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The effectiveness of an educational program according to the theory of triple intelligence in developing analytical thinking among fourth grade literary students in sociology

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Abstract
The goal of the current research is to identify the effectiveness of an educational program according to the theory of triple intelligence in the development of analytical thinking among fourth grade literary students in sociology, the researchers have used the experimental research method to achieve the goal of the research, and the research sample consists of two groups (experimental and control) each group consists of (30) students, and the research tool was the analytical thinking test, and the results resulted in the superiority of the experimental group that was studied using the educational program in the development of analytical thinking on the control group that was studied in the usual way, and the superiority of the post-application of the experimental group in the analytical thinking test on the tribal application, the researchers reached a set of recommendations and proposals in light of the results of the research.

Keywords
Triple intelligence theory, Analytical thinking.

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Introduction

The researchers believe that the growth of thinking of various types of analytical and other types of thinking and the acquisition of skills, is not automatic, but is through effective educational programs, the need has emerged to develop educational programs, and the innovation of teaching methods that lead to the development of thinking to improve the education process in our schools. While the fifth scientific conference of the College of Education for Human Sciences at Wasit University in Iraq (2012) confirmed a set of recommendations, the most important of which is to emphasize the use of modern teaching strategies that are compatible with scientific and technological development and away from normal methods and methods. (College of Education Conference, 2012: 1)

Based on this, the researchers believe that the weak interest in modern methods and strategies that call for activity and positivity caused deficiencies in the levels of achievement of students, and a lack of practice of purposeful mental skills, including analytical thinking skills, which are characterized by looking at things from several different angles or through the production of new ideas different. To reinforce the findings of the two researchers, an exploratory questionnaire was distributed to a sample of (10) female teachers of sociology for the fourth grade of literary in Basra Governorate _ Zubair District on 16/2/2024, where they were randomly selected from among (13) schools, as the questionnaire included many questions with research variables, and when sorting the results, the following was found:

1- 95% of the sample still use traditional methods in teaching sociology.
2- 97% of the sample confirmed their lack of knowledge of analytical thinking and the lack of availability of educational situations to develop the level of thinking. It is clear through the previous indicators that there is a problem represented in the low level of analytical thinking among fourth grade literary students, so the problem of research was to answer the following question: What is the effectiveness of an educational program according to

the theory of triple intelligence in developing analytical thinking among fourth grade literary students in sociology?

Second: The importance of research: The importance of research comes through the following:

1- The importance of educational programs in designing the material according to the needs and abilities of learners and providing educational content in the form of problems to create an effective educational environment.
2- The importance of the theory of triple intelligence in employing analytical, creative and practical abilities in the lives of students in order to adapt to the environment, develop and enhance strengths, identify weaknesses and compensate for them.
3- Teaching with triple intelligence seeks to find knowledge by building an organized and flexible knowledge base that can be easily retrieved.
4- Allowing researchers to conduct future research and studies in the field of teaching analytical thinking to increase the level of academic achievement.
5- Providing a test that measures the analytical thinking of fourth grade literary students. 6- The importance of developing the analytical thinking of students and providing them with its skills to develop the spirit of creativity and analytical outlook while dealing with school subjects and different life situations.
6- The importance of analytical thinking as an indicator of the ability to solve life problems, its development is a primary goal of educational programs, as it represents the most complex and advanced cognitive activities and helps students to address symbols and concepts and use them to solve the problems they encounter.
7- The importance of the preparatory stage as a stage in which students reach a level of mental maturity makes them able to think analytically.

Third: Research Objective: The current research aims to achieve the following main goal: Identify the effectiveness of an educational program according to the theory of triple intelligence in the

development of analytical thinking among fourth grade literary students in sociology.

Fourth: Research hypotheses: To achieve the objectives of the research, the researchers formulated the following hypotheses:

1- There are no statistically significant differences at the level of significance (0.05) between the average scores of the post-analytical thinking test for students of the experimental group who are studying sociology according to the educational program and the average scores of the post-analytical thinking test for students of the control group (ordinary) who study the same subject in the usual way.
2- There are no statistically significant differences at the level of significance (0.05) between the average scores of the experimental group students in the pre-test and their average scores in the post-test for the analytical thinking test.

Fifth: Research Limits: The research is determined by the following determinants:

1. Objective limits: chapters (first, second, third, fourth) in the sociology book for the fourth grade of literature, fourteenth edition, 2023.
2. Spatial boundaries: government preparatory and secondary day schools for girls affiliated to the Directorate of Basra Governorate / Zubair District.
3. Time limits: the first semester of the academic year 2024-2025.
4. Human limits: a sample of fourth grade literary students in government preparatory and secondary day schools for girls of the Directorate of Basra Governorate / Zubair District.

Sixth: Defining terms: Triple Intelligence Theory: Defined by each:

1- (Abu Riyash and Zahria, 2007): "It is the ability of the individual to achieve goals according to certain or special criteria, within the social and cultural context in which that individual is located, that is, the individual sets his goals and works to achieve them in line with the social and cultural context in which it exists, and successful intelligence consists of analytical, creative and practical intelligence." (Abu Riyash and Zahriya, 2007: 387)

2- (Sternberg 2009): "An individual's encounter with a problem, whether educational or life, and his successful use of the three analytical, creative and practical abilities to solve it." (Sternberg 2009, 113)

The researchers define it theoretically as: employing analytical, creative and practical capabilities and investing them optimally by enhancing strengths, addressing weaknesses, and finding ways to correct them to achieve maximum success and adapt to the environment.

Procedural definition: The researchers relied on the theory of triple intelligence, which was prepared educational program according to its steps, foundations, philosophy and educational premises advocated by Robert Sternberg, which the researchers aim to measure in the development of analytical thinking among fourth grade literary students in sociology.

Development

1. Defined by (Shehata and Najjar, 2003): as: "It is to raise the level of students' performance in different teaching and learning situations, and development is determined, for example, by increasing the average grades they obtain after training them on a specific program." (Shehata and Najjar, 2003: 157)
2. As defined by (Zayer and Sama'a, 2013): "It is the development and progress of the learner as a result of exposure to effective educational variables." (Zayer and Sama'a, 2013: 157)

The researchers define it theoretically as: the process of developing and mastering students' information and skills and improving their abilities to think better and solve the problems they encounter in their daily lives.

The researchers define it procedurally as: the amount of positive difference between the average scores of the two groups (experimental and control) in the subject of sociology for the responses of fourth grade literary students on the analytical thinking test.

Analytical thinking: defined by each of the following:

1. (Attia, 2015): "It is thinking based on the ability of the individual to identify the idea or problem and analyze it into its elements or partial components and organize the information necessary to make a decision or issue a judgment, and build a standard for the purpose of evaluation and conclusion." (Attia, 2015:138)

2. (Razouki and Suhail, 2019): "The mental ability that enables the learner to analyze the details of the situation into accurate or detailed parts to find the appropriate solution to the problem." (Razouki and Suhail, 2019: 18) The researchers define it theoretically: a type of successful thinking in the individual, to be able to use mental processes such as analysis, judgment, comparison between things and analysis to their elements, to reach an appropriate solution to the life problems facing him to achieve happiness and proper adaptation in life.

Procedural definition of analytical thinking: The total score obtained by the respondent on the paragraphs of the analytical thinking test adopted in the current study.

Theoretical Framework and Previous Studies

Triple Intelligence:

Concept: Sternberg sees it as: intelligence that involves creative skills that are manifested in the production of new ideas and analytical skills that assess whether those ideas are good or not, and practical skills that put those ideas into practice and convince others of their value while these skills are based on wisdom and that the individual uses knowledge and skill to serve the common good. (2015,81 ,Sternberg)

While (Vimple & Sawhney, S) pointed out that: The concept of triple intelligence means the ability to succeed in life by taking advantage of the strengths of the individual and compensating for weaknesses in order to adapt within the societal context, and identify environments using analytical, creative and practical abilities according to personal criteria and within the social and cultural context. (Vimple&Sawhney,2017,800)

Triple Intelligence Theory: Sternberg's triple intelligence theory is one of the modern theories that tried to explain the nature of human intelligence, as his interest in not only the cognitive processes necessary to answer the questions of standard intelligence tests, but also the relationship between these processes and intelligence behavior in real life. (Al-Azzawi, 2008: 33) Sternberg pointed to three main sections that make up what is known as the triple theory of intelligence:

1- intelligent behavior factorial: This dimension determines the components that form the basis of intelligent behavior and included

three elements of information processing: (learn how to do things, planning things to be done, doing the work actually) and that individuals who have these characteristics are good in tests that depend on measuring intelligence and reach the top of the scores in standard tests and may not necessarily be creative if critical.

2- intelligent behavior experiences: It means the ability of the individual to face new situations in his life, through the use of intuition, foresight and creativity, and therefore this category of individuals may score high marks in intelligence tests and they are future creative in the work of medicine and law.

3- Intelligent environmental behavior: This dimension is the role of the environment in which intelligence works, such as kindergarten, school or university, and Sternberg believes that this dimension includes (adapting to the current environment, working to choose the optimal environment, forming the current environment to make it more suitable for skills or values). (Al-Badran and Al-Rabie, 2016: 82-81)

Sternberg believes that human intelligence is divided into three sub-theories that interact efficiently to give a perception of Sternberg's theory of intelligence:

The complex theory of intelligence

This theory links intelligence and the inner world of the individual, in terms of its focus on the primary mental components that underlie the concept of intelligence, and the component, which is a basic information process that occurs in the inner world of the individual, works to translate sensory inputs into perceptive concepts and then translate these concepts into kinetic outputs. (Jassem, 2010: 143) This theory is based on a set of components:

First: After the components: - refers to the cognitive processes that determine the intelligent behavior of individuals and consists of three main processes:

A - metaphysical processes: It is represented in the advanced cognitive implementation processes that are used to plan and implement performance or task, and includes operations such as: identifying the problem, formulating its hypotheses and testing it logically, and evaluating the solution or performance, and Sternberg considers that the

individual differences between individuals in intelligence are due to the variation of these processes among themselves.

B - Performance processes: It is represented in the real cognitive processes that are used to carry out the task, and includes the processes of sensory perception and retrieval of experiences and appropriate memories and schemes that organize cognitive strategies determined by metaphysical processes.

C- Knowledge acquisition processes: It is the cognitive processes that allow individuals to retrieve previous experiences and benefit from them in new learning, in addition to information storage processes. (Zghoul, 2012: 251) The components of knowledge acquisition include three processes:

1- Selective coding: through which a distinction is made between information related to the subject and information not related to it, as the first is encoded and the second is ignored.

2- Optional compilation: It is the collection of optionally coded information in an integrated form or appearance and increases its internal coherence.

3- Optional comparison: It is the process through which permanent relationships are compared and found between what has been coded and collected and permanent knowledge in the cognitive construction of the individual, that is, it is to link the new information acquired, with the information gained in the past. (Wars, 1999: 86)

Second: Contextual sub-theory: - refers to the physical or social environmental context in which intelligent behavior occurs, it is related to the physical and cultural environment in which the individual lives and interacts with it and includes the multiple problems faced by the individual during his life, and his daily interactions and is manifested in three types of intelligence as follows: 1- Academic intelligence: It is the ability to deal with multiple academic problems and those included in intelligence tests. 2- Practical intelligence: refers to the ability to deal with social problems and respond to the requirements of daily life. 3- Innovative intelligence: It means the ability to deal efficiently and effectively with emerging problems and situations. (Pleasure, 1998:363)

Third: the sub-theory of experiences: It represents the ability to link the individual's own experiences and intelligent behavior, as it includes

the ability of foresight and innovation and includes two aspects: 1. The ability to deal with new situations and tasks that are reflected in the ability to innovate solutions and new production (innovative ability). 2. The ability to process familiar tasks and situations in a manner characterized by originality and with the least possible effort (clairvoyance). (Zghoul, 2012: 252)

It is clear from the above that intelligence must be directed towards achieving adaptation to the environment and its formation and the selection of the appropriate environment Despite the similarity of the processes and mental components used by individuals in their interaction with different situations, but the social context through which the individual works must vary according to the cultural and civilizational framework to which he belongs. (Tamimi, 2001: 158)

Components of the theory: According to the theory of triple intelligence of Sternberg, there are three different types of intelligences, which are as follows:

- First - Analytical intelligence: - It is the first component of the theory of triple intelligence, and specializes in a number of mental processes represented in the ability to analyze, make judgments, criticism, comparison, find differences and evaluation, as it refers to the ability to fragment the problem or information and understand its components, and this can be developed through a set of activities that are based on analyzing information, explaining the ways things happen and drawing comparisons Between specific cases, the analysis of alternatives, the division of colleges into parts, and in summary, analytical intelligence includes the following skills: analysis, comparison, classification, evaluation, interpretation, judgment, and criticism. (Hussein, 2010: 10-12)

Second - Creative Intelligence: - It means the student's ability to harness his skills in the process of innovation, invention, discovery, imagination and establishment, assumptions and building hypotheses, when the individual faces a problem, or when faced with a situation that requires a solution and Sternberg believes that the process of creativity both guarantees of convergent thinking and divergence, because the problems faced by individuals require solutions that contain the two types of convergent and divergent thinking and not just one type. (Qatami, 2009:195)

The importance of intelligence abilities is also fluency, which means producing the largest number of proposed ideas on a particular topic at a specific time, or the largest number of solutions to a particular problem, flexibility, which means the ability to produce and generate a diverse and different number of ideas, diversifying unfamiliar answers and diversifying alternatives, and originality means the ability to produce new unfamiliar and uncommon solutions or thought characterized by novelty and uniqueness, and enriching details that mean the ability to develop and improve the idea. By adding clarifications to it that help to highlight them, and sensitivity to problems, which means the ability to sense the manifestations of shortcomings and weaknesses in things and sense of problems and propose creative solutions to them, and can develop the creative abilities of students through the design and implementation of educational activities based on innovation, and discover new ways to solve problems, imagine scenarios, and find new uses of knowledge. (Ghanem, 2009: 216-219)

Third - Practical intelligence: It is the third component of the theory of triple intelligence, and is intended to encourage students to apply the ideas that have been analyzed and evaluated in analytical intelligence, and to find all that is new and non-traditional ones in creative intelligence Practical intelligence (applied) and means the ability of the individual to include all his skill and harness it practically in the context of his real world (real), so that he has experience in achieving compatibility with his environment appropriately for the situations he is going through, and shaping his behavior And the ability to analyze and evaluate ideas and solve problems, and come up with new and unconventional ideas, and practical intelligence works to apply those ideas on the ground by harmonizing between individual abilities and needs on the other hand, and the requirements of the context and the surrounding environment on the other hand, the importance of practical intelligence stems from its focus on experiences that include success in daily life and the constant need to develop science. (Tarawneh and Abu Asaad, 2018: 14-15)

In the light of the above, the researchers conclude the axes that can be used by the teacher of sociology in teaching according to the theory of triple intelligence:

1- Teaching using analytical thinking: It is intended to encourage learners to carry out analytical processes such as analyzing a topic, sentence or scientific theory, criticism and judgment of ideas, comparison, evaluation and evaluation, and this is measured by the teacher's ability to translate this into realistic activities using methods of developing analytical thinking among learners.

2- Teaching using creative thinking: It means encouraging students to create, make assumptions, predict, discover and imagine by asking questions, generating alternatives, analyzing assumptions, and producing creative ideas and solutions to real and life problems.

3- Teaching using practical thinking: It is done by encouraging students to apply, put ideas into practice, use previous knowledge with new topics in different situations, learn from previous mistakes, identify and overcome obstacles, and commit to achieving educational goals while thinking practically.

4- Striking a balance between individual and collective work in order to acquire methods of social interaction.

5- Using teaching strategies that develop thinking and reflection among learners, such as brainstorming, cooperative learning and problem solving.

6- Discovering individual differences between learners in terms of their abilities, types of distinct intelligences, learning patterns and appropriate teaching methods.

7- Provide immediate feedback to learning situations to support good performance.

8- Planning for teaching in a way that works to meet the needs of students in order to achieve the objectives and targeted educational outcomes.

9- Analyzing the content of the course to extract the knowledge, skills and attitudes necessary for students.

10- Providing support, reinforcement, reward and encouraging learners in the education process.

Applications on the theory of triple intelligence

The theory of triple intelligence of Sternberg carries implications for testing and education at all levels, and Steenberg often applied normal abilities and achievement tests specifically in the form of the development of the most valuable experiences from the point of view of

the resident culture, so the intelligence of some individuals will not notice if the logic of their experiences were outside this range, and the Sternberg triple test of intelligence is one of the promising tests as a broader determinant of intelligence, and Sternberg confirms that if I use this theory In standard academic measurements, it is likely that a select group of universities may choose more diverse students. (Sternberg and Kaufman, 2017: 114)

This prompted the researchers to adopt this triple theory of intelligence for Sternberg, because it is one of the leading theories in its interpretation of the concept of triple intelligence and its application to middle school students, which contributes to discovering their abilities in education and balancing between their needs and the needs of others and environmental and social contexts, and achieving goals constructively and adapting to the environment.

The concept of analytical thinking: Analytical thinking is defined as "the ability that leads students to understand the parts of the situation of interest, and divide it into its smaller components to allow other operations on these parts such as classification, arrangement, organization, etc." (Khalifa and Hassan, 2020: 410)

The researchers also define it as: the mental ability that enables students to carefully examine ideas and attitudes, and break them down into their parts and primary components in order to reach rational conclusions, a deeper understanding of relationships and connections, and the ability to predict and generalize, in order to understand the situation and make the appropriate decision.

Analytical thinking skills

Analytical thinking is characterized by many skills that the learner can be trained on and practiced during the teaching processes, and both (Khalifa and Hassan, 2020: 410-411) and (Ahmed, 2020: 362-364) and (Mohammed, 2019: 429-431), and these skills can be summarized as follows:

1- The skill of identifying causal relationships: It refers to the student's ability to identify the causes of the problem or issue and realize the relationship between causes and causes.

2- The skill of identifying characteristics: refers to the ability to identify the characteristics and distinctive features of the problem or topic.

3- The skill of identifying personal points of view, reasoning and proving them: It means the ability to express a personal opinion towards an issue, problem or subject and support this opinion with evidence and proofs.

4- The skill of analyzing components: It refers to the student's ability to analyze the problem or issue in the light of a set of dimensions that include (essential - spatial - temporal - qualitative).

5- The skill of identifying traits or qualities: It is the ability to identify the general features of several things or the ability to deduce the comprehensive description.

6- Observation skill: the ability to choose the appropriate features, tools and procedures that guide and help in the processes of collecting information, as well as detailing the simple idea or normal response and making it more useful, beautiful and accurate by expressing its meaning.

7- The skill of distinguishing between similarities and differences: It is the ability to identify similarities and differences between some topics, ideas or events, or to identify similar things and different things within a specific field.

8- The skill of building the standard: It is the ability to identify and estimate the most useful criteria that can be used in evaluating elements or items for their importance, i.e. setting limits for possible options.

9- The skill of arrangement and prioritization: any ability to put items or events in a hierarchy according to their importance based on qualitative values or the order of certain events chronologically.

10- The skill of seeing relationships: the ability to compare ideas and events to determine the system between two or more processes.

11- Prediction or prediction skill: It is the ability to form or propose solutions to a problem and analyze its results, which is to propose good guesses to solve an issue and then work on examining or testing these guesses.

12- Measurement skill: It is the ability to analyze and develop strategies aimed at solving a difficult question, complex situation or problem that hinders progress from one aspect of life.

13- Education skill: It is the ability to build a set of phrases and sentences that are derived from the relationships between related

concepts, or to build sentences and phrases that can be applied in most circumstances and conditions.

14- Arrangement skill: It is the ability to arrange paragraphs, objects or contents in an orderly and accurate manner, that is, to put things in a specific organization that is chosen very carefully. (Mimar, 2006: 56-78)

Previous studies

1. Study (Al-Rubaie, 2015): "The impact of an educational program according to the theory of successful intelligence in the achievement and the development of analytical thinking among fifth grade literary students in literature and texts" The study aimed to identify the impact of an educational program according to the theory of successful intelligence in achievement and the development of analytical thinking among fifth grade literary students in literature and texts. The study used the descriptive approach in order to benefit from it in building the theoretical framework for research and the preparation and tools of the research as well as the analysis and interpretation of the results, and also used the experimental approach with a semi-experimental design in conducting the exploratory study and in the application of the study experience. The study sample consisted of (60) students representing two experimental and control groups, as the number of students reached (30) for each group.

The researcher conducted parity between the students of the two groups in the following variables) chronological age, academic achievement of parents, final exam scores for the previous academic year in the Arabic language, intelligence test, previous information test, Sternberg's analytical thinking test consisting of (12) items, achievement test for literature and texts consisting of (50) items.

The researcher found that the superiority of the students of the experimental group who studied literature and texts in the educational program over the students of the control group who studied literature and texts in the traditional way of achievement and analytical thinking. "An examination of high school students critical thinking dispositions and analytical thinking skills". (Al-Rubaie, 2015: 1-154)

The study aimed to identify and examine the tendencies of critical thinking and analytical thinking skills of high school students, using a multi-stage cluster sampling plan, from different types of secondary schools. The study used the correlational survey model, and the study sample consisted of 433 students, and the study tool was the critical thinking scale, and the analytical thinking skills scale was used descriptive analysis, regression analysis, and MANOVA to analyze the data, and the results showed that high school students have high levels of analytical thinking skills and critical thinking tendencies. Analytical thinking skills explained 57% of the variation in critical thinking attitudes.

And that the possession of high analytical thinking skills had an impact on the tendencies of critical thinking of students.

The critical thinking tendencies and analytical thinking skills of students in high-performing schools were higher than those in low-performing schools. Finally, mothers with a higher level of education had a greater impact on students' critical thinking and analytical thinking skills and the results of the study revealed that levels of critical thinking do not differ by gender. The difference in results obtained from the studies can be attributed to differences in the scales used and the sample groups participating in the studies. Scientific high schools in Turkey show higher levels of disposition in critical thinking compared to vocational and technical secondary schools in Anatolia, where these schools accept students who show the highest achievement in central exams.

Methodology

First: Experimental Research Methodology:

The researchers have relied on the experimental research methodology with partial control to verify the research hypotheses, due to the difficulty of achieving complete control due to the subjection of schools to administrative regulations and rules that make it difficult to achieve randomness and reshape samples to reach complete control.

Second: Experimental design:

The researchers have adopted an experimental design with two groups (experimental and control) with a pre- and post-test to test analytical thinking and achievement test, and the researchers have

deliberately conducted parity between the two research groups, and the design was as in the following table:

Table 1. Experimental Design

Group	Pre-test	Independent variable	Post-test
Experimental	Analytical Thinking Test	Educational approach	Analytical Thinking
Control		Regular approach	

Third: Research Community: The researchers identified the problem of research in fourth grade literary students, and thus the research community consisted of all fourth grade literary students in secondary and preparatory day schools for girls, which have a literary branch in the Zubair Education Department of the Basra Governorate Center for the academic year (2024-2025) and their number was (13) schools, as the total number of female students reached (412) students in the fourth literary grade.

Fourth: Research sample: The research requires the selection of a sample of the total community in order to apply the experiment to them, and the researchers have chosen a school (Al-Shanqeeti Preparatory School for Girls) intentionally, for several reasons, including the proximity of the school to the site of residence of the researchers and this facilitates the continuation of work, and that the students of the school belong to one social environment, and the readiness of the school administration to cooperate with the researchers, and that the school is among the few schools that include more than one division for the fourth grade literary, as the researchers chose the experimental group and the control group, This is through the draw of paper clippings, and the research sample was as in the following table:

Table 2. Sample of female students

School	Division	Group	Students number
Preparatory School for Girls	A	Experimental	٣٠
	B	Control	٣٠

The research sample of the experimental group consisted of (30) female students, and the control group (30) female students. Fifth:

Equivalence between the two research groups: The researchers carried out equivalence procedures in variables that previous studies indicated to the possibility of their impact on the results of the experiment, and the equivalence was conducted as follows: Chronological age: The researchers calculated the chronological age of the students estimated in months until (2/10/2024), through the information card that was distributed to the research sample, and the researchers used the T-test for two independent samples and the results were as follows:

Table 3. Equivalence between research samples in the chronological age variable

Variable	Group	No.	Mean	St.d	df	Tabular (t)	Calculated (t)	Significance at 0.05
Chronological age	Experimental	30	209,0933	9,22444	58	2	1,093	Insig.
	Control	30	206,4067	9,81241				

The mean of the chronological age of the students in the experimental group (209.0933) either the arithmetic average of the control group (206.4067), and using the T test for two independent samples the researchers found that the T value was (1.093), which is smaller than the tabular T value of (2) at the level of significance (0.05) with a degree of freedom (58) and thus the differences are statistically significant. Academic achievement of parents: The researchers obtained parental achievement information through the information form and the researchers used the chi-square test and the results were as follows:

Table 4. Equivalence between research samples in the parental achievement variable

Variable	Repetition	Groups		Total	df	Chi-Tab. square	Cal. chi-square	Sig. at 0.05
		Exper.	Cont.					
Fathers' educational attainment	Primary/ Intermediate	14	16	30	2	5,991	0,419	Insig.
	Preparatory / Institute	8	6	14				
	Bachelor/	8	8	16				

	Postgraduate							
Total		30	30	60				

It is clear from the above table that the value of the chi-square of the father's collection variable was (0.419), which is less than the tabular value of (5,991), which is not significant, i.e. there are no statistically significant differences between the two groups in the fathers' collection variable.

Table 5. Results of Chi-Square Test for Experimental and Control Research Groups in Maternal Achievement

Variable	Repetition	Groups		Total	Df	Chi-Tab. square	Cal. chi-square	Sig. at 0.05
		Exper.	Cont.					
Mothers' educational attainment	Illiteracy/ Primary	7	5	12	2	7,815	2,55	Insig.
	Intermediate	6	9	15				
	Preparatory / Institute	8	11	19				
	Bachelor/ Postgraduate	9	5	14				
Total		30	30	60				

The repetitions that are less than five repetitions were merged and became as follows (illiterate / primary, intermediate, preparatory / institute, and bachelor's / higher); and accordingly the calculated chi-square value was (2.55), which is less than the tabular value (7,815) at the degree of freedom (3) and at the level of statistical significance (0.05) and this indicates the equivalence of the two experimental groups in the maternal achievement variable, and thus the two groups are equivalent in the cultural environment variable.

Analytical thinking: The researchers applied the analytical thinking test, to measure the equivalence between the two research groups, before starting the experiment and after the researchers made sure of the validity of the approved analytical thinking test, the researchers applied the test on (Wednesday) 2/10/2025 AD to the experimental and control research groups at the same time, and in similar circumstances with the help of one of the teachers, and the researchers obtained the students' answers to the test and to achieve the equivalence between the two

groups and after statistical processing of the data, the average scores of the experimental group in the test Tribal analytical thinking (12.3333), standard deviation (3.44747), and the average score of the control group (10.8) and standard deviation (2.99885), and therefore the researchers used the T test for two independent samples to calculate the difference between the experimental groups in this variable, as the results showed that the calculated value of the T test is equal to (1,838), which is a value less than the tabular value of the T-test (2) at the degree of freedom (58) and the level of statistical significance (0.05) and this indicates the equivalence of the two experimental groups in the variable scores of the analytical thinking pre- test.

Table 6. Results of T Value for Experimental and Control Research Groups in Analytical Thinking Pre-Test

Variable	Group	No.	Mean	St.d	df	Tabular (t)	Calculated (t)	Sig. at 0.05
Pre-thinking	Experimental	30	12,3333	3,44747	58	2	1,838	Insig.
	Control	30	10,8	2,99885				

Sixth: Research Tools: Analytical Thinking Test: After reviewing a number of tests related to analytical thinking, the researchers found that the Sternberg test for analytical thinking modified on the Iraqi environment by the researcher Amal Hussein Al-Azzawi is the appropriate test for the current study and this test was prepared to measure the ability of students to analyze ideas, and evaluate them in solving problems, and the test consists of three parts (1,2,3) distributed over (12) paragraphs of the type of multiple choice, which is for the preparatory stage (fourth grade, and grade). Fifth, and sixth grade) and the scientific and literary branches, and is suitable for ages from (15-18) years, in addition to enjoying high statistical characteristics with regard to its honesty and stability, as the coefficient of stability (0.82) and then corrected by the researcher using the equation of Spearman Brown,

where it reached (0.90), a high stability coefficient for non-codified tests. (Al-Azzawi, 2008: 127-129)

The researchers have allocated (two degrees) for the paragraph that refers to the correct answer, and (zero) for the wrong and abandoned answer and the paragraph that carries more than one answer.

Experiment Application

1- The researchers began to apply the experiment to the students of the experimental and control groups on Wednesday, 2/10/2025.
2- Studied researchers students of the two groups (experimental and control) sociology according to the teaching plans prepared and the number was (16) plan on the educational program according to the theory of triple intelligence of the experimental group, and (16) plan for the control group according to (the usual method).
3- The researchers applied the test before the two groups for the purpose of rewarding them.
4- The test was applied remotely to the students of the two groups (experimental and control) on Sunday, 5/1/2025, and the students' answers were corrected according to the approved correction method.

Results and Discussion

Verification of the first hypothesis: which stated that "There are no statistically significant differences at the level of (0.05) between the average scores of the post-analytical thinking test for the experimental group students who are studying sociology according to the educational program and the average scores of the dimensional analytical thinking test for the students of the control group (regular) who study the same subject in the usual way and the results were as in the following table:

Table 7. Results of T Value of Experimental and Control Research Groups in Post-Analytical Thinking Test Scores

Variable	Group	No.	Mean	St.d	df	Tabular (t)	Calculated (t)	Sig. at 0.05
	Exper.	30	18,7333	3,8411	58	2	7,775	Sig.

Post-thinking	Control	30	11,2	3,66154				

The results indicate that the amount of the effect between the results of the two groups in the scores of the post-analytical thinking test is according to the equation of the square of ETA (0.51034) and the equation of Cohan (2.04182) and this indicates that the impact is large, which confirms the effectiveness of the proposed educational program in enhancing the analytical thinking of the students of the experimental group other than the control that relied on the usual method of teaching. Verification of the second hypothesis: which states that "there are no statistically significant differences at the level of (0.05) between the average scores of the experimental group students in the pre-test and their average scores in the post-test for the analytical thinking test." The results were as in the following table:

Table 8. show (T) value of the results of the teams for the analytical thinking test for the pre- and post-application of the experimental group

Variable	Experimental	Test	No.	Mean	Means difference	df	Tabular (t)	Calculated (t)	Sig. at 0.05
Analytical thinking		Pre	30	18,7333	3,8411	58	2	7,775	Sig.
		Post	30	11,2	3,66154				

It is clear from the above table that the value of the difference between the average of the pre-application and the post-application of the analytical thinking test (6.4) degrees, and the value of the calculated T-test is equal to (5,913), which is a value greater than the tabular value of the T-test (2,045) at the degree of freedom (29) and the level of statistical significance (0.05) and this indicates the superiority of the results of the post-application on the pre-application of the experimental group in the post-analytical thinking test, which confirms the rejection of the null hypothesis and the acceptance of the alternative hypothesis that proves

the existence of differences between the results of the application Pre- and post-application and in favor of the post-application of the analytical thinking test of the experimental group.

Second: Interpretation of the results: The results of the hypothesis showed differences in the post-analytical thinking test between the experimental group that was studied using the educational program and the control group that studied in the traditional way for the benefit of the experimental group and indicated the superiority of the results of the post-application on the pre-application of the experimental group in the analytical thinking test and the existence of differences between the results of the pre- and post-application and in favor of the post-application of the analytical thinking test of the experimental group. The researchers justify this because:

A. The use of the educational program based on the theory of triple intelligence helped students to develop the analytical abilities of students, as Sternberg stressed that employing them in learning encourages students to acquire analytical thinking skills (analysis, criticism, comparison, judgment, measurement, and evaluation) in learning, which seeks this learning to find students able to deal with the problems they face and how to apply what they have learned in new situations and thus improve their memory capacity and increase the level of Thinking, perception and reflection of educational situations.

B. The educational program helped students on how to think analytically by fragmenting the elements of the scientific situation, understanding them and placing them in a regular format to interpret them and solve the problems they face after realizing the problem situation, in addition to developing their abilities to solve problems, whether educational or life, by exploring and understanding information, developing appropriate hypotheses for it, testing it and reaching the correct and appropriate solution, and this in turn requires addressing their previous experiences, which have been integrated into a cognitive system, In order for previous experiences to combine with new and available information and arise through this mental process, a change in cognitive information is created through the perception of the problem situation. The results of the current study agreed with the study (Al-Rubaie, 2015).

Conclusion

In light of the results of the research, the researchers concluded the following:

1- the ability of the program and its effectiveness in developing analytical thinking and that the superiority of the experimental group in the results of the post-analytical thinking test on the control group is due to the effectiveness of the proposed educational program, which was applied to the students of the same group other than the control group that adopted the usual method of teaching.

2- The ability of the educational program, including various activities and plans that were presented on the data show device, as it achieves the motivation of students to learn and their sense of desire and excitement during the lesson.

3- There is an active role for the theory of triple intelligence in building the educational program.

4- There is a need to build educational programs based on modern learning theories that are compatible with scientific and technological development to keep pace with global changes, which help students to raise the level of achievement in addition to social success equally by distinguishing between strengths, highlighting and benefiting from them as much as possible, distinguishing weaknesses, correcting them and working to avoid them, in addition to using analytical abilities in various educational and social situations.

5- Establishing a positive relationship between researchers and students has a great impact in pushing the experience towards success, and this is what students need in their relationship with the school to make the educational process successful.

Recommendations

In light of the results of the research, the researchers recommend the following recommendations:

1- Holding training courses for teachers of sociology in acquiring knowledge of the content of sociology within the teaching of analytical thinking to help students realize concepts and

knowledge and deepen them and generalize those experiences in new situations.

2- The need to pay attention to the modernization of school curricula by those in charge of educational work in the Iraqi Ministry of Education and include topics that stimulate students' thinking and expand their perception.
3- Directing the attention of those in charge of the Iraqi Ministry of Education in the subject of sociology to enrich teaching with educational programs and designs that include strategies, activities and educational means according to the theory of triple intelligence in order to help students increase the level of academic achievement through analytical thinking with different dimensions.
4- The need for diversification in teaching methods and strategies by male and female teachers, because of its great impact on developing students' understanding of the subject.

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