

“The effect of the Buxton model on the achievement and deep understanding in the history curriculum for the literary fifth students”

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ABSTRACT:

The current research aims to identify the effect of the Buxton model on the achievement and deep understanding in the history curriculum for the literary fifth students. The experimental curriculum was adopted, and the research sample was chosen from the (Al-Shumookh preparatory School for Girls) to conduct the experiment. The total sample was (60) female students distributed in two divisions (30) students in (A) and (30) students in Division (B).

- The researcher conducted a statistical parity between the two groups of research, promising (112) a behavioral objective.
- Researcher prepared achievement test (40) paragraph objective.
- The researcher used the statistical methods of the t-test for two equal independent samples and after analyzing the results - the researcher concluded the following:

1. The experimental group that studied the effect of the Buxton model outperformed the control group that studied the traditional method, with a statistically significant difference at the level (0.05).
2. The experimental group, which was studied with deep understanding, outperformed the control group that studied the traditional method, with a statistically significant difference at level (0.05).

Keywords:

effect, model, Buxton, achievement, deep understanding, history

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INTRODUCTION

Research problem :

Among the most important problems that appear in the educational field is the enormous amount of information, especially in teaching social subjects. Complaints have also increased about the abundance of concepts, the rigidity of the material and the difficulty of understanding it by the learners. The researcher noticed, through his fieldwork, that the majority of the educated memorize without understanding and awareness of historical information and facts.

It has also been observed in the teaching of the history curriculum, the followers of the old traditional methods and methods of teaching that bring many problems to female learners, lack of awareness of concepts and weakness in their educational achievement. Despite the tremendous scientific and technological developments and advancements, and it is necessary to keep pace with them. However, the reality of the educational process is still suffering from many teaching and educational problems, in some developing countries.

The history curriculum is among the school curricula, which suffers from teaching problems because weakness performance of male and female teachers, Because they do not follow the contemporary teaching methods, and this is reflected in the educated and their

achievement. Because of what they received from information and unconnected concepts and a lack of linking scientific facts (Muhammad, 2013, 9-11).

The researcher also shows that of the educational problems that are reflected in the learners' achievement of the history curriculum is the lack or non-use of male and female teachers of many modern teaching strategies such as strategy, brainstorming, deep understanding, critical thinking, mental maps, and others. In addition to not following contemporary teaching synonyms, such as the educational models of contemporary scholars in education. This becomes a major reason for creating educational problems and attitudes that distinguish contemporary teaching and increases the learning achievement of school curriculum subjects. It is the follow-up of male and female teachers the methods, concepts, strategies, and modern and contemporary models, as well as taking the views and directives of scholars and educational specialists in the field of school curricula because of these opinions have an effective effect on modern teaching and distinguish it from traditional teaching and increase the cognitive achievement and many problems and difficulties that occur in education and teaching of the curriculum Social materials, including the history curriculum.

The importance of research:

It is the responsibility of the Educational and pedagogical process to emphasize, in the first place, the

provision of learning for all educational levels through its various systems and fields. Education as a public field has been affected by the technological and knowledge revolutions that characterized the last decades of the twentieth century and the early years of the twenty-first century. This called for the possibility of making a tangible development in educational practices within our educational institutions at all stages and levels. (Saraya, 2007, 11).

The school curriculum is the focus of the educational and educational process, so it shows us its basic value and its great logic through the positive interaction of the teacher and the learner with the values, concepts and facts contained in these curricula from aspect, On the other aspect, the interaction of the teacher and the learner with the methods and teaching methods, which is one of the effective and important tools in the teaching and learning process, and can be important, including the appropriate and modern educational strategies that have an important function that contribute to achieving the goals of the educational process through educational situations that dare between the teacher and the students according to Specific school curriculum and context.

The importance of these teaching models and their impact on the achievement of the learners is evident in creating an increase in students 'learning and acquiring many facts, concepts and information on the topics of the historical curriculum. In order for the effect of the model on achievement to become an integral part of the learner's cognitive construction of historical facts and concepts, it must be learned better and more precisely by linking them to various examples and explaining them with strategic and modern methods of teaching that the teacher and the learner can reach their goal, understand and realize. This makes the researcher use, in depth understanding with the effect of the (Buxton) model on achievement in teaching the topics of the history curriculum (Abujado, 2000, 36, 339).

(Leih wood. Et. At: 2006) has indicated that the practice of deep understanding encourages long-term and continuous learning, and that failure to understand previous concepts greatly reduces the student's ability to deeply process more complex concepts. And that a deep understanding of these concepts depends on the previous concepts, as he sees that the deep understanding is not only related to specific fields of knowledge, but also about the processes of solving the problem itself, including what is referred to as metacognition processes. And the student's understanding of his own thought processes, in addition to that he sees that finding personal meaning in our life depends on our ability to have a good and deep understanding of what we possess in terms of knowledge and what we can perform and implement from them. (Leih wood. Et. At: 2006).

The researcher can conclude the importance of research regarding the effect of (the Buxton model on achievement and deep understanding) by the following:

- 1) The necessity of adopting modern educational models that emphasize that the student is the focus of the learning process as his ability to learn to inquire grows in order to reach an explanation.

- 2) The importance of the Buxton model in the acquisition and acquisition of historical facts.

- 3) The importance of the history curriculum as it is necessary and important for students at any school stage to learn about the nation's past, present and future.

- 4) The importance of using the Buxton model to increase achievement through the acquisition and retention of experience, skills, and historical knowledge.

- 5) The importance of using deep understanding as a teaching and learning method, and knowing its longevity in increasing achievement and acquiring historical concepts.

- 6) The importance and credibility of this study is that there is no study that has dealt with the effect of the Buxton model and the deep understanding on increasing the achievement of students.

Research objectives:

The current research aims to identify (The effect of the Buxton model on the achievement and deep understanding in the history curriculum for the literary fifth students).

Research hypotheses:

For the purpose of verifying the aim of the study, the following two hypotheses were formulated:

1. There is no statistically significant difference at the level of (0.05) between the average scores of the experimental group students who study according to the Buxton model in the post-achievement test, and the average scores of the control group students who study according to the usual method).

2. There is no statistically significant difference at the level of (0.05) between the mean scores of the experimental group students who study on according to the Buxton model and the average scores of the control group students who study according to the usual method according to the deep understanding scale).

Research limits :

❖ The current research is limited to the following form:

1. Human limits: the literary fifth students.

2. Time limits: the first semester of the academic year, 2019-2020.

3. limits of Place: One of the morning schools of the Directorate of Education, Ramadi District, Al-Shumookh Preparatory School for Girls, for the academic year 2019-2020.

4. The Scientific limits: The Three Chapters of the Modern and Contemporary History of Europe and

America Curriculum for Fifth Grade Literature to be taught by the Iraqi Ministry of Education, 2019-2020.

Define terminology:

❖ **The effect It is defined by:**

- (Dawood) Define it: What remains after the absence of something or magnifying it, and likewise it may be apparent or it may be hidden, which needs research and experiment to stand on it (Dawood, 2008, p.30).
- The effect is procedural: It is the intended cognitive, psychological or motor change that takes place in the two research groups (experimental and control), from the fifth literary class, who are studying modern history of Europe and America, according to the Buxton model, in the collection and deep understanding, and it will be recognized. Through the post-achievement test and the deep understanding scale.

❖ **The model defined by:**

- (Zayer and Dakhl): It is an integrative descriptive plan that includes the process of designing and implementing a specific content or topic, and directing the learning process inside the classroom and evaluation. (Zayer, Dakhl, 2013, p.140).
- The researcher defines the procedural model: it is (a set of logical sequential steps that the researcher uses to prepare study plans to teach fifth-grade literary students for an experimental group of subjects in the book of modern European and American history, and the choice of teaching methods, teaching aids, and appropriate activities)).

❖ **The Buxton model:** he defined it (Al-Saadi): as: a set of educational-learning procedures that use a set of teaching methods based on understanding according to the steps and methods which are (the automated method, the observation method, the (visual, relational) method and the method (abstract, formal)) to guide a process Acquire and understand the concepts of the content of a specific subject (Al-Saadi, 2011, p. 12).

- And he defines procedures: a set of educational-learning procedures organized using a set of teaching methods based on understanding, according to the steps and methods that Buxton came up with, namely (the automatic method, the observation method, the insight method, the abstract method, the formal), to guide the process of collection and deep understanding, The content of the modern and contemporary European and American history course, organized in the ten subjects decided in the experiment, by the literary fifth-grade students, and its effect is measured by the post-achievement test and the measure of deep understanding of the European and American of the history curriculum.

❖ **Achievement: defined by:**

- defined by (Al-Bawi and Ahmad): as the extent to which students comprehend what they have learned from the learning experiences in a particular subject, and it is measured by the grades that they obtain in the achievement test (Al-Bawi and Ahmad, 2013-349).

- Achievement is defined as procedural: the grades obtained by fifth-grade literary students according to the post test prepared by the researcher according to the cognitive content of the book, Contemporary European and American Modern History.

❖ **Deep understanding: defined by:**

- (Cox & Clark): as the ability to use explanatory concepts creatively and lead the ability of teachers and learners to think about problems and create new solutions to these problems, that is, it is a group of mental abilities by which the teacher tries to include a specific subject within the cognitive structure through several aspects (Cox & Clark, 2005,83).
- The deep understanding defines action: it is the learner's ability to meditate and relate to the subsequent and previous information and facts in an organized, logical and progressive framework according to the hierarchy of concepts in the history. It depends on multiple skills such as analysis, understanding, perception and decision-making, and it is measured by the degree that the learner gets in the test prepared for that.

❖ **history: defined by:**

- he defined it (Al-Amin, 1997): that it is a science concerned with studying human relations and past civilizations and to uncover the factors that contributed to the formation of contemporary civilization and the problems of contemporary man. (Al-Amin, 1997, 20).
- The history curriculum defines procedural: what it contains of methodological topics included in the three chapters of the history curriculum (Modern and Contemporary History of Europe and America) for the fifth literary class, which is decided by the Iraqi Ministry of Education for the academic year 2019-2020.

Theoretical framework:

Many educational models have emerged based on the principles of constructivism theory, which focus on construction knowledge for the learner, revealing the previous knowledge he possesses, and confronting the learner with educational situations that raise challenges and encourage competition to reach results and apply them in new situations. We have decided to present a number of educational models based on the theory. Constructivism, including:

1. Model Conceptual Change (Posner Model).
2. The constructivist learning model (Trowbridge and Bybee M).
3. The problem-centered learning model (Grayson Wheatley M). (Zaitoun and Zeitoun, 2003, p. 195).
4. Buxton model: Buxton's model is based on the constructivist theory (epistemology that asserts) that knowledge is a text and a prerequisite through which an individual's experiences and his interactions with the elements and variables of the world around him construct. And that the student reaches knowledge through building a cognitive system, organizing and interpreting his experiences with the variables around

him that he perceives through his cognitive apparatus, in a way that leads to the formation of a self-meaning, and this continues with the student passing through experiences that enable him to connect the new information with what he has meaning)). (Abbas, 2011, p.19).

❖ **Genesis of the model:** At the beginning of the mid-seventies, the educational scientist, Skemp, in 1976 developed a teaching model for understanding, and it was the first model of learning that distinguished it with two methods of automatic and relational or insightful understanding. (Skemp, 1976, p2-27). After discussing the aforementioned model by the educational scientist (Buxton) in 1976, he found that there are deficiencies in some aspects of the previous model and stated that in some educational curricula, the teacher needs more than two methods of understanding in the classroom, so the Buxton model can be described. (Buxton 1987) ((As teaching methods based on understanding, and the basic idea of the model is based on helping students build their knowledge through the four stages of understanding: Rote Style (deaf), Observational Style, Visual Style and Abstract Formal style. Accordingly, the comprehension model is based on four methods, which will be mentioned: (Buxton, 1987: p36). Al Sharif (1996) mentions the stages of the model (Buxton, 1987) with four methods he called levels of comprehension (Levels), namely:

1. Rote Style : This method relies on automatic memorization (the deaf), where the information is printed on the memory and strengthens and reinforces the historical concepts through repetition to memorize it by means of repetition. This happens, for example, when the student memorizes the historical text in a deep understanding method.

2. Observational Style: This method is based on recognizing and distinguishing between the areas of beauty in the historical text, and the ability to discover the defect found in historical concepts that work as a thought in analyzing previously understood facts and situations and working to come up with a solution to more general rules for similar situations. This method is deeper than the automatic method, because it works as a transition from the automatic to the insight.

3. Visual Style: This method is based on realizing ((relations between primary and secondary concepts and conceptual structures to form an integrated structure of the process)) analyzing historical facts, so that the student can understand history and increase his cognitive achievement in that. This method, which the scientist called Skemp in his model (relational style and in light of the definition of (Skemp), That (the visual Style): is the method that depends on the realization of the relationship between structure and meaning, the comparison between an idea and another idea in terms of content, and the deduction of the values and trends

common in historical texts to form an integrated structure for the process of learning history.

4. Abstract Formal style: This method is concerned with identifying suggestive expressions in historical texts, interpreting symbols and writings, and predicting new historical facts (Al-Sharif, 1996, 286-287).

The second axis: deep understanding:

- What is a deep understanding: It is the learner's understanding of the educational position as a whole, which is a basic factor in reaching the correct conclusions and appropriate indications that lead him to solve problems and then take appropriate decisions.

- Whereas, defined by (Qutami and Amor, 2005): a conscious mental cognitive process that the student undertakes to generate meaning or experience with what he interacts with from various sources such as perceptual observation of the phenomena he encounters and which are related to the experience, reading something about it, or seeing illustrations, Or participate in the discussion of this experience, as this cognitive process aims to develop the knowledge stored in the student's life in order to generate new information and experiences. (Qatami and Amour, 2005, p.82).

(Leith wood et.al 2006) indicated that the practice of deep understanding encourages long-term and continuous learning, and that failure to grasp previous concepts dramatically reduces the student's ability to deeply process more complex concepts, and that a deep understanding of these concepts depends on previous concepts. From the above, it is clear that there is agreement between educators in some aspects of deep understanding, such as interpretations, questioning and decision-making, which is what the researcher adopted in this research.

As for the changes that the student makes by using scientific models and theories to clarify ideas, scientific events, events and phenomena, the process of building and understanding changes depends on the broad scientific content of those in charge of change, and the changes are divided into several types, including explanatory explanations, causal explanations, statistical interpretations and historical explanations.

While Al-Jahoori (2012) believes that deep understanding is a process that goes beyond the superficial knowledge of learning to refer to the student's thinking in an integrated and multi-dimensional manner prepared according to the conceptual framework, and that the outward perspective of deep understanding is attributed to the role of the student himself, but the teacher has two important roles: **The First:** Providing students with new ideas and strategies in an interactive way, and providing support and guidance while providing the appropriate educational environment.

The Second: includes in the detection and diagnosis of the depth of available knowledge and what is already known, and the search for means by which the

interpretation of activities, research, investigation and exploration to form a further and deeper understanding. The importance of learning with understanding is confirmed by the student's possession of new organized knowledge of concepts, principles and procedures, which makes him differently. In order for the student to become an expert with broad knowledge and experience in the field of study, his role should not be limited to knowledge acquisition only, but he must have a general perception or understanding. Topics and ideas that facilitate meaningful-based learning and achieve deep understanding (Al-Jahoori, 2012, p. 28).

Deep understanding skills:

Deep understanding skills are represented in: interpretation, questioning, and generative thinking, as its dimensions are: fluency and flexibility, imposing assumptions, forecasting in light of the data, and making decisions. In this, the researcher sees deep understanding skills represented in interpretation, and the two dimensions of generative thinking (prediction, intellectual fluency) and decision-making.

Arab studies that dealt with the Model Buxton, including the following:

1) A study (Al-Saadi, 2011): The study aimed to identify ((the effect of using the Buxton model in acquiring mathematical concepts and the trend towards mathematics among the second intermediate students. The study sample consisted of (56) female students from the second intermediate students, I prepared the mathematical concepts acquisition test consisting of (54) objective items of the multiple test type, and I also prepared a test to measure the direction of (30) items. After applying the two tests, the researcher used the t-test for two independent samples (t-test) to reward the two groups and to know the significance of the difference in the selective results, and the results showed:-

- There is no statistically significant difference at the level of (0.05) between the mean scores of the experimental group students and the average scores of the control group students in the mathematical concepts acquisition test.

- There is a statistically significant difference at the level of (0.05) between the average scores of the experimental group students and the average scores of the control group students in the trend toward mathematics scale in favor of the experimental group.

2) A study (Mu'nis, 2015): The study aimed to investigate the effect of the Buxton model on the acquisition and retention of geographical concepts among second intermediate students. The sample of the study consisted of (67) students from the second intermediate grade, divided into two groups (experimental and control), where the experimental

group included (33) students, and the control group (34). The researcher prepared the geographical concepts acquisition test consisting of (50) objective items of the multiple test type. After the end of the experiment, which lasted three months, and after applying the test, the researcher used the T-test for two independent samples (t-test) to reward the two groups and to know the significance of the difference in the final results, and the results showed:-

- There was a statistically significant difference at the level of (0.05) in the acquisition of geographic concepts and retained between the students of the two groups, and in favor of the experimental group (Mu'nis, 2015).

The second axis: Studies that dealt with deep understanding:

1) Al-Sayed's study (2014): This study was conducted in Egypt. This study aimed at the interaction between the scaffolds of education in the environment of web-based learning, the superficial learning method, and (deep understanding) in achievement. The study sample amounted to (85) students, this study used the experimental method, and from the research tools (deep understanding test), the results emerged:-

- The students of the experimental group with the simple, deep learning style, who studied using the domains of learning, excelled as objective practice led to meaningful learning and abstract concepts turned into tangible concepts (Al-Sayed, 2014).

2) Al-Otaibi study (2016): This study was conducted in Saudi Arabia, and it aimed to know the effect of the cognitive teaching model in developing the dimensions of deep understanding in the monotheism approach among the experimental secondary students. The study sample reached (64) students, and from the research tools (a test to measure deep understanding), the results showed:

- The effectiveness of the cognitive teaching model in developing the dimensions of deep understanding in the Tawhid curriculum for high school students as a whole and the development of the dimensions of deep understanding in both the explanation, clarification, interpretation, application, and perspective (Al-Otaibi, 2016).

Research methodology and procedures:

The researcher used the experimental method that suits the nature of his research, and the researcher adopted the experimental design with partial control with two equivalent groups. The first (experimental) was studied according to the Buxton model, and the second was the control group studied according to the usual method. The same post-test to measure achievement and deep understanding, as shown in Table No. (1) as follows:

Table (1)				
The group	Parity	Independent variable	Dependent variable	The tool

Experimental	1- Chronological age. 2- Academic achievement for parents. 3- Intelligence. 4- Previous information. 5- Test deep understanding.	Buxton model	1-Achievement.	-Achievement test
Control		The usual way	2-Deep understanding	-Test Deep understanding

The researcher chose (Al-Shumookh preparatory School for Girls) intentionally for the purpose of applying the experiment in it. It contained two divisions for the fifth literary class. The total number of female students is (65) female students. The two research groups were distributed between two divisions, so the choice was randomly assigned to Division (A) to

represent the experimental group that is taught according to (Paxton Model) 'and Division (B) to represent the control group that is taught in the usual traditional way, and after excluding statistically (5) female students who failed The number of the total research sample has become (60) students for the two divisions.

The group Variables	Experimental (30) students		Control 30) students		T-test at (0.05)	
	the middle	variance	the middle	variance	Tabular	Calculate d
Cognitive flexibility	16.77	11.32	17.16	13.34	2.00 At a degree of freedom of 58	0.423
Chronological age	210.766	237.633	218	215.379		0.03
Previous knowledge	53.009	136.09	52.33	159.95		0.358
IQ score	32.33	82.91	32.66	82.91		0.099

Academic achievement for fathers: The researcher obtained data on the educational achievement of the parents. The researcher used the chi-square (X^2), and the results showed that the calculated value of (X^2) (0.01) is less than the value of the Chi-Square (X^2) tabular (7,082) and at the degree of freedom (3) And the level of significance (0.05), which indicates that the two research groups are statistically equivalent.

Academic achievement for mothers: The results showed that the calculated value of (X^2) (0,06), which is less than the value of (X^2) tabular (5.99), at the degree of freedom (2) and at a level of significance (0,05), which indicates the parity of the students of the two groups.

Research into high achievement for mothers.

Research requirements:-

1) Determine the scientific material: The researcher specified the scientific subject that will be studied during the period of the experiment (the ten subjects) of the three chapters, which are (Chapter One, Chapter Two, and Chapter Three of the Modern and Contemporary History of Europe and America book, which is decided by the Ministry of Education for the academic year (2019-2020). The following table shows the (ten subjects) to be taught to the students of the two research groups during the period of the experiment. It also shows the number of substantive paragraphs with a total of (40) paragraphs to achieve the two dimensions.

Table of achievement test specifications

No.	subject	number of pages	Proportion. Importance. Content	Percentage of behavioral Objectives						Total
				Knowledge 26%	understanding 16%	Implementation 15%	Analysis 16%	Composition 18%	Correction 9%	
1	The French Revolution 1789 AD.	7	13%	1	1	1	1	1	-	5
2	Preludes at the French Revolution.	7	13%	1	1	1	1	1	-	5

3	The position of European countries on the French Revolution	7	13%	1	1	1	1	1	-	5
4	The independence of the United States of America from British colonialism and the nature of its political system 1775-1865 AD	5	9%	1	1	1	1	1	-	5
5	American Revolution and the independence of the United States of America	5	9%	1	1	1	1	1	-	5
6	The nature of the political system in the United States of America	6	11%	1	1	1	1	1	-	5
7	The American Civil War 1861-1865 AD	2	4%	-	-	-	-	-	-	-
8	Europe revolution during the nineteenth century	6	11%	1	1	1	1	1	-	5
9	Revolutions of 1830 AD in Europe	7	13%	-	-	-	-	-	-	-
10	The national revolutions of 1848 AD in Europe	2	2%	1	1	1	1	1	-	5
Total		54	100%	8	8	8	8	9	-	40

2) Then the researcher formulated (112) behavioral objectives distributed over the six levels in Bloom's classification in the cognitive domain (knowledge, understanding, Implementation, analysis, Composition, Correction).

3) Preparing the teaching plans: The researcher prepared plans for the two research groups according to (Buxton model) for students of the experimental group, other plans for the control group students. The researcher presented two educational plans to a group of experts and specialists in curricula and methods of teaching for the course of history, for the purpose of improving the formulation.

*Among the requirements of the current research are two exams: Achievement test in history and measure of deep understanding in history.

- Formulation of achievement test items: The researcher prepared an achievement test of the multiple-choice type (40) items. The test was validated. The test was presented to a group of experts and all its items were approved.

- Find the difficulty factor of the paragraphs: and it ranges between (0.42, 0.52), and this indicates that all the test items are acceptable and applicable, and the difficulty factor is appropriate. He found the coefficient of excellence for the paragraphs and found that they range from (0.35-0.45).

- Stability of the test: - The researcher calculated the test reliability coefficient by the method of half-partitioning successively dividing the test items into two equal parts, and the value of the correlation coefficient between the two halves was (0.73), then this value was corrected using the Spearman - Brown equation, reaching (0.84).

- The final image of the test: After completing the statistical procedures related to the test and its items, the exam became a final image consisting of (40) items for the post-achievement test.

Deep understanding test:

The researcher prepared a deep understanding test consisting of (40) items and presented it to a group of specialists to judge the validity of its paragraphs. Therefore, this test is considered to have ostensible validity.

The researcher applied the deep understanding test on a randomly selected sample of (20) students without the original research sample for the purpose of (calculating the time taken for the answer and ensuring the clarity of the paragraphs and instructions). The deep comprehension test was applied to an exploratory sample chosen randomly, consisting of (50) students after Correcting the students' answers. The students' deep comprehension test scores were arranged in descending order, and they were distributed into two groups (25) upper groups and (25) lower groups.

The difficulty factor was calculated for each paragraph of the test, and its values ranged between (0.41-0.62), and the discriminatory strength of each paragraph of the deep understanding test was calculated and found that it ranged between (0.31-0.44), so the test items are acceptable in terms of their discriminatory ability, It is found that the false substitutes are negative coefficient of characterization.

Displaying and interpreting research results:

First: Results of the post-achievement test:

Verify the first null hypothesis, which states the following: There is no statistically significant difference at the level of (0.05) between the average scores of the students of the experimental group who

study on according to the Buxton model and the average scores of the students of the control group who study according to the usual method of (achievement test). After the researcher applied the post-achievement test on the two research groups (experimental and control), the researcher used the t-test for two independent, equal

samples (t-test) to find out the significance of the statistical difference between the two research groups, and the statistical treatment of the scores of the students of the experimental and control research groups appeared in the post achievement test. , As shown in the following table:

the group	Number	Arithmetic average	variance	T-Test		Degree of freedom	Statistical significance
Experimental	30	28,833	18,281	Calculated	Tabular	58	statistical significance
Control	30	21,533	17,498	5,572	2,00		
Total	60						

The table shows the superiority of the female students of the experimental group who studied using the Buxton model over the control group students who studied according to the usual method of academic achievement. Thus, the null hypothesis is rejected and the alternative is accepted, i.e. there is a statistically significant difference at the level of (0.05) between the

mean scores of the experimental group students who study according to the Buxton model and the average scores of the control group students who study according to the usual method in the achievement test for the benefit of the experimental group.

$$\text{ETA Square } (\eta^2) = \frac{T^2}{T^2 + \text{Degree of freedom}} = \frac{(5.572)^2}{(5.572)^2 + 58} = 0.35$$

The literature on the subject indicates the adoption of the following table as a reference to determine the levels of effect size for all measures of impact size:

The tool used	Effect size		
η^2	Small	medium	large
	0,01	0,06	0,14

When applying the equation, a value of ($\eta^2=0,35$) is found according to the table, the effect of the size of (Paxton's model) on the dependent variable (achievement) is large.

Deep understanding Test Results:

Verify the second null hypothesis which states:
(There is no significant difference at the level of (0.05)

between the average scores of the students of the experimental group who are studying according to the Buxton model and the average scores of the students of the control group who study according to the usual method according to the scale of deep understanding.

The researcher used the t-test for two independent, equal samples (t-test), to find out the significance of the statistical difference between the two research groups, as shown in the following table.

the group	Number	Arithmetic average	variance	T-Test		Degree of freedom	Statistical significance
Experimental	30	21,866	9,774	Calculated	Tabular	58	statistical significance
Control	30	18,4	9,351	4,268	2,00		
Total	60						

It is evident from the table that there are statistically significant differences between the two research groups

(experimental and control), in the dimensional deep understanding scale, and in favor of the experimental group, and thus rejects the null hypothesis, and the hypothesis accepts the ambiguity which states that: (There is a statistically significant difference at the level of (0.05) between the average grades of the experimental group students who study according to the Buxton model and the average scores of the control group students who study according to the usual method

according to the deep understanding scale), and this indicates the superiority of the experimental group students over Control group students. The size of the effect was calculated according to the following equation:

$$\text{ETA Square } (\eta^2) = \frac{T^2}{T^2 + \text{Degree of freedom}} = \frac{(4.268)^2}{(4.268)^2 + 58} = 0.24$$

When applying the equation, the value of ($\eta^2 = 0.24$) is found. According to the table, the effect of the size of (Paxton's model) on the function variable (deep understanding) is large.

Second: Interpretation and discussion of the results:

It is evident that there is a statistically significant difference between the scores of the students of the experimental and control groups at the level of significance (0.05), and the researcher touches the effectiveness of the model (Buxton) during the teaching process, Through the interaction of the students and their competition in participation and the method of answering the questions that are asked by the researcher during the explanation of each topic and the interpretation of each answer by the students, which indicated an understanding of the topic.

The experimental group also outperformed the average scores of the post-achievement test over the average scores of the post-achievement test of the control group, and the researcher believes the reason for the existence of statistical significance between the two groups is the good focus in the lesson, and actual and serious participation in learning because the model consists of four methods of understanding, as it is deduced from Cognitive orientation and as follows:

Starting the lesson using the automatic method has a clear effect on stimulating students' motivation to learn and being attracted to the lesson, and preparing them not to receive new information. Then comes the observation step: to arouse the students' attention to the relationships in the historical cognitive structure, to pave the way in turn to the conceptual method step, to relate the previous information that the students had previously studied with the new lesson. This helped to distinguish the new facts and concepts from the facts and concepts that are already present in the cognitive construction of the experimental group students, which makes the learning process easy. Then the formal method step in which the relations reached in the previous step are deepened.

The method of discussion with the students of the experimental group, which is used to define each of the main and sub-concepts, has contributed greatly to

distinguishing its meaning, and defining its characteristics, as learning is more persistent after error than learning without error. Giving students the opportunity for meaningful scientific dialogue and discussion increases their awareness of the outcomes that have been achieved, as it makes students able to express and reduces shyness and fear and breaks their usual routine.

The method of observation during the duration of the experiment had a clear effect on enhancing learning, increasing its effectiveness, and making it longer lasting among the students of the experimental group. And that the female students in the experimental group excelled in the test of deep understanding, as it is among the modern models that make students the focus of the educational process, and this is what the results of deep understanding showed.

Sources and references.

- 1- Abujado, Salih Muhammad Ali (2000 AD), Educational Psychology, 2nd Edition, Dar Al-Masirah for Publishing and Distribution, Jordan.
- 2- Al-Amin, Shaker Mahmoud and others (1997) Fundamentals of Teaching Social Subjects, 1st Edition, Iraq, Safadi Printing.
- 3- Dawood, Muhammad (2008 AD) Dictionary of Semantic Individual Differences in the Holy Qur'an, Dar Gharib for Publishing, Cairo.
- 4- Zayer, Saad Ali, and Dakhl, Sky Turki (2013 AD) Modern Trends in Teaching Arabic Language, Part One, Dar Al-Murtada', Al-Mutanabi Street – Baghdad.
- 5- Zaitoun, Hasan Hussein, Kamal Abdel Hamid Zaitoun (2003 AD) Learning and Teaching from the Perspective of the Cairo Constructivist Theory.
- 6- Saraya, Adel (2007 AD) Instructional Design and Meaningful Learning, 2nd Edition, Dar for Publishing and Distribution, Jordan.
- 7- Abbas, Muhammad Khalil and others (2011 AD) Introduction to Research Methods in Education and Psychology, 3rd Edition, Dar Al Masirah for Printing and Publishing Amman - Jordan.
- 8- Qatami, Yusef Mahmoud and Amr Omaira Muhammad (2005 AD) Habits of Reason and Theoretical and Application Thinking, 1st Edition, Dar Al Fikr, Amman.

- 9- Al-Sayed, Mostafa (2014) The effect of a web-based interaction between educational articles and a deep surface learning method on achievement and decision-making. Testing of learning resources for students of the College of Education, Journal of the College of Education, Port Said, Egypt, Issue 16.
- 10- Al-Bawi, Majda Ibrahim, and Ahmed Obaid (2013 AD) The effectiveness of a proposed program in the achievement and development of scientific and ethical awareness and critical thinking, 1st Edition, Al-Safa - Jordan.
- 11- Al-Saadi, Furat Ghani Nouri (2011 AD) The effect of using the Buxton model in the acquisition of mathematical concepts and the trend of growth of the mathematics curriculum for the second intermediate students, a master's thesis, unpublished College of Education, Ibn al-Haytham - University of Baghdad - Iraq.
- 12- Al-Sharif, Ahmed Al-Arifi (1996 AD) Introduction to Teaching the proposed University Mathematics, Tripoli, Libya.
- 13- Al-Jahoori, Nasser (2012 AD) The Effectiveness of the Self-State Strategy (K.w.h) in developing a deep understanding of physical concepts and metacognitive skills to start the eighth grade, Sultanate of Oman, Arab Studies in Education and Psychology.
- 14- Mu'nis, Muhammad Hashem (2015), the effect of the Buxton model on the acquisition and retention of geographic concepts among the second intermediate students, Iraq, Journal of professor. Issue 212.. Issue 212.
- 15- Muhammad Abd al-Basit, Abbas (2013 AD) The effect of the Skman model on the acquisition of historical concepts of the literary fifth students, an unpublished master's thesis - College of Education - Ibn Rushd - University of Baghdad.
- 16- Cox,K.&Clark (2005) : The use of formative quizzes for deep learning file,heep://A Deep Learning and foromative Quizzes htm.
- 17- Skemp , (1976) R Relational understanding and instrumental understand ding mathematics Teaching , No 11 .
- 18- Leith Wood, K, medie,K,Bascie , N, Rodrigue , A,& Moore,S, (2006) : Deep Understanding for all students : The oVerriding Goal for schooling . in