Meaningful exploratory learning allows the learner to explore the main information for himself, and then the exploration becomes meaningful.[6] As for receptive learning with meaning, it is considered one of the most important types of learning that received more attention from Ausubel than other types of learning because this type of learning occurs mainly

in the classroom, and because most types of learning are obtained by the learner by providing ready-made information to him, as the learner cannot learn everything he wants through the exploratory method. Ausubel disagreed with the opinions of many educators who believe that receptive learning is demonstrative learning, and exploratory learning is meaningful learning. Ausubel believes that both types (receptive and exploratory) can be meaningful learning.[7]

**Formal Organizer Systems**

Formal organizer systems are an important educational strategy that organizes and analyzes information that is related to the problem to be facilitated, solved, and translated through visual presentations and graphics. It is worth noting that it is a tool that helps students organize information, solve concepts, and link them with other concepts, not to mention that it works to visualize the relationship between these concepts and link them to each other in the unit or lesson (2). Formal organizers have historical roots that Ausubel spoke about, defining them as "a tool for bridging the gap between what the learner knows and what he should learn at any stage of his education". It is worth noting that cognitive theory has stated that the prior knowledge available or present in a person is stored in the brain (cognitive structures). Thus, students' learning is effective, meaningful, and systematic, and there are many cognitive theories that are considered the basis for explaining the characteristics of formal organizers on which the learning process is based, including: cognitive load theory, schema theory, and component coding theory.[9] Mcelroy and Coughlin asserted that "new information was acquired when it was linked to a pre-existing cognitive structure." Therefore, the goal of formal organizers is to stimulate and activate students' prior knowledge, link it to new generalities, and help students learn in a meaningful way.[10] Witzel and others pointed out "It led to improved achievement and performance in solving problems".[11] Garderen and Baxendell also confirmed that "Formal organizers help students understand the content and organize information, and retain and remember it when needed".[12] The teacher must present the formal organizers in an orderly, organized, and innovative manner, and present them in an effective and exciting manner, which helps the students to better understand the lesson and thus make learning more effective. The formal organizer enabled students to understand difficult concepts, classify information, generate ideas, and develop their visual thinking skills. It also linked information and strengthens communication between them, which led to a positive impact on female students' performance and academic achievement.[13] As for Miller's interpretation, he explained it as "a visual representation of ideas, which helps learners organize their thoughts and apply their intellectual skills to the content in a more organized way." This allows students to focus on the concept rather than the general meaning of the complete sentence.[14] Bishop believed that "the formal organizer can be used to verify the difficulties facing students through good and correct planning and organizer of information, and making appropriate maps of the concepts in which they face difficulties" (9).

**The Concept of The Formal Organizer**

Ellis defined it as "The concept of the formal organizer is based on visual displays and diagrams that depict spatial relationships between terms, facts, concepts, and ideas within the framework of the educational task.".[15] As for Baxendell, he defined it as "an organizer process that works to help students connect and organize information in a meaningful way and enables them to understand the interrelationships in the educational material".[16]

Using a formal organizer was considered a map that was a tool that allowed the teacher and learner to use meaningful ideas, focuses on key ideas, facilitates learning for students, and provided a better summary of what they had learned. As for Chiang he defined it as "a visual communication tool that makes use of visual symbols to clarify ideas and concepts that help convey and understand meaning, and helps teachers and learners draw a map of their ideas and beliefs by forming clear visual images".[17] The researcher concluded from these definitions that the formal organizer was a group of visual displays, graphs, charts, and maps that work to understand the relationship between ideas, terms, and concepts and organize them within the content, so that it worked to facilitate them and solve the problems that students face during the learning process. Not to mention that the formal organizer separates important information from unimportant information, in order to build a structure of concepts and important information, as well as identify the relationship between information and concepts and organize information around the problem. It also allows students to exploit their previous experiences and inclinations as a premise for solving the problem.[18]

**Types of Formal Organizers**

There are many formal organizer types that are used in teaching academic subjects, especially social studies. These types can be summarized below represented by diagrams for illustration purposes:

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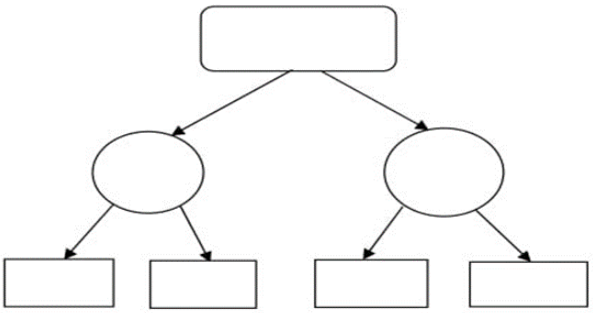

**Figure 1.** Tree Diagram

1. Hierarchical Diagramming: this type of diagram begins with the main idea of the lesson topic, and then information about this main idea is communicated through sub-parts.

2. Sequence Charts: these organizers symbolize a series of sequentially related events and procedures. As shown in figure 2 below:

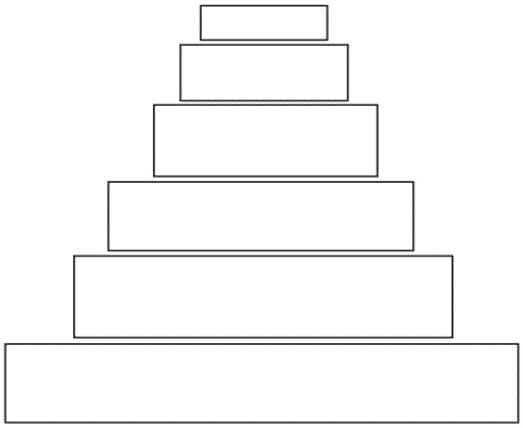

**Figure 2.** The sequence of actions and events in the content

3. Paraphrasing: this type of organizer helps to rephrase the question to enhance understanding of the problems facing students in the lesson 1. This type of organizer is used for several things, including:

- Defining the problem.
- Rephrasing the problem.
- Underlining words or terms that help solve the problem.
- Writing the question.

4. Visualization: it means using pictorial representations revolving around the topic in social studies, or asking students to draw a map or diagram related to the topic that helps understand and clarify the problem 4. This type of organizer is used in the following:

- Reading the problem and identify it.
- It should be an important picture of the problem for students.
- Providing pictorial representations of the problem or drawing a comprehensive vision of the problem.

5. Compare and Contrast Matrix: it is based on two dimensions; the first dimension is a set of concepts and the second dimension is a set of characteristics and attributes.

6. Spider Maps: these maps include a main idea or a comprehensive concept, from which sub-branches indicate details related to the concept. They are linked to sub-concepts through arrows that connect the main ideas and the partial ideas.[19]

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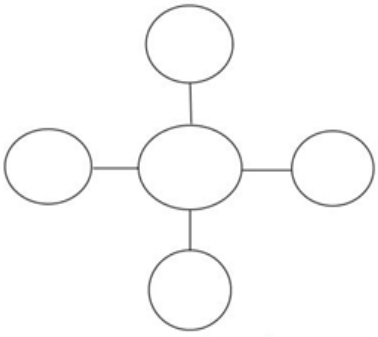

**Figure 2.** The sequence of actions and events in the content

**Stages of presenting the formal organizer**

Katami (2011) presented formal organizers in three stages:[20]

1. The first stage: presenting the formal organizer, which includes:
    - Clarifying the goal.
    - Introducing the organizer.
    - Define terminology.
    - Give examples.
    - Preparation.

2. The second stage: providing expertise or presenting important scientific material, where the teacher must work on:
    - Clarifying the educational material to students.
    - Drawing students' interest and focus on the subject.
    - Maintaining attention in order to continue the lesson.

3. The third stage: strengthening cognitive organizer: this stage links the new educational material with the students' existing knowledge structure through:
    - Facilitating the task of integration and integration.
    - Taking into account the formation of concepts for the academic subject.
    - Raising active (receptive) learning.
    - Clarification.[21]

**The importance of the formal organizer**

The importance of the formal organizer appears in the points summarized by Abuj ado (1998) as follows:

- It contributes to developing the learner's effectiveness, by providing him with a systematic way of main ideas, so that the learner can reach the main concepts and issues to be taught.
- The formal organizer is important in using key ideas that have a role in organizing the development of his thinking structures and organizing educational situations.
- The importance of the formal organizer becomes clear at the end of the lesson through the learner obtaining a developed thinking perspective, which includes a specific structure that is important in interpreting similar issues.

Not to mention that the formal organizer is of great importance in presenting the lesson to the learner, as it helps the learners to choose information directly related to the topic and to understand and assimilate it. It also helps him arrange and organize his lesson so that the learner cannot move to another lesson until after he is sure that he has completed the previous lesson. From choosing appropriate modern educational methods and a suitable teaching method for the lesson.[22]

**Characteristics and advantages of the formal organizer**

Among the most important advantages mentioned in educational psychology are:

1. Give a summary and comprehensive overview of the topic and its details in advance.
2. It makes it easier for learners to teach the subject well.
3. The formal organizer is definitely marked by comprehensiveness and generality, and it is introductory materials that have a high level of abstraction.
4. It is of great importance in increasing learners' comprehension because it has a positive impact on the learning process.
5. It works to link the relationship between the new material and what exists in the mind).

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**Conditions Required in the Formal Organizer**

There are conditions that must be met by the formal organizer in order for his role to become effective in the educational process:

1. Authentic: it allows deducing the relationships that link the new topic to the previous topic.
2. Comprehensive: it includes all aspects of the lessons and must be logically sequential.
3. Concise: it consists of observable information, verbal and visual information.
4. Clear and understood by learners.
5. That it has the power to influence the human mind.
6. General in its meaning and language.

**The Importance of The Formal Organizer for The Teacher**

The formal organizer is of great importance to the role of the teacher in order to achieve his goals in the classroom. This importance is summarized in the following:

1. Planning the lesson, whether it is a unit of study or a semester.
2. The teacher may use the formal organizer at the beginning of the lesson, during the lesson, or at the end of the lesson.
3. Through the formal organizer, the teacher can develop his students' thinking by carrying out activities that strengthen their cognitive organizer.
4. The teacher can use this organizer by using visual conceptual organizers, such as drawing on a blackboard, or by using a computer.
5. The teacher can utilize an appropriate formal organizer that is linked to the structures by either using pre-tests or conducting class discussions.[23]

There are advantages to the formal organizer that benefit the learner and can be summarized as follows:

- It contributes to making the learner active in his learning and work.
- It helps the learner to separate important information from marginal information.
- Linking new information to previous information.
- It helps the learner find relationships between ideas and concepts.
- It helps the learner organize and classify the information he deals with.
- Applying visual thinking skills in the learning process.
- Encouraging learners who suffer from difficulties in the learning process.

**The Relationship Between the Formal Organizer and Some Theories**

- Formal organizer and Schema theory: this theory emphasizes linking new information to previous information, so that the new information has meaning in a way that the learner understands so that he organizes his information according to a specific organizer.[24]
- The formal organizer and the right and left hemispheres of the brain: the right and left hemispheres of the brain each have different functions. The left hemisphere of the brain controls the movement of the right half of the body and controls language. As for the right side, it controls the movement of the left side, adjusting rhythm, and processing images, and the presentation of information is synchronized with the auditory and visual hemispheres of the brain.[25]
- The formal organizer and multiple intelligences: gardinard identified nine types of intelligence: logical, linguistic, spatial, visual, physical, sensory, social, environmental, personal, and existential intelligence. Gardinard indicated that most schools in different cultures focus on logical, linguistic, and mathematical intelligence. Gardinard also pointed out that there are no two people who possess the same intelligence and the same powers, even within the same culture.[22]

**Visual Thinking Skills**

*Thinking*

The process of thinking has a great and main advantage and importance in life and education for many scholars and educators, because of its importance in human life and development. Thinking about the past, present and future has an important role in finding solutions to the problems and obstacles facing the individual in daily life, through enabling educators and scholars to dominate the universe and determine their future according to what God Almighty says in the Holy Qur'an, where the Holy Qur'an mentions man and the actions of the mind and thinking about the universe through verses that indicate the perfection of God's creation and ability saying ( after interpretation) "With it He produces for you corn, olives, date-palms, grapes and every kind of fruit: verily in this is a sign for those who give thought" (SURAH AN-NAHL AYAT 11).

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**Historical Development of Thinking** T

The first stage: this stage begins before the beginning of psychology, which is an experimental science, as the prevailing philosophy at that time was associative and the prevailing reliance in that period was that mental life could be explained by ideas and elements that are considered to be (the principle of interconnection by difference - the principle of interconnection by similarity).[27]

The second stage: this stage coincides with the beginning of the twentieth century, that is, with the beginning of psychology as an experimental science, where behavioral theory appeared, which confirmed that thinking in humans is human behavior, just as Skinner emphasized, that thinking is procedural behavior, and Skinner also emphasized that it is not There is a reason why methods of thinking cannot be analyzed, learned and made more effective and more active, and after that the revolution began in interest in thinking in general.[28]

**Concept of thinking**

The different views of researchers, scientists, and educators on the concept of thinking, as they presented many different definitions and terms based on multiple theories and trends, not to mention that each individual has a special way of giving a definition of the style of thinking, which may be affected by his style of upbringing, cultural background, and abilities, which makes it It differs from others in explaining the concept of thinking, its characteristics, ideas, and methods, which gave scientists wide areas of research.[29]

While Zayer and others explained that it was a group of internal mental processes that aim to solve a problem, make a decision, search for meaning, or reach a specific goal.[26] As for the behaviorists, they defined thinking as "psychology must deal with the individual's experimentally observed behavior as a basis for its information, as internal processes cannot be directly observed." While cognitivists believe that "behavior is the result of thinking." Researchers believe that learning results from the individual's serious attempt to understand the world around him by using thinking and its available tools.[30]

Ghanem (2016) states, "It is the process by which the mind organizes its experiences in a good way to solve a specific problem, so that this process includes realizing new relationships between the topics or elements of the situation to be solved".[28] Taima et al.[31] defined it as "a series of mental activities that the brain performs when it is exposed to a stimulus that is received through one or more of the five senses. It is an abstract concept that involves invisible and intangible activities, and what we observe or touch are in fact outcomes." The act of thinking, whether in written, spoken, visual, or kinetic form". Al-Deeb (2015) defined thinking as "a combination of mental inference of ideas through sensory perceptions coming to the mind, and mental processing of these ideas with the aim of judging things".[30] Al-Jubouri (2021) also defined it as "it represents a form of human behavior, and it is one of the most important characteristics that distinguishes humans from other creatures, and this distinction results from the structure of their brain and its complexity compared to its simple structure in animals." Al-Jubouri (2021). As Al-Tamimi and Al-Khikani (2019) defined it, "a series of mental activities that the brain performs when it is exposed to a stimulus that is received through one or more of the five senses".[32]

**Characteristics of Thinking**

Thinking is characterized by some characteristics and advantages pointed out by researchers and scholars, which are as follows:

- Effective human thinking is thinking that depends on the information that the individual obtains using modern strategies and methods.
- Thinking is a purposeful human behavior that does not occur without a specific goal or in a vacuum.
- Thinking is an advanced human behavior that increases in complexity as a result of the accumulation of cognitive experience and the increase in individual development.
- Human thinking occurs in various forms and patterns (formal - quantitative - symbolic - verbal - spatial), each of which has different characteristics.[33]
- Perfection of human thinking is impossible, and effective thinking is a goal that can be achieved through training and practice and is formed from the interplay of elements that include (time, appropriate situations, and the problem around which the thinking takes place).

**Levels of Thinking**

1. Basic thinking: a group of uncomplicated mental and intellectual activities that are based on the application of Bloom's three (lower) levels (remembering - understanding - applying).
2. Complex thinking: a group of complex and complex mental and mental activities that include thinking and problem-solving skills and all that is meta-cognitive, which includes the (higher) levels (synthesis - analysis - evaluation).[34]

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**The Difference Between Thinking and Thinking Skills**

Thinking is a comprehensive, comprehensive process that mentally processes information and sensory input to form, infer, or judge ideas. It includes previous experience, conscious processing, intuition, and perception. As for thinking skills, they are specific processes that we use and practice intentionally in processing information, such as the skills of identifying a problem, evaluating the strength of evidence or a claim, and finding assumptions not mentioned in the text.[35]

## METHOD

This chapter includes a presentation of the research methodology in terms of choosing the experimental design, defining the research population and its sample, conducting equivalence between two research groups (experimental and control), preparing its requirements and tools, then applying the experiment and choosing the appropriate statistical methods that suit the requirements of the experiment. Figure 4 explains this, as follows:


**Figure 4.** Experimental Research Design

**Table 1.** Research Variables

| Group | Parity | Independent Variable | Dependent Variable | The Test |
|---|---|---|---|---|
| Experimental | Age calculated in months Parents' educational attainment Academic achievement test Visual thinking test Raven IQ test | Formal organizer strategy | Academic achievement | Academic achievement test |
| Controlling | | The Normal method | Visual thinking | Visual thinking test |

**Research Community**

Defining the research community is a very precise step, as the research procedures and design, and the adequacy of its results depend on it. The community means the overall elements that have common characteristics that can be observed. It also means all the parts that carry the apparent data that the subject of the study deals with, that is, the sum of the research units whose data is intended to be obtained. The research population includes the first intermediate grade in government day schools for girls affiliated with the General Directorate of Education in Al-Qadisiyah Governorate - the governorate center for the academic year (2023-2024), in which the number of classes is not less than two classes. To achieve this, the researcher visited the General Directorate of Education in Al-Qadisiyah Governorate under A mission facilitation letter issued by Al-Qadisiyah University / College of Education - Postgraduate Studies and addressed to the General Directorate of Education in Al-Qadisiyah Governorate, Appendix (1), and a mission facilitation letter issued by the Directorate of Preparation and Training / Al-Qadisiyah Education addressed to all governmental day secondary schools in the governorate center was obtained. Appendix (2), Using the Department of Educational Planning - Statistics

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Division in the General Directorate of Education in Al-Qadisiyah Governorate, the researcher obtained the names of the schools, the numbers of female students, and the addresses of the schools in the center of the governorate. The number of schools was (18) and each school contained more than two divisions.

**Table 2.** Number of Schools in Al-Qadisiyah Governorate

| No. | School Name | Students Number | Number of Sections | No. | School Name | Students Number | Number of Sections |
|---|---|---|---|---|---|---|---|
| 1. | Al- Adala Intermediate School | 173 | 5 | 10 | Al Sajda Intermediate School | 135 | 4 |
| 2. | Al Jimhuriya Intermediate School | 133 | 4 | 11 | Um Ammar Intermediate School | 117 | 3 |
| 3. | Al Huriyah Intermediate School | 163 | 5 | 12 | Al Rahma Intermediate School | 151 | 5 |
| 4. | Al Quareer Intermediate School | 130 | 5 | 13 | Al Hikma Intermediate School | 141 | 5 |
| 5. | Al Bara'a Intermediate School | 330 | 7 | 14 | Al Dhilal Intermediate School | 331 | 10 |
| 6. | Al Shefiq Intermediate School | 250 | 8 | 15 | AL Rabi'a Intermediate School | 296 | 8 |
| 7. | Um Al Banin Intermediate School | 162 | 5 | 16 | Al Ghisson Intermediate School | 160 | 5 |
| 8. | Al Nawaris Intermediate School | 203 | 6 | 17 | Bin Ghazi Secondary School | 200 | 6 |
| 9. | Um Kalthom Intermediate School | 60 | 2 | 18 | Fatimah Bint Assad Secondary School | 115 | 4 |
| Total | | 164,441 | | | 118,529 | | |
| | | | | | 282,97 | | |

**Research sample**

The research sample refers to that part that adequately represents the community of origin, allowing its results to be generalized to it, with the aim of identifying the characteristics of that community. It gives the researcher the results at the lowest cost, and with the quickest time and effort. She chooses them using different methods according to the problem or phenomenon, and since the communities are often large in size. The researcher cannot study the entire phenomenon; Therefore, it resorted to selecting a sample from that community.

*School Sample*

Al-Baraa Intermediate School for Girls was intentionally chosen from among the intermediate schools for girls in the center of Al-Qadisiyah Governorate because of:

1. The aforementioned school is close to the researcher's residence, which made it easy for her to reach it to conduct the experiment.
2. The school administration cooperated with the researcher, as the administration welcomed the researcher and expressed its full readiness to provide everything that would facilitate the conduct of the study experiment.
3. The presence of more than two sections for the intermediate grade and the availability of necessary educational supplies to avoid the influence of any extraneous factor that may affect the results of the study, and this is what the study requires the current one.

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*Students Sample*

After obtaining a book to facilitate the task from the General Directorate of Education in Al-Qadisiyah, the researcher visited the school and agreed with its administration to collect information related to first-year intermediate school female students from their records to organize the required information and arrange it for the purpose of conducting equivalence later on a number of variables that are likely to have an overlapping effect on the two dependent variables with the influence of the independent variable. The researcher chose, by random assignment, Section (A) to represent the experimental group that will study the social studies subject according to the (formal organizer strategy) and Section (B) to represent the control group that will study the subject social studies according to (the usual method). In coordination with the school administration, private information was obtained for the purpose of establishing parity among the research sample in some variables. The number of female students in the two groups was (74), with (36) female students in the experimental group and (38) female students in the control group, after excluding the failed female students, who numbered (9) female students. 4) female students in the experimental group and (5) female students in the control group, the number of female students in the study sample was (65) female students, with (32) male students for the experimental group and (33) female students for the control group, as shown in table 3 below:

**Table 3.** Table title

| Group | Section | Number of female students before exclusion | Number of excluded students | Number of female students after exclusion |
|---|---|---|---|---|
| Experimental | A | 36 | 4 | 32 |
| Controlling | B | 38 | 5 | 33 |

*Equivalence of the Two Research Groups*

The researcher was keen to establish parity between the two groups (experimental and control) in order for the research results to be more truthful and for the difference between the experimental and control group to be attributed to the independent variable and to control variables that may affect the results of the experiment. These variables include:

1. The chronological age of the students calculated in months.
2. Parents' educational attainment (fathers' educational attainment, mothers' educational attainment).
3. Intelligence test (Raven).
4. Previous plastering (for mid-year grades).

*Visual Thinking Test*

The researcher obtained the above-mentioned data, except for the variables (the second and third), on Monday, corresponding to (2/19/2024) AD, according to the book to facilitate the task from the school records, such as (chronological age calculated in months). The researcher also obtained the academic attainments of the parents from the school records. The following is an explanation of the statistical equivalence procedures in the variables between the two research groups:

The Chronological Age of Female Students Calculated (In Months): the researcher conducted statistical parity in chronological age calculated in months between the female students of the two research groups and the results were as in table 4 and figure 5:

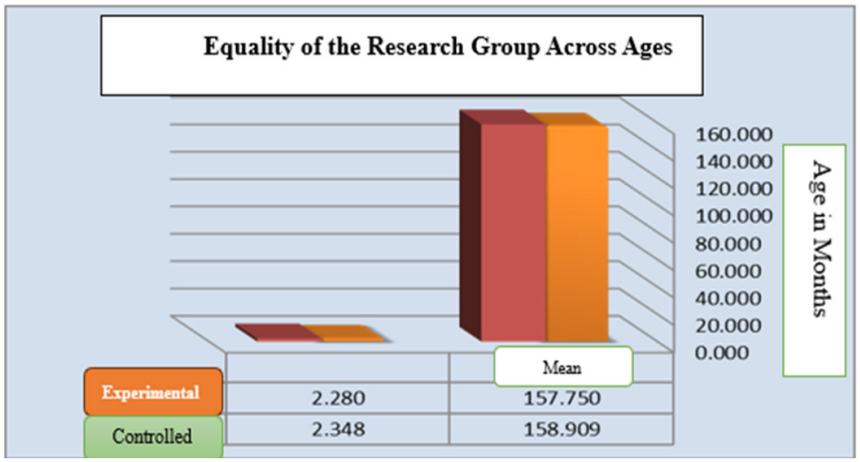


**Figure 5.** The age of study samples variable calculated by the year and month

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It is clear from table 4 that the average chronological age of the female students in the experimental group was (157,750) months, and the average age of the female students in the control group was (158,090) months. When using the T-test for two independent samples to determine the significance of the difference, it became clear that the difference is not statistically significant at the level of (0,05), as the calculated T-value (1,297) was less than the tabulated T-value of (2,00) with a degree of freedom (63). This indicates that both groups are equivalent in the chronological age variable.

**Parents' educational attainment**

*Father's Achievement of Parity*

One of the factors that affect motivation towards learning is the social and cultural environment. The family and social environment in which cultural capabilities are available pushes the student towards understanding and understanding what is going on in life. This information was obtained by submitting an information collection form to the students' The achievement levels were divided into four categories. To ensure the equality of the two groups, the researcher used the chi-square equation, so the calculated value reached (1,906), which is less than the tabulated value (2,00) at the significance level (0,05) and with a degree of freedom (63). Thus, both research groups are considered equivalent in terms of the academic achievement of parents. The calculated value reached (1,906), which is less than the tabulated value (2,00) at the significance level (0,05) and degree of freedom (63). Thus, both groups are considered equivalent in mothers' academic achievement, as shown in figure 6:

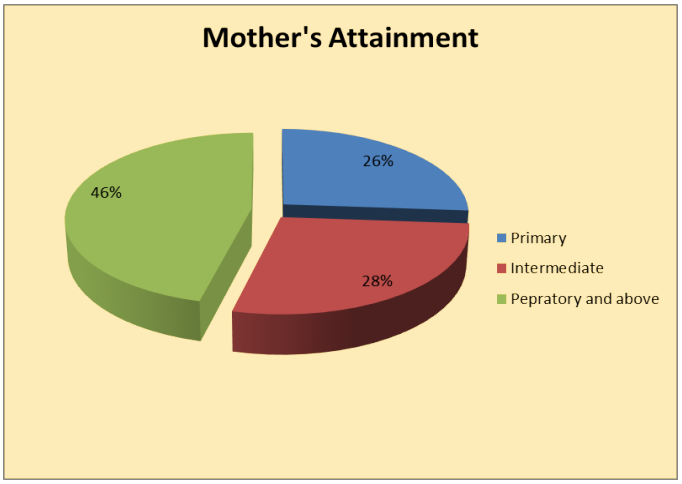


**Figure 6.** Academic achievement

**IQ test**

Raven's Progressive Matrices Test is a nonverbal intelligence test that measures the ability to think abstractly and logically, especially in distinguishing patterns and relationships between shapes and symbols. The test consists of a series of sequential arrays, each containing shapes or symbols arranged according to a pattern, and the tester is asked to select the shape that completes the pattern.

This test is widely used to measure general mental abilities and can be part of IQ tests or other psychological tests. There are three main levels of the Raven test:

1. Standard matrices: intended for children and adults.
2. Colorful matrices: intended for young children, the elderly, or people who have problems with mental abilities.
3. Advanced matrices: intended for adults and people with high mental abilities.

The Raven's test is useful because it avoids the need for language, making it suitable for people of different linguistic and cultural backgrounds.

Raven's Progressive Matrices Test is a test developed by the British researcher John C. Raven in 1936. Raven developed this test as a tool to measure general intelligence and the ability to think abstractly and logically in individuals.

Raven Test was developed with the aim of providing a simple, non-verbal test that can be used across different cultures and in multiple languages, as the test is based on visual patterns and symbols rather than words. Since its development, the Raven's Progressive Matrices Test has become one of the most popular psychological tests in the world, has been standardized, translated into many languages, and is widely used in psychological and educational research and the assessment of mental abilities.

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## RESULT AND DISCUSSION

**First Axis: results related to the first null hypothesis**

For the purpose of verifying the first null hypothesis, which states that: (There is no statistically significant difference at the level of significance (0,05) between the average grades of the female students of the experimental group who studied social studies according to the formal organizer strategy and the average grades of the female students of the control group who studied using... According to the usual method in the achievement test).

To verify the validity of the previous null hypothesis, the researcher extracted the arithmetic mean and standard deviation of the grades of the female students in the two groups (experimental and control), and table 5 shows this:

**Table 4.** The arithmetic mean, standard deviation, and calculated and tabulated T-value for the scores of the experimental and control groups in the final achievement test

| No. | Group | Students Number | Mean | Std. Dev. | Freedom Degree | T- Value | | Statistical significance at the 0,05 level |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Calculated Value | Tabulated Value | |
| 1 | Experimental | 32 | 33,094 | 3,226 | 63 | 9,218 | 2 | Significant |
| 2 | Controlling | 32 | 33,094 | 3,226 | | | | |

It can be noted from, table 4, that the arithmetic mean value of the grades of the female students in the experimental group was (33,094), while the arithmetic average value of the grades of the female students in the control group was (24,485). Using the T-test for two independent samples of unequal numbers showed the results are that the calculated T-value was (9,218), which is greater than the tabulated value of (2,00) at a degree of freedom (63) and a significance level (0,05). Therefore, we note from Table (5) that this is statistically significant, that is, the students of the experimental group who studied according to the formal organizer strategy outperformed the female students of the control group who studied according to the usual method in the achievement test, that is, the adoption of the formal organizer strategy in teaching social studies to first year female students The medium had a clear effect on the achievement of the female students of the experimental group compared to the achievement of the female students of the control group, and thus the first null hypothesis is rejected, and the results of this research in the achievement variable agree with the results of the study of Al-Nabhan (2017).[36]

**Second Axis: results related to the second null hypothesis**

For the purpose of verifying the second null hypothesis, which states that: (There is no statistically significant difference at the significance level (0,05) between the average grades of the female students of the experimental group who studied social studies according to the formal organizer strategy and the average grades of the female students of the control group who studied using according to the usual method of testing visual thinking skills prepared for the purposes of this research). To verify the validity of the previous null hypothesis, the researcher extracted the arithmetic mean of the grades of female students in the two groups (experimental and control) and table 5 shows this:

**Table 5.** The arithmetic mean, variance, and calculated and tabulated T-value of the scores of the two groups (experimental and control) in the visual thinking skills test

| No. | Group | Students Number | Mean | Std. Dev. | Freedom Degree | T- Value | | Statistical significance at the 0,05 level |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Calculated Value | Tabulated Value | |
| 1 | Experimental | 28 | 23,531 | 3,066 | 63 | 7,930 | 2 | Significant |
| 2 | Controlling | 28 | 16,727 | 3,055 | | | | |

It can be noticed from table 6 that the value of the arithmetic mean for the students of the experimental group is (23,531) and the value of the arithmetic average for the students of the control group is (16,727) using the T-test for two independent samples of unequal numbers. The results showed that the value The calculated T was (7,930), which is greater than the tabular T value of (2,00), at a degree of freedom (63) and a significance level (0,05). Therefore, we note from table 5 that the difference between the averages of the two groups is statistically significant, which indicates the superiority of the female students of the experimental group who

studied social studies according to the formal organizer strategy over the female students of the control group who studied the same subject in the usual way in the test of visual thinking skills, and thus it is rejected. The second null hypothesis: The results of this research regarding the variable of visual thinking skills are consistent with the results of the study.

**Results Explication**

*Interpretation of the result related to the first hypothesis*

The result indicated that there was a statistically significant difference between the average grades of the female students of the experimental group who studied social studies according to the formal organizer strategy, and the average grades of the female students of the control group who studied the same subject in the usual way in the achievement variable in favor of the female students of the experimental group. This can be attributed to the following reasons:

1. The use of the formal organizer strategy attracted the attention of the experimental group students and increased their focus and attention. It helped the weak students in the social studies subject to participate with their classmates in the lesson, which led to the creation of a spirit of teamwork and interaction among them, which increased their level of academic achievement.
2. Using the formal organizer strategy put the students in the experimental group in a positive, interactive position with the lesson based on good listening, instead of a negative position in which they relied on the teacher, as this helped their superiority over the control group.
3. The researcher noticed through the application that the students in the experimental group were more active, positive, and interactive in the learning process than the students in the control group, and this is due to the diversification of activities within one lesson for each student. The interpretation of the results of this research regarding the achievement variable is consistent with the interpretation of the results of the study.

**Interpretation of the result related to the second null hypothesis**

The result indicated that there was a statistically significant difference between the average scores of the female students of the experimental group who studied social studies in the formal organizer strategy, and the average scores of the female students of the control group who studied the same subject in the usual way in the visual thinking variable in favor of the students of the experimental group. This can be attributed to the following reasons:

1. The reason for the superiority of the students in the experimental group is that they are provided with sensory data through the sense of sight. Because the tools of visual thinking are: (pictures, symbols, and diagrams), which are themselves main tools in the formal organizer strategy that the researcher used in teaching the female students of the experimental group.
2. The formal organizer strategy is an essential factor in developing visual thinking skills among female students, and diversifying educational activities is of great importance in harmonizing the mental abilities possessed by the female student, each according to his abilities and inclinations.
3. Using the formal organizer strategy leads to stimulating an important type of thinking, which is visual thinking, and stimulating their use of visual thinking skills (the skill of visual reading, the skill of perceiving spatial relationships, the skill of interpreting information, the skill of analyzing information, the skill of deducing meaning). The interpretation of the results of this research regarding the variable of visual thinking skills agrees with the interpretation of the results of the studies of Al-Sheikh and Al-Ghazali.

## CONCLUSIONS

After the researcher applied the research experience, analyzed its results, and tested the validity of its hypotheses and their interpretation, the following conclusions were reached:

1. The formal organizer strategy contributed to raising the academic achievement level of first-year intermediate school female students in social studies.
2. Teaching using the formal organizer strategy had an impact in improving visual thinking among first-year intermediate school students in social studies.
3. There was a positive impact of the formal organizer strategy in raising the level of academic achievement.

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## CONFLICT OF INTEREST

None.

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