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The Effect of Edelson's Model in Developing Mathematical Interconnectivity skills and Achievement for Second- Grade Students in Mathematics

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Abstract

The objective of the research was to identify the effect of the Edelson model in developing the mathematical interpersonal skills of second average grade students in mathematics. To achieve the research objective, the researcher adopted the empirical research method, the empirical design of two parallel groups of pre and post- test in mathematical interdependence. The experiment was applied on a study group consisted of (65) students, the experimental group (33) students, and the control group (32) students from the second average grade students in (Berier intermediate school) of Directorate of Education province of Diyala for the academic year 2018-2019. The research tool was built (Mathematical Interdependence Skills), The Mathematical Interaction Skills Test consisted of (30) thematic paragraphs of multiple choice. The honesty of the test has been verified, the difficulty and discrimination coefficients, and the effectiveness of the wrong alternatives were tested. The appropriate statistical means were the (Kyodar Richard) equation, the T-test and Pearson correlation coefficient using the SPSS V.23.0

El Efecto Del Modelo De Edelson En El Desarrollo De Habilidades Y Logros De Interconectividad Matemática Para Estudiantes De Segundo Grado En Matemáticas

RESUMEN

El objetivo de la investigación fue identificar el efecto del modelo de Edelson en el desarrollo de las habilidades interpersonales matemáticas de los estudiantes de matemáticas de segundo grado medio. Para lograr el objetivo de investigación, el investigador adoptó el método de investigación empírica, el diseño empírico de dos grupos paralelos de pre y post prueba en interdependencia matemática. El experimento se aplicó en un grupo de estudio compuesto por (65) estudiantes, el grupo experimental (33) estudiantes y el grupo de control (32) estudiantes de los estudiantes de segundo grado promedio en (escuela intermedia Berier) de la Dirección de Educación de la provincia de Diyala para el curso académico 2018-2019. La herramienta de investigación fue construida (Habilidades de Interdependencia Matemática), La Prueba de Habilidades de Interacción Matemática consistió en (30) párrafos temáticos de opción múltiple. La honestidad de la prueba ha sido verificada, los coeficientes de dificultad y discriminación, y la efectividad de las alternativas incorrectas fueron probadas. Las medias estadísticas apropiadas fueron la ecuación (Kyodar Richard), la prueba T y el coeficiente de correlación de Pearson utilizando el SPSS V.23.0

The results indicated the following:

1- There is a difference of statistical significance at the level of significance (0.05) between the average score of students in the experimental and control groups in the test of the skills of mathematical interdependence and for the benefit of the experimental group.

- In terms of secondary hypotheses, there was a statistically significant difference at the level of (0.05) between the average scores of the experimental group who studied according to the Edelson model and the students of the control group who studied according to the usual method of teaching in skills of linking of Mathematics in other sciences, and the skill of linking mathematics to everyday life) for the benefit of the experimental group.

2- There is a significant statistical difference at the level of signifi-

cance (0.05) between the average score of the experimental group students who studied according to the Edelson model in the tribal and remote tests and for the benefit of post-test students.

- As for the secondary hypotheses, there was a statistically significant difference at the mean level (0.05) between the average scores of the experimental group who studied according to the Edelson model in the two tests (The skill of linking mathematics, the skill of linking mathematics with other sciences, and the skill of linking mathematics to everyday life) and for the benefit of post-test students.

Research problem

Mathematics is a study material has a major role in the development minds of individuals. This is why it has become one of the most important subjects taught by students in all educational stages. It provides them with mathematical content and mathematical skills. However, the reality shows weakness in achievement. The complaint continues, especially after changing the new mathematics curriculum starting from the first grade average up one year after another. In a meeting with the group of teachers of mathematics for the second average grade in one of the training courses on the new curriculum, they stressed that the new books went out of the past and not compatible with traditional methods used currently this is a clear weakness in the achievement of the second average grade students average, and this is what the researcher noticed that the current book of mathematics for the second average grade (2018-2019) was organized into six sections: learn, make sure you understand, train and solve exercises, train and solve life issues, think, write. (Jassim et al., 2018: 3).

According to a survey conducted by (Al-Kubaisi and Al-Shamri, 2018), distributed to (400) students from the secondary school about the main reasons behind the low level of achievement in mathematics from their point of view, since the student is the axis of the educational process, The main reasons were the strategies and the teaching models followed with them do not raise the motivation for follow-up and recall in the introduction of lessons, and the problem of weak fundamentals of previous mathematics they studied in previous stages, as well as weak ability to connect different mathematical ideas and link with other subjects.

(Al-Kubaisi and al-Shamri, 2018: 22)

It is clear to us from the above that there is a weakness in the achievement of mathematics, which are no longer mere symbols and terminology that students save and retrieve, but it has exceed that so that the student has ability to use the correlation between mathematical ideas, and understands

that mathematical ideas are interrelated and built with each other, In other sciences and the external environment.

As recommended by many of the Iraqi studies the need to teach mathematical associations such as the study of Qasim and Sidawi (2013), Abdullah (2013) and Jawad (2016) and Qasim (2018) and Amin (2018).

This can be achieved through the use of teaching models focused on motivating the motivation for study and follow-up by students. Experimentation of a teaching model that motivates students may contribute to increasing their achievement and their mathematical connection. Therefore, the researcher is formulating his research problem by asking the following:

What is the impact of Edelson's model on developing mathematical interpersonal skills among second-grade students in mathematics?

The importance of research

1- Benefit from educational applications that came out of teaching theories or educational models, especially Edelson model, which may contribute to the improvement of the educational process and give a prominent role in making students the focus of the educational process and reduce the disadvantages of traditional teaching methods where the teacher is the focus of the educational process.

2- Benefit from this study by teachers in the knowledge of modern strategies and models in the teaching of mathematics.

3- The researcher hopes that this study will benefit the researchers' results in conducting research in other subjects.

4- The research derives its importance from the importance of the dependent variable which is the skills of mathematical interdependence, which is one of the requirements of the age and its importance in the field of education.

5- The current research is a new scientific addition that enriches the competence of the methods of teaching mathematics and is enriching or adding quality to the scientific library.

6- The current research is the first of its kind in Iraq at this stage and other stages to the knowledge of the researcher, which deals with the model (Edelson) in developing the skills of mathematical interdependence among students in the second grade the average and will pave the study to carry out complementary research in this area.

7- The current research may benefit the authors and developers of mathematics curricula for the primary stage by taking advantage of the mathematical attitudes related to the mathematical interdependence in-

cluded in the research.

8- The results of the research may encourage the in-service training of mathematics teachers to develop the mathematical coherence of their students.

Research objectives and hypotheses

The current research aims at revealing the effect of the Edelson model in developing the mathematical bonding skills of second average grade students in mathematics.

To investigate the research objective, the following hypotheses were formulated:

1- There was no statistically significant difference at the level of significance (0.05) between the average scores of the experimental group who studied the subject based on the Edelson model and the average scores of the control group students who studied the same subject according to the usual method of testing the mathematical bonding skills.

From this hypothesis, the following sub-hypotheses are derived:

- There is no statistically significant difference at the level of significance (0.05) between the average grades of students who studied according to the Edelson model and who studied according to the usual method of teaching in the skills of (linking the fields of mathematics, linking mathematics with other sciences and linking mathematics to everyday life)

2- There was no significant statistical difference at the mean level (0.05) between the average scores of the experimental group who studied according to the Edelson model in the tribal and remote tests in the mathematical correlation skills.

From this hypothesis, the following sub-hypotheses are derived:

- There was no statistically significant difference at the mean level (0.05) between the average scores of the experimental group who studied according to the Edelson model in the pre and post-tests in the skills (linking the fields of mathematics, linking mathematics with other sciences and linking mathematics to everyday life)

Research limits

Current research is limited to:

1) Students in the second average grade in the public day schools in the General Directorate of Education of Diyala for the academic year 2018 - 2019.

2) The second semester for the academic year 2018-2019.

3) Chapters (V / Engineering and Measurement, VI / Engineering Coordinates, VII / Statistics and Probability) of the content of the book of

mathematics for the second grade average edition of the first year 2017.
4) Mathematical interdependence skills (linking mathematics fields to each other, linking mathematics with other sciences, linking mathematics to life).

Definition of terms

- The effect: defined by (Ibrahim, 2009) as "the ability of the study subject to achieve a positive result in the students, but if criticized this result did not achieve, it may lead to negative repercussions. (Ibrahim, 30: 2009)
- Model (Abu Jado, 2008): as "a set of measures practiced by the teacher in the educational situation, which includes the material and methods of evaluation and treatment" (Abu Jado, 317: 2008)
- Edelson's model is defined by Abu Dhahir (2016) as: A learning model based on cognitive theory and constructional approach, focusing on the learner building his own knowledge, through direct and indirect interaction with others, and encourages students to use and apply knowledge with The opportunity to think and reflect, compare past knowledge with their new knowledge, and learn through it in three steps (motivation or motivation, knowledge building, knowledge refinement and refinement). (Abu Dhahir, 2016: 7)
- Mathematical Interdependence Skills (Obaid, 2018) defines it as: a process that makes mathematics of integral importance and close texture. Mathematical ideas come with other ideas to build an integrated mathematical structure that enables students to connect mathematical ideas to each other and focuses on the relationships and linkages between the various subjects in mathematics, and connect with other sciences and with daily life. (Obaid, 2018: 13)

Chapter Two: Theoretical Framework

First Axis: Edelson Model

In the light of the scientific and technological development in the modern era and the penetration of modern technologies in all human economic, social and even educational activities, the interest is no longer confined to selecting or producing means to help the teacher to bring concepts closer to the students' minds and clarify the experiences that he could not explain in the abstract word. Education in the educational process is imperative to overcome the many challenges faced by educators in this age, including:
1. Horizontal expansion in education: The use of teaching techniques helps to overcome the problem of increasing the number of devel-

oping learners with the numerical growth of population and the increasing demand for education.

2. Knowledge Flow: The growing knowledge, specialization, and growing branches of knowledge are becoming more and more accessible.

3. Multiple sources of knowledge and tools: The teacher cannot rely on the textbook as a single source of learning at a time when there are films and audio tapes, computer programs and other programs, which enriches learning and achieves its goals.

4. Solve the problems of individual differences: cannot solve the problems of individual differences between groups of learners without the use of teaching techniques. (Farajani, 1989: 29)

In order for educational technologies to achieve their roles in the field of education and to take advantage of their characteristics, this requires the availability of an integrated system of factors, the most important of which are the following:

1. The availability of necessary educational techniques to implement advanced strategies in the education process.

2. Teachers' awareness of these techniques and their importance in the educational process.

3. Teachers' employment of teaching techniques during practice of teaching.

In the light of the foregoing, this research came to look for strategies and teaching models that overcome the educational difficulties in order to bridge the gap in this field in order to improve the educational process and keep pace with the developments in education in the Arab and the world. (Mr., 1999: 733)

Edelson's model

Edelson defines it as a description of learning processes that can be used to activate the curriculum and inquiry-based learning activities. (Edelson, 2001: 356)

Abdul-Kareem refers (2003: 49) citing Saleh (1989: 2013) as a model of content management and a learning model based on many contemporary learning theories and contributing to the achievement of science education standards taking into account the basis of meaningful learning processes and understanding through a rich environment which can be used to strengthen the integration of intensive content and survey-based science education activities.

Edelson's model starting points

The Edelson Learning Model is a framework for systematic instructional

design based on the integration of cognitive content with science processes. It focuses on the learner building his or her own knowledge, as well as interacting with others, focusing on learning activities that give students an opportunity to reflect and compare their previous knowledge with their new knowledge. .

Hence, Saleh (1990: 2013) sees a set of premises on which the Edelson model of learning for use is represented in:

1. The learner will not be able to learn new knowledge unless it is integrated and concerned.
2. The knowledge received by the learner is not useful to him unless he built it in support of its use later.
3. In order to integrate the learner in the construction of knowledge must be able to understand the benefit that will come back from learning. (Valid, 90: 2013).

Steps of the model can be summarized as follows:

1- Motivation or motivational excitement: recognition of desire and the need for new knowledge and this recognition does not need to be conscious and occurs when the learner stands in the face of a problem or gap or activity or event shows the inadequacy of previous knowledge and need to learn to solve the new problem in knowledge and this affects the learner : Creating the desire and motivation to acquire new knowledge and create the context, in the introduction of new knowledge in memory and its integration with previous knowledge and the existence of motivation here achieves a goal directed to the nature of learning and achieves a conscious understanding of the nature of learning.

2- Building knowledge: This step focuses on building structures of new knowledge in memory so that integration can be achieved and linked to previous knowledge. As a result of this integration and interdependence, this knowledge is organized, assimilated, overlapped and formed, and thus becomes part of long - term memory, taking into account that the learner is active and has the opportunity to observe Integrate into activities or communicate with others or both.

3- Revise or refine knowledge and refine it: This step focuses on organizing knowledge and linking it to other knowledge and enhancing it so that it can be retrieved, used and applied in the future as well as reorganize the knowledge of the report and turn it into procedural knowledge to become meaningful and achieve this through two processes of application and reflection.

The following table shows the procedural steps of the model and the pro-

cesses involved in each step and the strategies, activities or tasks proposed for each operation.

Table (1)

The procedural steps of the Edelson model and the processes involved in each step and the strategies, activities or tasks proposed to implement each process.

Step	Process	Strategy design
Motivation	The need for expertise (Experience Requirement)	Apply activities that help to develop the need for knowledge
	Curiosity to learn (Curiosity)	Applying activities to inspire learners' curiosity and curiosity by showing the gap or gap between what the learners already have and what they should have to successfully solve the new task.
Knowledge construction	By Note	apply activities to provide learners with direct experience that enables them to observe relationships in the subject matter of the study and thus build their own knowledge and connect with others
	Communication	Apply activities that enable learners to communicate directly or indirectly with others, and allow them to build new knowledge based on communication with others
Refinement	Application	Apply tasks or activities that allow learners to use knowledge in meaningful ways to reorganize, strengthen, and strengthen understanding to become meaningful, and ultimately useful to them.
	Meditation	apply tasks or activities that provide learners with opportunities for reflection through which they can re-realize and meditation in their knowledge, experience and indexing.

(Edelson ، 2001: 360)

The second axis: Mathematical interdependence

Mathematical interdependence concept

The interrelationships in the subjects will make them adhere to this se-

quence so that students cannot be presented with subjects unless they have previously presented their requirements. This course should include the material of the link and the link with each other. The teaching material may be organized in units or classes Which should be integrated into all aspects, in order to achieve integration and interdependence in the process of organizing the curriculum and subjects of the unit of the subject matter, and these units should be planned to lead to the establishment of other units, which enables the student to recognize the interrelations and overlaps between the subjects of the whole article, Interdependence helps students to understand the inter-relationships between subjects or parts of one subject or one unit of study, and between them and other materials and units, thus expanding the scope of the subject in a comprehensive manner, and confirming the broad scope of concepts and application of the mathematics curriculum and principles. (Abu Zeina, 2010: 63)

As for the decisions of school mathematics in the intermediate stage, Badawi (2003) pointed out that the mathematics curriculum in the intermediate stage in the three grades must include the achievement of mathematical coherence so that learners can:

1. Consider mathematics as a whole integrated and regular.
2. Exploring problems and describing outcomes using mathematical, graphical, numerical, sensory, algebraic, verbal or representation models.
3. Employ mathematical ideas to broaden their understanding of other mathematical ideas.
4. Employ mathematical thinking and mathematical models to solve problems that appear in other subjects such as: art, music, psychology, science and commercial materials.
5. Estimate the role of mathematics in our culture and society.(Badawi, 2003: 103-104).

The importance of mathematical interdependence in the teaching and learning of mathematics:

1) Mathematical interdependence is a fundamental element of learning comprehension: The purpose of teaching and teaching mathematics is to try to develop the learner's understanding of the learner, and the associations are a guide in understanding the learning of experiences and mathematical ideas, and trying to understand the learner for himself and others by linking and organizing mathematical knowledge, Sports by modeling them.

2) Mathematical interdependence is a means of creating conceptual links: Interconnection is a set of multifaceted ideas to show mathematical

relationships and principles, expressed through the conceptualization of relationships between mathematical ideas and concepts, and is not a single entity to express something. (Saidi et al., 2012: 16)

3) Mathematical Interrelationships A problem-solving tool: One of the goals of mathematical interdependence is to motivate and encourage students to use this interdependence in solving problems. Students who have the ability to apply and translate between different representations of the same situation for a given problem will have a range of flexible and powerful tools and ideas In solving problems and a profound appreciation and great harmony and harmony in mathematics. (Bayoumi, 2006: 43)

4) Mathematical interdependence is not a method but a process for building mathematical ideas. The National Council of Teachers of the United States (NCTM, 2000) notes that mathematical correlations are not a theory of learning or a particular method, but a process and an important means of building mathematical ideas, and that their use will support and help students' ideas in an organized way. The students' ability to understand and solve the problems they face increases, and they also help simplify the structure of the models and build them to learn mathematical knowledge. (NCTM, 2000: 279)

The researcher classified the skills of mathematical interdependence in line with his research where adopted on Badawi classification

Classification of (Badawi, 2003): Badawi mentions that the skill of mathematical interconnecting has sub-skills, they are:

1- The skill of the interrelationship between the areas of mathematics: are the links within the mathematical topics taught by the student in each interrelated such as engineering, measurement, numbers, processes, and others.

2- The skill of the correlation between mathematics and other subjects: The links between mathematics and the social sciences, science, health education, sports, Arabic language and others.

3- Interrelation between mathematics and daily life: The role of mathematics in the daily life of students, where the language of dealing with numbers and numbers. (Badawi, 2003: 314)

Chapter Three: Research methodology and procedures

First: Research Methodology

The experimental approach was dependent in this research to achieve its objectives and to study the effect of the independent variable (Edelson

model) on the first dependent variable (mathematical interdependence skills)

Second: Experimental Design Selection

The researcher relied on one of the experimental designs with partial control of two parallel test groups - suitable for research purposes. As shown in Table (2).

Table (2) Experimental design adopted in research

Group	Equivalence of the two groups	Independent variable	Dependent variable	Post-test
Experimental	- Test the skills of -tribal mathematical interdependence	Edelson model	-Mathematical interdependence skills	Tests of interdependence skills
Control	-The chronological age of months previous knowledge - Intelligence - Collecting parents	Usual method		

Third: Research Population

Third: Research Population

The current research community is limited by second-grade students in intermediate schools for boys under the Directorate General of Diyala Province for the academic year (2018-2019).

Fourth: Research Sample

The Brier School for Boys, affiliated to the Directorate of Diyala Education, was selected in an intended way. It was found that the school consisted of three divisions which were chosen by random sampling method (A) to represent the experimental group that taught mathematics according to the Edelson model and (C) to represent the control group that taught mathematics according to the usual method. The number of students in the experimental group (33) students, either the control group has reached the number of students (32) students, before the exclusion of students who are statistically absent (1) students from the experimental group so as not to affect his previous experience In the accuracy of the search results, the number of individuals The final sample (65) students.

Fifth: Control Procedures

The search variables were adjusted by doing equivalence between the students of experimental group and the control group in some variables (The chronological age months, previous knowledge test, IQ test, parental aca-

demic achievement) as shown below.

Table (3) Equivalence variables for the two research groups

Group	erimental (33) studen		trol (32) Student		t value			
Equivalence variables	Average arithmetic	Standard deviation	Average arithmetic	Standard deviation	Calculated	Table	Freedom degree	Statistical significance at level (0.05)
Chronological age	94	5	63		7	9	3	No significance
intelligence	21.03	8.95	20.79	7.58	0.151	1.999	3	No significance
Previous information	15.36	2.69	14.34	2.82	1.491	1.99	3	No significance
Test tribal mathematical interdependence skills	12.27	2.24	11.84	2.30	0.762	1.995	3	No significance
Parental academic Achievement	Q-squire value		reedom degree					Significance level (0.05)
	ulated	Table						
Father's academic Achievement	0.229	7.815	3					No significance
Mother's academic Achievement	0.808	7.815	3					No significance

Sixth: Research supplies

- Determining the educational material: The educational material included the following chapters (Chapter V (Engineering and Measurement, Chapter VI (Engineering Intersection), and Chapter VII (Statistics and Probability), which was studied during the second semester of the academic year 2018-2019.

Seventh: Research tool

Preparation of the mathematical interdependence test paragraphs: (30) test paragraphs were prepared and the researcher chose the objective questions of the type of multiple choice, four alternatives. Each paragraph has four alternatives (one alternative is correct and the remaining alternatives are wrong) divided into three skills (linking mathematics, linking mathematics with other sciences) , And linking mathematics to life).

A - Honesty of the test: I use two types of honesty, namely:

1 - Virtual honesty: It is based on the initial examination of the virtual

test to verify the validity of the measured features, as the test is true when measuring what is meant to measure. (Ghanaim and Gad, 2004: 177)
2) Constructive honesty: Allam (2006) points out that the method of the internal consistency coefficient that is meant to correlate between the scores of the test vertebrae, ie the degree of measurement of the verbs of the attribute itself, is one of the indicators of the validity of the test. (Allam, 111: 2006)
Statistical Analysis of Test paragraphs: To perform statistical analysis of paragraphs, the following were followed:
1 - Coefficient of difficulty paragraphs: The difficulty of the paragraphs of the equation and the difficulty of paragraphs (0.47 - 0.72).
2 - Coefficient of discrimination of the paragraph: The coefficients of the discrimination of each paragraph of the test were calculated, found value (0.37 - 0.47).
3 - The effectiveness of the wrong alternatives: The effectiveness of the wrong alternatives was calculated, and found that the wrong alternatives attracted a number of students in the lower group than the upper group, and thus returned all the wrong alternatives effective.
4. Stability of the test: The test gives the same or similar results when applied to the individuals themselves and the same conditions. Stability is one of the indicators to verify the accuracy of the test or measure in measuring what should be measured (return, 1998: 266) - Richardson 20) to calculate the stability of the test with a stability factor of 0.83 and this indicates that the test has a high degree of stability.
Eighth: Application Procedures
1. Apply the experiment:
The experiment began on Thursday (21/2/2019) and ended on Wednesday (5/5/2019).
2. The final application of the test of mathematical correlation skills:
The tribal sports networking skills test was conducted on Wednesday (20/2/2019). After completing the teaching of the content of the research material according to the time specified for the experiment and the two groups of research, the test of the skills of the mathematical distance was applied on Wednesday (8/5/2019).
3. Correcting the test: The test papers were corrected and the scores of the two groups (experimental and control) were corrected and prepared for statistical processing up to the results related to the current research objectives.
Eighth: Statistical Means In this research, the statistical program SPSS

23.0 was used to analyze the data by the appropriate statistical means.

Chapter four: Presentation and Interpretation of Results

First: Presintation the results

This chapter includes an overview of the results. The results of this study were analyzed to determine the effect of the Edelson model on the development of the mathematical correlation skills of the second grade students in order to test the difference between the two groups (experimental and control) As well as an explanation of the results and a presentation of the recommendations and proposals.

- View results

To verify the validity of the first zero hypothesis, which states that: (There was no statistically significant difference at the level of significance (0.05) among the average scores of students who studied according to the Edelson model and who studied according to the usual method of teaching in the test of mathematical interdependence).

After the post-mathematical correlation test was applied to the students of the research groups (experimental and control), their papers were corrected, the total score of each student was calculated, the arithmetic mean and the deviation of each group were determined separately, as shown in Table (6).

(4) Table

T-test results to find out the difference between the mean scores of the two research groups In the test of mathematical bonding skills

Group	Sample	Arithmetic mean	Standard deviation	Freedom degree	T- value		Statistical significance at level (0.05)
					Calculated	Table	
Experiment	33	22.12	7.36	63	4.168	1.995	Statistical significance
Control	32	19.72	3.37				

It is clear from the above table: There is a statistically significant difference at the level of significance (0.05) among the average scores of students who studied according to the Edelson model and who studied according to the usual method of teaching in the test of mathematical bonding for the benefit of the experimental group.

To find out the effect of the Edelson model on the test of mathematical

bonding skills for intermediate second graders, use the ETA square test (η 2) to calculate the magnitude of the effect, calculate the value of the ETA square (η 2) and then calculate the value of d. As shown in Table (5).

Table (5)

The values of d, η 2 and the effect of the two groups of research (experimental and control) in the test of mathematical bonding skills

Independent variable	Dependent variable	Calculate T-value	η^2 Value	d Value	The amount of effect size
Edilson model	Mathematical interdependence skills	4. 168	0. 216	1. 05	Very big

Table (5) shows that the magnitude of the effect of the Edelson model in Mathematical Interaction Skills is significant because the value of d (1.05) is smaller than (1.10), indicating the effect of the Edelson model on the mathematical interdependence skills of the experimental group who studied on the Edelson model.

To investigate the secondary hypotheses that were derived from the second hypothesis, the researchers have done the following:

The following hypothesis is validated: (There is no statistically significant difference at the level of significance (0.05) among the average grades of students who studied according to the Edelson model and who studied according to the usual method of teaching in (the skill of linking the fields of mathematics, the skill of linking mathematics with other sciences, Mathematics in daily life)

The scores of the two groups of research (experimental and control) were determined in (the skill of linking the fields of mathematics, the skill of linking mathematics with other sciences, the skill of linking mathematics to daily life), and then the arithmetic mean and deviation of each group separately. 6).

Table (6)

The results of the T-test to determine the significance of the difference between the intermediate scores of the two research groups in the skill of linking the fields of mathematics, the skill of linking mathematics with other sciences, and the skill of linking mathematics to everyday life

Skill type	Group	Sample	Arithmetic mean	Standard deviation	Freedom degree	T- value		Statistical significance at level (0.05)
						Calculated	Table	
The skill of interdependence mathematics fields	Experimental	33	8.33	1.34	63	3.096	1.995	Statistical significance
	Control	32	7.25	1.48				
The skill of linking mathematics with other sciences	Experimental	33	6.15	0.906	63	3.534	1.995	Statistical significance
	Control	32	5.34	0.937				
The skill of linking mathematics to everydayy life	Experimental	33	8.30	1.468	63	4.474	1.995	Statistical significance
	Control	32	6.78	1.263				

It is clear from the above table that there is a statistically significant difference at the level of (0.05) between the average scores of students who studied according to the Edelson model and who studied according to the usual method of teaching in (the skill of linking mathematics, the skill of linking mathematics with other sciences, In daily life).

After applying pre-test and post-test skills to the experimental group students, their papers were corrected, the total score of each student was determined in the tribal and post-test, the computational mean and the standard deviation for each group separately, as shown in Table (7).

Table (7)

T-test results to find out the significance of the difference between the average scores of students in the tribal and post-test In the test of mathematical bonding skills

Experimental group	Sample	Arithmetic mean	Standard deviation	Freedom degree	T- value		Statistical significance at level (0.05)
					Calculated	Table	
Pre	33	12.27	2.24	32	17.199	2.037	Statistical significance
Post		22.12	2.71				

The above table shows:There was a statistically significant difference at the level of significance (0.05) between the mean scores of the experimental group who studied according to the Edelson model in the pre-test and the average scores of the experimental group in the post-test who also studied according to the Edelson model in mathematical correlation skills for post-test students.

To investigate the secondary hypotheses derived from the second hypothesis which states:

There was no statistically significant difference at the level of significance (0.05) between the mean scores of the experimental group who studied according to the Edelson model in the tribal test and the mean scores of the experimental group in the post-test who also studied according to Edelson's model Linking mathematics with other sciences, and the skill of linking mathematics to everyday life).

The scores of the tribal and post-test tests were calculated in (the skill of linking the fields of mathematics, the skill of linking mathematics with other sciences, and the skill of linking mathematics to everyday life) and correct their papers and find the total score for each student in the tests after calculating the arithmetic mean and the standard deviation of the students of the tribal and remote testing separately, as shown in Table (8).

Table (8)

The results of the T-test to find out the significance of the difference between the average scores of students in the tribal and remote tests in the skill of linking the fields of mathematics, the skill of linking mathematics with other sciences, and the skill of linking mathematics to everyday life

Skill type	Experimental group	Sample	Arithmetic mean	Standard deviation	Freedom degree	T- value		Statistical significance at level (0.05)
						Calculated	Table	
The skill of interdependence mathematics fields	Pre	32	4.42	1.37	33	12.785	2.037	Statistical significance
	Post		8.33	1.34				
The skill of linking mathematics with other sciences	Pre	32	3.91	1.16	33	10.737	2.037	Statistical significance
	Post		6.15	0.91				
The skill of linking mathematics to everyday life	Pre	32	3.85	1.33	33	13.316	2.037	Statistical significance
	Post		8.30	1.47				

The table above shows There was a statistically significant difference at the level of significance (0.05) between the mean scores of the experimental group who studied according to the Edelson model in the pre-test of the correlation between the mathematics fields and the average scores of the experimental group in the post-test which were also studied according to the Edelson model Mathematics, the skill of linking mathematics with other sciences, and the skill of linking mathematics to everyday life) for the benefit of post-test students.

Second: interpretation of the results

- The students of the experimental group who studied according to the Edelson model exceeded the students of the control group who studied in the usual way in the mathematical bonding test, which includes the three skills (linking the fields of mathematics, linking mathematics with other

sciences, 2016) and (Al-Wadia, 2017) and (Al-Khalili, 2018), who examined the effect of other variables in mathematical interdependence.

The researchers believe that the reasons for this superiority in the skills of mathematical interdependence may be due to the following reasons:

1. The use of Edmog Edelson led to the exploitation of information prior to students by linking to the new information, which makes them take root in their knowledge and then increase their level of superiority in the skills of mathematical interdependence.
2. Edelson's educational model emphasis on the connection between the subject and the environment of the students, which led to the treatment of students in the experimental group desire and enthusiasm in the classroom, which in turn led to the storage of information in memory correctly can be retrieved quickly and easily when needed, Positively on the achievement of students in the test of mathematical interdependence skills.
3. When using Edelson's model, students' learning process is attractive and exciting because it provides many opportunities for active interaction between students and their surroundings, which in turn leads to the development of their mathematical attachment skills.

Third: Conclusions

In light of the findings of the current research we can conclude the following:

- The use of the Edelson model as a teaching method has shown a significant positive impact in developing the skills of mathematical interdependence as a whole and in each of his skills in second-grade intermediate students.

Fourth: Recommendations

1. To draw the attention of officials in the Ministry of Education and the Institute of Educational Development to establish training courses on how to use the Edelson model in teaching, and to encourage teachers of mathematics for the intermediate stage to create the democratic atmosphere within the classroom, and work to create a social education environment that promotes mutual human relations, Achievement of students.
2. Instructing educational supervisors and supervisors in mathematics to urge the teachers of mathematics to follow modern methods of teaching, especially Edelson's model in teaching this article, its importance and its direct connection to students' lives.
3. Enriching the second grade mathematics book with learning situations according to Edelson's model for the appropriate topics in order to develop their mathematical bond and benefit from the positions presented

in this research.

Fifth: Proposals

1. Conduct an analytical analysis of the activities of the mathematics books in order to determine their focus on the skills of mathematical interdependence.
2. Conduct a similar study of the current study in the development of some dependent variables other than the current research such as the development of composite thinking; modify the alternative perceptions of mathematical concepts.

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