

The Effectiveness of Teaching by Methods of Reviewing Understanding in The Acquisition of Cognitive Processing Skills University Students Through Electronic Education (Within Corona Pandemic)

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Abstract

The aim of the research is to verify the effectiveness of teaching by methods of reviewing understanding in the acquisition of cognitive processing skills by students / university students via the Internet (in light of the Corona pandemic) and the sample was identified with females (students). To achieve the goal of the research, the design with two groups (experimental and control) was chosen; one of them is partially controlled, and the other is partially controlled and from the same post-test. The two researchers chose the first group randomly and by lottery from the fourth stage (finished) in the kindergarten department to represent the experimental group, which consists of (15) female students, and they were taught using teaching methods for electronic understanding; And another control group, numbering (15) students, who were taught by the usual electronic lecture method. Within the specialized teaching methods, and for a group of educational topics in the first course of the academic year 2020-2021. One of the two researchers taught the two research groups for a period that lasted for a whole month within the first course after verifying the statistical equivalence between the students of the two research groups in the following variables: the previous year's score for general teaching methods, and Raven's intelligence test, the students' tribal scores on the cognitive processing skills scale For information; and the degrees of achievement prior to the first month in a specialized methods subject. To analyze the data statistically, the arithmetic mean, the standard deviation, and the t-test for two independent samples were used: The results revealed that there are differences between the experimental and control group on the cognitive processing skills scale and in favor of the experimental group using the methods of reviewing the understanding and at the level of significance (05,0).

In light of the research results, some recommendations were made; of which :

- The necessity of applying teaching methods for understanding in the teaching of various electronic or physical subjects.

To complement the research, several proposals were developed; of which:

- Conducting research and comparative studies between teaching methods for understanding and other teaching methods to

determine the effect or effectiveness of either of them on the dependent variables of achievement and acquisition of mental and performance skills.

Keywords: *Methods of Reviewing Comprehension, Cognitive Processing Skills.*

Chapter One: Search Framework

First. The Search Problem:

We live today in a rapidly changing world in various areas of life, and in order to keep pace with these changes, the individual must possess the methods of dealing with them. Today's world is a world of challenges, and perhaps the most prominent of these challenges are the rapid changes that have faced the whole of humanity since 2020 and the spread of the Corona pandemic, which required the search for solutions to this general problem; The trend towards e-learning was one of the most prominent alternative solutions to confront this problem. The trend towards e-learning has been made in educational institutions in Iraq, including university education. The trend towards e-education in light of the conditions of the academic year (2019-2020) and the spread of the Corona pandemic and the application of the policy of social distancing has burdened the elements and capabilities of the educational process from students, professors and administration And organizational, technical and applied capabilities, and in order to identify the extent to which the goals of university education or part of them have been achieved by relying on e-learning, including the integrated one, it is necessary to research and experiment. Therefore, the problem of the current research is determined in identifying the effectiveness of using the methods of reviewing the understanding in the acquisition of university students skills to process knowledge in educational topics by moving towards e-learning in light of the Corona pandemic. This research problem can

be summarized in the following question:

- *What is the effectiveness of the methods of reviewing understanding in university students' acquisition of informational knowledge processing skills through e-learning in light of the Corona pandemic?*

Second: The Importance of Research

That the investment of information becomes more important in the youth stage; As this age group is the beating heart of society and the mainstay of its renaissance in the processes of change (Ibrahim, 1999: 16). The university student is at the height of the youth stage; This is the stage that brings the young person to responsibility and real knowledge of the requirements of the age of science and technology and rehabilitation to think about solving the problems of society and raising the production process and pushing it forward (Al-Tikriti, 1990: 115). The student at this stage works to develop his entity and enjoys intellectual excitement, broadening the horizon, and continuous contact with new ideas. Improving the scientific and cognitive level of university students requires focusing on skills and methods that develop the ability to learn and comprehend, and the development of ways and methods of thinking of all kinds in conscious decision-making, and this is not to be filled with facts, concepts and scientific and human ideas. The information that is presented to them in itself does not teach them. Rather, what teaches them is their organized responses to these facts and information by perceiving them in a comprehensive way and thinking about them in a way that makes them easy to apply and use to the fullest extent (Ghadfa, 2016:

2785

138).Therefore, acquiring knowledge processing skills is an important matter for university students to meet the challenges of the age in enabling them to invest information. The lesson is not in the presence of information, but in the availability of the ingredients for its investment by the conscious, educated beneficiary to be directly reflected on the various aspects of life.The finished stage of university education is important and fateful, according to which the student's fate of success or failure is decided. He achieves his goals in the event of success that satisfies the various aspects of his personality and feels his new responsibility in building his own entity (Al-Douri, 2002: 26).The interest in the numbers of university students comes through paying attention to learning and education, which are considered one of the necessities of life. Through them, humanity advances, nations rise, and peoples excel (Al-Naji, 2002: 10) and they are the basis for reform and the basic basis that the nation needs to face changes and take a leading position in the ride's human civilization.

Third. The Purpose of The Research

The current research aims to:

Recognizing the effectiveness of teaching methods for understanding in the acquisition of cognitive processing skills by university students through e-learning in light of the Corona pandemic.

Fourth. The Research Hypothesis

In order to achieve the goal of the research, the following null hypothesis was developed:

- There are no statistically significant differences at the level (0.05) between the acquisition level of the experimental group of students who

studied electronically by teaching methods for understanding, and the acquisition level of the control group of students who studied the same subjects according to the electronic lecture method on the cognitive processing skills scale.

Fifthly. The Limits of Research

The search was limited to the following limits:

- Spatial boundaries: Wasit University - College of Basic Education.
- Time limits: the academic year (2020-2021).
- Human limits: - university students in the fourth (finished) stage, in the Kindergarten Department, within the morning study.
- Objective limits: educational topics in specialized methods.

Sixth. Defining Terms

First. Teaching for Understanding

Wiggins & Mctighe (2005) defines it as: a teaching method in which teaching processes are integrated into design and evaluation, focusing on making meaning and creating understanding with the student's activity and efforts to generate new ideas that he applies in unfamiliar contexts.

As for Khalaf (2016: 8), you define it as: a teaching approach that emphasizes students' practices and performance tasks to generate knowledge in their own way in order to achieve understanding.

The two researchers define it for the purposes of the current research as:

One of the teaching methods that focus on the participation of female students in the educational process in order to focus, study and perform in order to achieve

comprehension (understanding) by performing a set of procedures and tasks identified by the two researchers in conducting their experiment.

Second: E-learning:

Salem (2004: 289) defines it as: an educational system to provide educational or training programs for learners or trainees at any time and any place. Using interactive information and communication technologies to provide a multi-source, synchronous and asynchronous learning environment based on self-learning and interaction.

Zeitoun (2005: 24) defines it as: presenting electronic educational content via multimedia based on computers and networks to the learner in a way that allows him to interact actively with this content and with his colleagues and teachers in a synchronous or asynchronous manner in a place and time and at a speed that suits his circumstances.

As for this current paper researchers, they have defined it for the purposes of the current research as “The two female teachers/researchers teach and teach with methods in order to understand educational topics in a specialized teaching method for students of the fourth stage (finished) in the Kindergarten Department through various electronic media in e-learning platforms from (classroom; Google meet)”.

Third. Cognitive Processing Skills:

- Cognitive skills.

It is linguistically defined “ the person’s dowry is a thing, i.e. judge it and become clever with it (The Arabic Language Council, 2001: 593).

Idiomatically, Al-Najjar (1960) defines skill as: “the ability of a person to do something easily and accurately, and the skill is either physical, physical, mental or mental.”

Cognitively ,Al-Serafy (2009: 227) defines it as a complex mixture of concepts, ideas, theories, rules and procedures that guide actions, decisions and long studies in a specific field, and it is represented in the form of general and abstract information that is suitable for use in general. Ibrahim (2005: 14) as: cognitive procedures that include observation, comparison, conclusion... and other procedures. Waqtet (2008: 16) refers to it as “specific processes that we practice and intentionally use in processing information.” Ali (1998:44) defines it as the ability to perform types of tasks with high efficiency, or it is the ease, speed and accuracy in performing work with the ability to adapt performance in changing conditions.

Fourth. University Students

In the current research, they mean a group of kindergarten students in the completed (fourth) stage at the College of Basic Education / Wasit University for the academic year (2020-2021).

Fifth. Educational Topics:

In the current research, it means a group of specialized teaching methods topics, which include the topic:

- 1- Principles that are taken into account in the methods and methods of raising and teaching kindergarten children.
- 2- Methods and methods of raising and teaching a pre-school child (kindergarten).
- 3- Indoor games and their types for the kindergarten child.

4- Outdoor games and their types for the kindergarten child.

5- The method of discussion, brainstorming, direct experience, style of songs and music.

Which was taught to the experimental group by teaching methods for electronic comprehension, and to the control group by electronic lecture.

Chapter Two: Theoretical Framework

The First Axis. Cognitive Theory

Cognitive Theory

Cognitive theory is concerned with mental processes, treatments, and continuous interventions in the subject of learning (thinking about it) with the aim of organizing it and integrating it into the cognitive learning environment. The cognitive theory assumes that cognitive learning (thinking) is the result of an individual's serious attempt to understand the surrounding factor by using the thinking tools available to him. The quality and quantity of the scientific material that an individual absorbs and is represented by differing opinions, beliefs, feelings, and expectations.

For example, two students may attend a lesson, but each of them differs in the extent to which he understands and how he understands the objective or lesson according to the background and learning style of how the student deals with the presented material (Qatami, 2013: 32).

In an experiment mentioned by (Wittrock) from the University of (UCLA), it turns out that the student's experience of the event he was exposed to, and how he understands and comprehends it, all affect how he learns.

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from the University of (UCLA), it turns out that the student's experience of the event he was exposed to, and how he understood and understood it, all affect how he learned.

The internal event, including the belief, is considered to have more influence than the external event, and therefore epistemologists believe that we learn when we process information and with the influence of goals and internal factors more than they are related to external events and results. In the form of cognitive experience, the cognitive theory assumes that the student is active as he initiates the practice of experiences that lead to learning and searches for information related to solving the problem and reorganizes and arranges what he has of information and experiences to collect and introduce new learning, and instead of being passive and governed by creating the surrounding environment, the student chooses, decides, exercises, pays attention, ignores and makes other responses vitally in order to achieve the goal (achieving understanding). One of the important influences in the cognitive process is what the student brings from experiences to learning situations.

Cognitive psychologists have become more interested in the role of knowledge in education, and that what we have in the form of mental experience is supplied with a large number of what we will learn, remember, and forget (Wittrock, 1986: 15).

1- Cognitive method in the development of education:

The ways in which the student learns from a cognitive theoretical point of view, which differ from the prevailing methods in the authoritarian automated education. The most important characteristic of cognitive learning is that:

It aims to stimulate the student's ability and readiness.

1. Active learning centered around the unique student.
 - Learning that includes objectives that are appropriate in its operations and contents to the learner's interests, feelings, and values.
 - Learning gives the student an opportunity and an important role in the multiplicity of types of experience that should be available in the learning and teaching environment.
 - A learning that takes care of the differences that exist between students' abilities, attitudes, interests, learning methods, their physical and psychological components, their past experiences, and their aspirations for the future, and takes into account them in arousing their interests and integrating them into experiences.
 - A learning that encourages the student to search for relationships between ideas.
 - Learning that builds internal motivation (Intrins is motivation), by which the student aims to reach a solution to the problem, discover something new, or crystallize an original idea.
 - A learning in which the student moves from focusing on repeating the results that have been reached. Focusing on the original research axis in the phenomena, by raising questions, and seeking to search for answers to them.

The goal of developing cognitive learning for students can be achieved by practicing their mental work, in which the teacher creates learning environment

conditions that allow them to launch their thinking, imaginations and intuitions, taking into account the individual differences between their preparations, abilities, tendencies and interests (Al-Fneesh, 1975: 133).

2. Cognitive learning processes:

Qatami (2013: 43-44) summarizes the occurrence of cognitive processing with a number of mental processes and requirements in order to achieve real learning among students; of which :

- Talking to oneself and doing self-mental rehearsals.
- Formulating and identifying a problem is more important than solving it.
- Filling or removing the gap between knowing something and not knowing it.
- Looking at an old problem from a new angle.
- Practicing new methods and processes to break the framework of old knowledge and achieve real learning.
- Linking success in achieving learning goals to work and not abandoning it for any reason; As well as correcting the mistakes committed, as neglecting to correct them is committing other mistakes, which keeps the student away from achieving the goals.
- The practice of contemplation and reflection on past experiences prevents making mistakes; This requires teaching methods that break the old cognitive frameworks of students and encourage them to wisely and reflect on past experiences, situations and events to benefit from them in current cognitive treatments.

3. Knowledge acquisition processes:

It is a set of processes through which cognitive information is processed and

translated into responses and behavior that determine the personality of the individual (the student), which requires:

First. Sensory processes, including (attention, which is determined by the action of the senses and the mechanisms of receiving experience)

Second. Mental operations, including (thinking, perceiving, remembering, and understanding).

1- Strategies and methods for acquiring knowledge:

Despite the multiplicity and diversity of cognitive strategies, according to the principles and laws on which the cognitive theories that show these strategies are based. Khallaf (2011: 9) believes that the following strategies are among the most common; It is the similarity strategy (transfer of knowledge), the imaging strategy (building the representative system), the free production strategy (brainstorming), the analysis strategy (segmentation) and the installation strategy (linking).

Cognitive theory is concerned with many methods that help the student focus and study; Including the methods of reviewing understanding. Some of them have been identified by (Jaber, 2003: 476-478) as follows:

A - Summary Cards

From time to time the cards are distributed to the students and they are asked to write on both sides of them giving directions or instructions that are summed up in the following:

- Based on your study of the topic of the unit, write a big idea that you understood and a summary of it.

- Identify and distinguish something about the topic of the unit that you did not fully understand and put it in a question or statement.

B- Question Box Or Question Board

Here it specifies a location such as: a bulletin board, an e-mail address, a question box, virtual or in person, whereby circumstances allow students, according to their ability, to write questions about their subject related to concepts, principles, or generalizations that they do not understand or understand. This method may benefit students who are uncomfortable with expressing their lack of understanding aloud.

C- Similar to Facilitating Learning (Similar Concept)

From time to time, the students are presented with a similar that reminds them of the concept:

This concept, principle, or process is similar tobecause.....

D- Visual Representation and Representation (Concept Map or Conceptual Fabric)

Here, students are asked to create visual images (e.g., a concept map, flowchart or timeline) to show the subject or process elements or components. This method effectively detects whether students understand the relationship between the elements.

E - Oral Questions:

Oral questions that deepen students' follow-up are used regularly to check understanding; Such as

- How is is similar to or different from it?
- What are the characteristics or parts of?
- In what other ways can we show or explain?
- What is the big idea, the key concept, the moral lesson in?

- How is related to or related to
- What ideas or details can we add to
- Give an example of
- What is wrong with
- What can we infer from
- What conclusions can we draw from
- What question are we trying to answer.....?
- What is the problem we are trying to solve.....?
- What do you assume or take for granted about
- What would happen if.....?
- What criteria could you use to judge/or evaluate.....?
- What is the witness that supports or supports
- What can we prove or support...?
- How can this be viewed from the perspective of
- What are the alternatives that should be paid attention to.....?
- What comparison or strategy can you use to

F- In-Depth Follow-Up Questions Such as:

- Why.....?
- What do we mean by
- How do you know this?
- Can you give an example?
- Do you agree?
- Explain?
- Tell me more?
- Provide your reasons?
- Can you find this in the text?
- What about
- What data and data support your position?

G- Reviewing the Misconception

Students are presented with common or predictable misconceptions about a particular concept, principle or process, and they are asked or asked whether they agree or disagree with it with an explanation of the reason. The review of the misconception can also be presented in the form of a short test consisting of questions Multiple choice or true or false questions.

For the sake of research, some of these methods were used and focused on them in the activities that were distributed to the experimental group throughout the duration of the experiment; which:

- 1- Summary cards.
- 2- Question box or question board.
- 3- Oral questions and questions that deepen follow-up.
- 4- Review the misconception.
- 5- An example of a concept

5- Cognitive Skills:

Cognitive abilities and skills were classified according to the trends and theories that explain them into different classifications. However, there is agreement on a group of abilities identified by the American Association for Curriculum Development, which are:

Focus: includes defining tasks, setting goals, collecting information, and includes observation.

- Questioning and organizing information: includes comparison, classification and synthesis.
- Analysis: includes defining the characteristics of the components and determining the relationships and patterns.

Production: includes deduction, prediction, and representation. Integration and merging: include summarization and reconstruction.

- **Evaluation:** It includes setting criteria, proof and identifying errors (Jarwan, 1999: 428).

In light of those cognitive skills, a scale will be prepared by the two researchers to

measure the acquisition of cognitive processing skills for the two experimental research groups that are taught by comprehension methods and the control group that is taught by electronic lecture after the end of the experiment.

The Second Axis: E-Learning

The rapid development of knowledge and technology has caused a great conflict between the producer and the recipient, which is characterized by the course of the world today and its events of a qualitative and rapid shift in the sources of access to knowledge, which posed a great challenge to the world and developing countries in particular, due to the shortage of material capabilities, and there is no doubt that This is reflected in one way or another on the educational process and how to acquire knowledge from its various sources and multiple technologies, which need a close look to develop scientific and research technology fields, to keep pace with rapid developments in the world.

E-learning is one of the most important contemporary learning methods; It helps to solve the problem of the knowledge explosion and the increasing demand for education. It also helps in solving the problem of overcrowding in classrooms, increases the chances of admission to education, and enables the training of remote workers and the education of housewives, which contributes to raising the percentage of learners and eliminating illiteracy and digital illiteracy (Shbul and Alyan, 2014: 116).

The educational process is no longer a mere transfer of knowledge to the student, but rather a process centered on the education of students; How do they learn? How do they think? How do they use mental habits in carrying out, processing and employing learning activities? How do they build according to what they understand?

The nature of e-learning is to put its means,

tools, and what it needs in the hands of learners of different levels, orientations and purposes, in every place and time. The learner no longer makes a great effort and bears a lot in order to access the information he wants to be stored (Atiya, 2008: 163); In e-learning, learners are equipped with the skills and knowledge they need; The individual's achievement depends on the content of this learning and the means of receiving it. The more the content and media of education are suitable for the student's goals, the greater the achievement and the better results outside and inside the school walls to increase the effectiveness of learning using the best modern technology methods that facilitate and accelerate the teaching and learning processes at the lowest cost and save time (Salim, 2007: 67-68).

1- Types of E-Learning:

E-learning has two methods:

The first method: direct instruction that is followed with class students.

It is defined as that type that depends on the use of electronic means in communication between teachers and learners, or between learners and the institutions to which they belong; This concept includes floppy disk (CD) technologies; and Internet technologies. The second method: is learning that includes arrangements that make it possible for the student to learn it at the time, place and speed that suits his circumstances and capabilities. Accordingly, this learning came open to meet the needs of many who were unable to complete their studies in a direct manner because they were unable to enroll in regular schools because they were occupied with work or profession, or because they had become too old to enroll in schools, institutes and universities (Atiya, 2008: 283 -284).

2- Features of e-learning:

E-learning is concerned with a number of characteristics that gave it uniqueness, as follows:

- His dependence on the means of remote communication in the administration and delivery of education.
- Relying on the Internet, which is known for its high prevalence and coverage capabilities in delivering education programs and linking the parties to the communication process.
- Using a variety of media that prepares the communication process and supports communication and interaction between its parties.
- His need for a small number of teachers in relation to the large number of learners.
- The priority of preparing educational content in a way that saves time, effort and money (Amer, 2015: 70).

3- The Role of the Professor In E-Learning Environments:

It must be noted that the e-learning system has created new jobs for a faculty member other than his traditional roles within the traditional system; the most important step in building an e-learning system is the preparation of the teaching staff who is able to perform his new roles different from his traditional roles, which are represented by:

- Organized content according to the electronic system.
- Author working on the search for new acquaintances.
- An assessor that provides grades and checks the level of students.
- Facilitator of learning processes and designed for the tasks and activities that lead to it.
- Technical maker and consultant who advises and advises students.

Thus, his role in e-learning becomes more

important and more difficult. He is a highly qualified creative person who manages the educational process ably, and works to achieve ambitions in progress and benefit from technology. Here, it is possible for a university faculty member to have other roles in developing electronic educational systems via the Internet, including the following:

- Analyzing the content of electronic systems before submitting them.
- Diagnosing students' needs and characteristics.
- Determine the appropriate strategies for each of the content and the student.
- Determine the appropriate activities for each strategy.
- Determining the appropriate tools for implementing the strategy and activities, and preparing an evaluation form for the content.
- Defining the various objectives and educational strategies and following up on their implementation.
- Participation in the management of electronic educational positions.
- Directing and encouraging students towards implementing educational goals.
- Participation in the process of individual and group interaction.
- Contribute to the formation of various educational groups.
- Update the activities related to the course periodically.
- Evaluate the results of implementing strategies.
- Re-evaluation in light of the results.
- Carrying out technical programming for educational activities and tools and providing technical support to students regarding Internet tools (Al-Halafawi: 2011: 21-22).

4- Principles of E-Learning

E-learning depends on the principles of Brunner's theory of education in several aspects, including:

- Reliance on the principle of taking into account the characteristics of students.
- Preparing educational situations in a manner that takes into account the student's freedom to choose what suits him of abilities and capabilities.
- It depends in providing information in various forms that suit the abilities of students in terms of providing it verbally, written or audible, or presenting it in graphics and static and moving images.
- Centering the learning process around the student and his skills in obtaining information and developing skills.
- Creating an educational environment that helps the student's interest in learning and desire for it in a way that increases the motivation to learn and speed in achieving goals by relying on the nature of his activity (Amer, 2015: 68).

Chapter Three

Research Procedures and Methodology

First. The Experimental Design

The choice of the experimental design must be of high accuracy by controlling the negative and extraneous factors and influences, except for the experimental factor.

In our research, the design with two groups (experimental and control) was chosen; one of them is partially controlled and the second is the same as the post-test, as in Table (1):

Table (1) Scheme of the experimental design of the research

Group	Independent Variables	Dependent Variables
Experimental	Teaching methods for understanding	Acquisition of cognitive processing skills
Controlling	electronic lecture method	

Second. The research community and its sample:

The research community consisted of all female students in the kindergarten department at the College of Basic Education / Wasit University for the academic year 2020-2021; The number of (102) female students is distributed in the following manner and according to the requirements of e-learning.

- The first stage (25 students) In two groups, the first group is (13) students. The second group (12) students.
- The second stage is (17) female students, which is one group.
- The third stage (30 female students) In two groups, each of them has (15) students.
- Fourth stage (30 female students) In two groups, each of them has (15) students.
- As for the research sample, the two researchers chose the fourth (finished) stage of the kindergarten department by random selection using a lottery. The first group of the stage represented the experimental group, which consists of (15) students, which will be taught by the independent variable (teaching methods for understanding), represented by B: (summary cards, question box or question board, oral questions and questions that deepen the follow-up, review the misconception, imitation of the concept) and the other represented the control group, which was studied by

electronic lecture method; and Table (2) illustrates this.

Table (2) Research Sample

Groups	Number of female students
<i>Experimental group</i>	<i>15th</i>
<i>Controlling group</i>	<i>15th</i>
<i>Total</i>	<i>30</i>

Equivalence of the Two Search Groups

Before starting the experiment, the two researchers were keen to ensure that the sample members were statistically equal in some variables, which are:

- 1- The level of intelligence.
- 2- The level of pre-acquiring cognitive processing skills.
- 3- Degrees of previous achievement in specialized teaching methods.

Based on the grades of the first month in a specialized methods test for the academic year (2020-2021).

4-Final grades of general teaching methods for the academic year (2019-2020).

1- IQ level

With regard to the equivalence of the two research groups in the intelligence test of Ravin, the average scores of the experimental group were (27,48) and the average scores of the control group (27,73), and when calculating the significance of the differences between the means using (t-test) the t-test for two independent samples With a degree of freedom (28) and a significance level (0.05), it was found that the sample was equal in its two groups; As the calculated value of the t-test amounted to (1,312) which is smaller than the tabular value (2,048).

2- In the parity between the level of female students in acquiring cognitive processing skills beforehand

The result appeared that the two groups were equal in those skills before conducting the experiment. The calculated t-test value was (0.041), which is smaller than the tabular value (2,048), and therefore there are no differences between the two groups in that variable; and Table (3) shows this.

Table (3) Averages of The Degrees of Acquisition of Cognitive Processing Skills for The Two Research Groups

Group	Sample Number	Mean	Standard Deviation	Calculated T-Value	Tabulated T-Value	Freedom Degree	Significance
Experimental	15th	10,92	1.06	0,041	048,2	28	<i>Statistically Unsignificant</i>
Control	15th	10,99	1.03				

1- Previous academic achievement

In the equivalence between the previous achievement scores of the two research groups (experimental and control); It has been:

A - Conducting the equivalence process between the average total of the first month's grades for specialized teaching methods for the academic year (2020-2021),

and the average grades of the first (experimental) group reached 17.5 degrees; As for the average of the second group (the control group), it reached (17.57) degrees, as the test score is (20) degrees.

B - When calculating the significance of the differences between the arithmetic averages using (t-test) the t-test for two independent groups, it was found that there were no differences between them in the

achievement level of a specialized teaching methods subject, as the calculated t-value amounted to (0.50), which is smaller than

the tabular value (2). 048); Table (4) shows that:

Table (4) The arithmetic means of the scores of the two research groups in the first month test for a specialized teaching methods subject

Group	Sample Number	Mean	Standard Deviation	Calculated T-Value	Tabulated T-Value	Freedom Degree	Significance
<i>Experimental</i>	15	17.50	2.09	50.0	048.2	28	<i>Statistically Unsignificant</i>
<i>Control</i>	15	17.57	2.11				

4- Final grades of general teaching methods for the academic year (2019-2020)

A - With regard to the parity between the two research groups in the achievement test scores in the final general teaching methods subject for the academic year (2019-2020), the two researchers obtained the scores of the two groups from the examination committee. The average score of the experimental group was (80,30), while the average score of the control group was (79,98).

B - When calculating the significance of the differences between the arithmetic averages of the two groups, it was found that there were no differences between them in the achievement level of a general teaching methods subject, as the calculated T-test value was (0,304), while the tabular value was (2,048); Table (5) illustrates the arithmetic average of the scores of the two research groups in the (final) achievement test for the General Teaching Methods subject.

Group	Sample Number	Mean	Standard Deviation	Calculated T-Value	Tabulated T-Value	Freedom Degree	Significance
<i>Experimental</i>	15	80.32	8.57	0.304	2.048	28	<i>Statistically Unsignificant</i>
<i>Control</i>	15	79.98	7.89				

evaluation, integration and inclusion, productivity and obstetrics); In front of each of them, I put two answers:

Third: The Search Tool

A scale was prepared to measure the extent to which students acquire cognitive processing skills; The process of preparing the scale went through the following steps:

1- The two researchers prepared a scale and wrote its items in the light of their experience and with reference to the educational literature and previous studies related to information literacy skills, and the scale may consist of (34) items distributed on those skills (focus, information gathering, remembering, information organization, analysis,

- It applies to me (two degrees)

- Does not apply to me. (1 degree)

1. To verify the apparent validity of the scale items; It was presented to (10) arbitrators in educational disciplines at Wasit University, and they were asked to judge the extent of the clarity of the paragraphs, their affiliation, and their relationship to the research topic and its objectives; And defining the content of the paragraphs in the light of cognitive skills, and the paragraphs agreed upon by (80%) of the arbitrators were fixed,

and the result was to keep all the paragraphs to obtain high approval rates.

2. To verify the stability of the scale through the consistency of the answers to its paragraphs; It was applied to an independent sample of (15) female students twice, with an interval of two weeks. The stability coefficient of Cronbach's thousand was calculated, and the stability coefficient reached (0.83), and this coefficient confirms the consistency between the paragraphs of the scale.
3. To verify the stability of the scale through the consistency of the answers to its paragraphs; It was applied to an independent sample of (15) female students twice, with an interval of two weeks. The stability coefficient of one thousand Cronbach was calculated, and the stability coefficient reached (0.83), and this coefficient confirms the consistency between the items of the scale.
4. After verifying the validity and reliability of the scale, it was applied to the research sample after completing the experiment that extended from mid-December (15/1/2021) to (9/3/2021); note that the scale was applied to the two research groups in presence. On (3/10/2021); See Appendix (2).

Fourth. Search Procedures

The research experiment was applied electronically, as for the measurement and evaluation process, it was done in person as a precautionary measure to prevent leakage of answers among the students to control the experiment.

The control group was taught by electronic lecture method; As for the experimental group, the teaching methods were used for understanding, which are:

1- Summary Cards

2- Question Box or Question Board (Electronic).

3- Review the Misconception.

4- Similar Concept and Oral Questions.

5- Questions That Deepen Follow-Up.

Here, the focus has been on mental activities that develop the process of acquiring cognitive processing skills according to those methods mentioned in Appendix (1).

Chapter Four. Research results and their interpretation

First. Research results and their interpretation:

For the purpose of verifying the null hypothesis test for research in

There are no statistically significant differences at the level (0.05) between the acquisition level of the experimental group students who studied electronically by teaching methods for understanding, and the acquisition level of the control group students who studied the same subjects according to the electronic lecture method on the cognitive processing skills scale.

The t-test was used to compare the differences between the arithmetic mean in the level of acquisition of cognitive processing skills for the experimental group and the average of the control group on the scale prepared for that. The results were as shown in the table below:

Table (6) The results of the T-test in the cognitive processing skills scale for the two research groups

Group	Sample Number	Mean	Standard Deviation	Calculated T-Value	Tabulated T-Value	Freedom Degree	Significance
<i>Experimental</i>	15	13.47	0.08	28	8.166	2.048	<i>Statistically Unsignificant</i>
<i>Control</i>	15	11.02	1.22				

It is clear from the above table that the calculated t-value amounted to (8,166), which is greater than the tabulated t-value, which is equal to (2,048) at the degree of freedom (28) and the level of statistical significance (0.05).

Which means that there are statistically significant differences between the arithmetic mean of the experimental group's acquisition of cognitive processing skills and the average acquisition of those skills by the control group's students, and therefore ... rejects the null hypothesis and accepts the alternative that determines the existence of a difference between the two groups and in favor of the experimental.

It is possible to explain this result that the use of teaching methods for understanding is effective in acquiring the cognitive processing skills of the experimental group students because it may work on developing their mental abilities as a result of focusing on the mental activities related to them.

This result may also be attributed to the fact that these methods focus on the students' thinking as they make an intellectual effort relying on themselves in order to access facts, opinions and information through the activities they undertake, which leads to their acquisition of cognitive processing skills. The methods contribute positively to the self-activation of mental processes from memorizing and understanding the material by providing the opportunity for students to use cognitive processes and high levels of thinking of a quality such as:

A- Concertation.

B- Gathering information.

C- Reminding.

D- Organizing information.

E - Analysis and Assessment. integration

H - productivity and obstetrics.

Second. The Conclusions

1. Teaching with electronic methods for comprehension contributed to raising the level of cognitive processing skills for the experimental group students.
2. The use of teaching methods for understanding in teaching educational subjects electronically has kept teaching away from routine and opened the horizons of participation, knowledge, thinking and practice among students, which made the teaching process more effective.

Third. Recommendations

In light of the search results, we recommend:

- 1- The necessity of the teachers' interest in the course of their teaching by using learning methods for understanding in various courses and subjects, whether electronically or in person.
- 2- University professors in various university specializations should pay attention to planning and preparing for a set of educational and learning activities that encourage their students to understand the material and to contribute to the acquisition of

various mental skills, including cognitive processing skills.

- 3- Students / university students in general should pay attention to following several methods of dealing with knowledge or information in the study subjects assigned to them.

Fourth. Suggestions

1. Conducting research and comparative studies between teaching methods for understanding and other teaching methods to find out which one is more effective in acquiring cognitive processing skills.
2. Conducting research and other studies using teaching methods for understanding, to know their effectiveness in other variables; And on samples and various environments in terms of stage, material and place of study.

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