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The educational program effectiveness based on generative learning in the literary achievement of fourth-grade female students in the sociology subject

Zainab Kadhum Abdul-Hasan, Nedhal Issa Abed
Department of Psychological Science
The College of Education for Human Sciences, University of Basrah, Iraq

Abstract: The goal of the current research is to identify the effectiveness of an educational program based on generative learning in the achievement of fourth-grade female students in the subject of sociology. The two researchers used the experimental research method to achieve the research goal, the research sample consisted of two groups (experimental and control), each group consisting of (30) female students. The two researchers built a research tool to test achievement in sociology, it consisted of (50) multiple-choice items and essay questions. The results showed the superiority of the experimental group that studied using the educational program over the control group that studied using the usual method. The two researchers reached a set of recommendations and proposals through the research results..

Keywords: educational program, generative learning, fourth-grade female students, the sociology subject.

Introduction

Research problem: The problem of the current research is determined by answering the following main question:

What is the effectiveness of a proposed educational program based on the generative learning model in the achievement of fourth grade female students in sociology?

Importance of the research: The importance of the research comes from the following:

1. The importance of the theoretical basis on which the proposed educational program is based, which is based on the generative learning model, which makes the learner the basis and focus of the educational process.
2. The importance of the generative learning model, which focuses on enabling learners to organize and link information and find relationships between them in the subject of sociology, and to move away from memorization and boring narration to get rid of the stagnation that characterizes the academic subject.
3. Also providing teachers with an integrated teaching plan based on the generative learning model, which can work to develop learners' levels of achievement.

4. Its importance for researchers also lies in providing information and data that enable them to conduct further research and studies on this topic.
5. It contributes to addressing the deficiency in the level of female students' achievement in sociology through the use of the generative learning model.
6. It is the first research within the limits of the science of the two researchers that aims to address the shortcomings in the acquisition of the subject of sociology.

Research aims: The current research aims to achieve the following main goal: Identifying the effectiveness of the proposed educational program based on the generative learning model in female students' achievement in sociology.

Research hypothesis: The researchers assumed the following null hypothesis: "There are no statistically significant differences at the level of significance (0.05) in the achievement of female students between the average of the experimental group that studied using the proposed educational program, and the control group that studied in the usual way."

Research limits: The search is limited to the following parameters:

1. Human Limits: A sample of female students in the fourth literary grade from schools in the Basra Governorate Center for the academic year (2023/2024).
2. Subject limits: Sociology subject for the fourth literary grade, scheduled to be taught for the academic year 2023/2024.
3. Spatial boundaries: Basra Governorate Center schools.
4. Time limits: The first semester of the academic year 2023-2024.

Definition of terms:

Tutorial: known as: A teaching system consisting of a number of study units grouped around a topic designed to achieve specific goals and whose teaching continues for an entire semester. (Zaytoun 746:2001).

Generative learning: is defined as:

1. Learning through dialogue, negotiation, and generating meaning with the teacher through learning in small groups, where the teacher uses language, writing, and symbols to explain phenomena. (Agha and Lulu, 2009: 375).
2. A model for generating answers to a problem that does not have a ready solution, especially if the problem is unfamiliar, and the learners do not have the ability to recall facts that are related to the problem (Chin & Brown, 2000: 114).
3. The researchers define it theoretically: the process of building new knowledge resulting from the processes of linking and harmonizing what has been learned and previous information on the specific topic, and arriving at participatory explanations among students that are more realistic and acceptable.
4. Achievement :
5. It is the mental and cognitive activity of the student, which he obtains from the total grades in his performance of the study requirements. (Al-Khalidi, 2003: 92).

6. It is the average of the grades a student obtains in academic distances, or a group, of academic distances, which measures this situation through classification at the end of the year or year. (Ismaili, 2011: 61).

7. The researchers know it procedurally: the extent to which the students of the fourth literary grade achieve the goals set in the sociology subject, and it can be determined by answering the achievement test that the researchers prepared for the subject.

Theoretical background and previous studies:

The concept of generative learning: Generative learning, in the broad sense, includes all different experiences and means, such as books, teachers' guides, teaching methods, educational methods and techniques, various types of activities, examinations and evaluation methods, study plans, and school facilities and buildings. It includes all the knowledge, skills, and planned educator experiences that are presented within School and outside it in order to achieve comprehensive growth for the learner in all aspects (Al-Khairy, 2022: 69).

Generative learning is one of the intellectual and mental processes carried out by the learner with the aim of extracting meanings, ideas and concepts from the experiences acquired during learning, by linking them to his previous experiences in order to generate ideas, produce solutions to his life's problems or carry out creative tasks (Grabowski, 2001: 14).

Generative learning objectives: Many researchers and thinkers argue that the basic meaning of generative learning assumes the activity of learners through the integration of old information with new information to form the new cognitive structure, and therefore generative learning aims at the following goals:

1. It makes students the basis of the educational process.
2. The teacher's role is based on simplifying the learning process and guiding the learners.
3. The role of the learners revolves around using previous ideas and experiences to understand new information.
4. That learners build their own knowledge, whether collectively or individually.
5. It activates the learners' brain by activating the mental processes that the learner performs.
6. It builds cognitive thinking among learners when reviewing any new information or being exposed to a new educational situation through criticism and reasoning.
7. Increasing learners' ability to deal with information clearly to understand things.
8. Providing the student with an educational situation that enables him to generate new experiences, create questions for themselves and others based on these experiences, as well as form ideas related to the aspects of study. (Al-Samarrai and Al-Khafaji, 2014: 116).

Characteristics of generative learning:

Generative learning is characterized by certain characteristics that emerge from the classroom environment in which it exists. These characteristics include:

1. Active circulation of ideas among learners.
2. Recalling information from the learner's long memory.
3. Integration of the learner's old information with new information.
4. Forming new knowledge that has been built in a way that is easy to remember and understand in any new educational process.
5. The learner connects previous knowledge with current knowledge in innovative ways of analyzing ideas, summarizing, classifying and grouping.
6. Both the teacher and the students communicate with each other to achieve the best learning.
7. Generative learning includes elaboration on the formation of mental images and meaningful sentences. (Al-Awamleh and Abu Loom, 2019: 171).

The role of the teacher in generative learning: It requires the teacher to perform certain roles, which are as follows:

1. The teacher asks questions to reveal alternative perceptions among students.
2. Correcting students' concepts by providing parameters that conflict with their experiences.
3. Creating intellectual generation among students by using strategies that bring about a change in concepts and enable them to understand information and clarify ideas.
4. Encouraging learners to ask questions, engage in dialogue and discussion, and generate new ideas.
5. Facilitator, organizer, and guide of the learning and teaching process. (Afana, Al-Jaish, 2008).

Achievement

1. The concept of achievement :

The term achievement is widely used in educational literature, "because of the importance this concept represents in judging the progress of learners in achieving the desired educational goals, and making appropriate educational decisions for this judgment, whether the educational process is judged positively or negatively, and from the judgments resulting from the level of achievement." Decisions to transfer learners from one stage of study to another, decisions to diagnose the strengths and weaknesses of the educational system, decisions on the effectiveness of the plans drawn up for them, the success of educational institutions in achieving the desired goals, and the quality of the outputs resulting from the educational system." (Allam, 2011: 55).

The process of learners' transition between academic levels depends largely on the level of academic achievement of the learners and the extent to which various types of educational goals are achieved. This transition is called educational outcomes in the educational process and is represented by learners who pass tests that were prepared in light of the various academic subjects. (Marai and Al-Hila, 2012: 74).

2. The importance of achievement: Achievement gives great importance to the student, his family, or his community, as it plays an important role in building the individual's personality and its

development, which contributes to the development and advancement of society as a whole. "It also enables the individual to satisfy his needs and achieve acceptable self-compatibility, and psychologically, thus moving away from Behavioral problems leading to disturbances in his personality. There is no doubt that academic achievement is an indicator of the student's success in his daily and school life and the ability to interact and coexist with others in the future, and the average he obtains is a measure of his ability. (Ahmed, 2010: 14).

Academic achievement plays a role in addition to the above, such as identifying the problems of failure and failure of students who can be like their other peers in their ability to learn and acquire various information, which leads to many complaints from teachers.

It should be noted that academic achievement is one of the phenomena that has occupied the minds of many educators in general and specialists in educational psychology in particular, as it is one of the important criteria in evaluating student education at different educational levels. If educational psychologists are interested in studying the issue of academic achievement from multiple aspects, some of them seek to Clarifying the relationship between academic achievement, personality components, and cognitive factors, and some of them search for factors in school or non-school environments that affect the quality and strength of achievement (Al-Badri, 2011: 415).

3. Factors affecting achievement:

Achievement is a complex process that is affected by many factors, including those related to intelligence, achievement motivation, test anxiety, and locus of control, and also those related to external factors represented by the economic, social, and cultural level that surround the learner. These factors are:

a. Physical disabilities: These are related to physical manifestations that limit the learner's competition with his peers, such as disabilities, poor eyesight, and other physical conditions.
b. Mental disabilities: These disabilities are related to mental manifestations and the level of mental maturity among learners, which hinder their learning, keeping pace with the education process, and competing with their peers, as in (intelligence level).
c. Psychological disorders: They can affect the level of academic achievement of learners, which leads to poor adaptation to the academic environment, or the inability to integrate with peers, and these psychological disorders include (anxiety, deprivation, feelings of inferiority, and other disorders).
d. Environmental influences: These influences have a major impact on the level of student achievement, examples of which include (cultural level, economic level, and school conditions). (Al-Salakhi, 2013: 26-41).

4. Measuring the level of achievement:

Achievement is measured through achievement tests prepared by teachers specializing in academic subjects or through official government agencies after the end of studying the course or the end of the school year, with the aim of identifying the knowledge and information that learners have acquired, and various means are used to measure their mental skills. And the extent to which the

desired goals are achieved. The construction of tests depends on principles that work to improve the measurement process, such as paying attention to the construction process according to specific steps for it, determining the goal of preparing the test, and that the construction of tests takes into account the characteristics of comprehensiveness and honesty, the focus of the academic content and its representation of the academic content, and the selection of test items. Appropriateness to the objectives, taking into account Bloom's levels of achievement, taking into account the difficulty and ease of the test items, and taking into account individual differences among learners. (Al-Lami and Al-Shammari, 2020: 147).

5. Types of achievement :

The literature classifies academic achievement into types according to the diversity of goals that the educational system seeks to achieve, and since the goals are divided into cognitive goals, emotional goals, and skill goals, in this way, achievement is of three types, and these types are not independent of each other, but they combine to form the learner's academic achievement. These types are as follows:

A. Cognitive achievement: It means all the knowledge and information that the learner acquires after going through educational experiences, educational situations, and studying a specific course. The cognitive field focuses on all the factors that relate to the learner in terms of his mental processes through his responses and processing of information through a series of cognitive structures that exist within his mind to reach The ultimate goal is cognitive learning, and the learner's role in cognitive learning is to process information, organize the amount of information presented to him, and manage his mental processes in a way that suits his aptitudes and abilities. (Qatami and Abu Jaber, 2008: 199).

B. Skills achievement: These are the skills that the learner acquires after undergoing specific training. The skills are divided into simple skills and complex skills.

C. Value-based (emotional) achievement: This means all the emotional-value qualities that the learner acquires during study, and the teacher tries to implant these values in the hearts of the learners due to their importance in their societal life in trying to reach a normal human being. (Salama, 2008: 127).

6. Achievement classification:

Specialists in the educational field classified achievement into subclassifications, and for each type of achievement there was a specific classification. One of the most famous classifications is Bloom and his colleagues' classification in 1965, which classified achievement into six levels in a sequential hierarchical classification. This classification includes higher-order thinking skills and reasoning skills. Also, some of them classified the six levels into three groups, namely (the tangible relational level group, the conceptual level group, and the creative level group) and Bloom's levels of achievement as follows:

 a. The level of remembering: It is the lowest level and falls within the minimum thinking skills and the tangible relational level. This level represents the remembering of knowledge by the learners.

b.   The level of understanding: This level follows the level of remembering and is among the lower thinking skills and requires the learner's ability to understand the meanings indicated by the concepts and the connections between the concepts.

c.   Application level: It is one of the lowest levels of thinking and requires the learner to be able to implement what he has learned in terms of laws and information, or draw or apply a rule.

d.   Level of analysis: It is one of the higher-order thinking skills and includes the learner's ability to understand the correlational relationships between the parts that make up the elements in the academic subject.

e.   Synthesis level: It is one of the higher-order thinking skills and includes the ability to combine multiple elements to create a new structure or template of the learner's creativity.

f.   Evaluation level: This means the ability to judge, issue judgments, or give an opinion on a subject according to the knowledge and information that the learners have learned. (Saada, 2011: 170).

Previous studies:

Study (Ahmed, 2021): The study was entitled "The effect of using generative learning on the cognitive and skill learning outcomes of some offensive skills in basketball." The study aimed to identify the effect of using the generative learning model on the cognitive and skill learning outcomes of some offensive skills for female basketball students in Faculty of Physical Education for Girls, Zagazig University. The study followed a quasi-experimental research approach. The study sample consisted of two groups (experimental and control), each group consisting of (30) students. The parity between them was extracted in terms of growth variables, physical variables, and the level of previous cognitive achievement. The study tool varied between (5) physical tests, and (5) skill tests. The results showed the superiority of the experimental group over the control group in the post-measurement. The results also showed the effectiveness of the generative learning model on developing the basketball skills of the research sample, as well as The effectiveness of the model in developing the level of understanding of the academic subject, and the study reached a set of recommendations and proposals. (Ahmed, 2021: 483).

Study (Al-Khairy, 2022): The study was entitled "The effect of using the generative learning model in teaching science in developing scientific concepts and critical thinking among third-grade intermediate students in Mecca schools." The study aimed to reveal the effect of using the generative learning model in teaching science in developing... Scientific concepts and critical thinking among third-year intermediate students in Mecca schools. The study used a quasi-experimental research approach, and the study sample was in two groups (experimental, numbering 44 students) and (control, numbering 42 students) of third-year intermediate students, and the study tools were in two tools (Scientific Concepts Test) and (Watson and Glaser Critical Thinking Test). The results of the study indicated that the experimental group was superior to the control group in the post-test of scientific concepts, and the experimental group was superior to the control group in the critical thinking test. The results showed the effectiveness of the effect of the generative learning model, and concluded The study led to a set of recommendations and proposals in light of the research results. (Al-Khairy, 2022: 65).

Study (Al-Adwan and Al-Rawaidah, 2023): The study was entitled "The effectiveness of the generative learning model in developing critical thinking skills among female students of the Hadith Graduation and the Study of Chain of Transmissions at the Faculty of Sharia at the University of Jordan." The study aimed to identify the effectiveness of the generative learning model in developing critical thinking skills among female students. The subject of graduation of hadiths and the study of chains of transmission in the Faculty of Sharia at the University of Jordan. The study used a quasi-experimental research approach. The study sample was in two groups. The experimental group consisted of (22) female students, and the control group consisted of (23) female students. The study tool was a measure of critical thinking skills. It consists of (60) items, in addition to a guide to using the generative learning model prepared by the researchers. The results of the study indicated the superiority of the experimental group that studied using the generative learning model over the control group that studied in the traditional way in the post-test of the critical thinking skills scale, and in light of the results The study concluded that the researchers came up with a set of recommendations and proposals. (Al-Adwan and Al-Rawaida Study, 2023: 54).

Research methodology and procedures:

Experimental research method: It is a method that uses experiments to verify the hypotheses set by the two researchers. Experimental research is characterized by high accuracy and applicability. (Al-Nahi and Al-Shammari, 2019: 131).

The two researchers relied on the experimental research method with partial control to verify the research hypotheses, due to the difficulty of achieving complete control due to schools being subject to administrative systems and rules that make it difficult to achieve randomization and reshape samples to achieve complete control.

Experimental design: The two researchers adopted an experimental design with two groups (experimental and control) with a pre- and post-test for the level of classroom interaction and a post-achievement test only. The two researchers attempted to establish parity between the two research groups, and the design was as in the following table..

Methods

The research method used in solving the problem includes an analytical method. Figure captions should be part of the figure caption, not part of the figure. The methods used in the completion of the research are written in this section. In the Research Methods, small and non-main tools (already common in the lab, such as: scissors, measuring cups, pencils) do not need to be written down, but simply write down the main set of equipment only, or the main tools used for analysis and / or characterization, even need to go to type and accuracy; Write in full the location of the research, the number of respondents, how to process the results of observations or interviews or questionnaires, how to measure performance benchmarks; common methods do not need to be written in detail, but simply refer to the reference book. Experimental procedures should be written in the form of news sentences, not command sentences.

Table 1: Experimental design:

Groups	Pretest	Independent variable	Posttest

Experimental	Classroom Interaction (Flanders Card)	educational programs	Achievement test + classroom interaction
Control		The usual method	

Research community:

The two researchers identified the research problem in the fourth literary grade students. Thus, the research community consisted of all girls' schools that had a literary branch for the academic year (2023-2024) affiliated with the Basra Education Directorate. Their number was (45) schools, and the total number of female students was (1474) students. In the fourth literary grade.

Research sample: Conducting the research requires selecting a sample from the entire population in order to apply the experiment to it. The two researchers intentionally chose the school (Al-Miqat Preparatory School for Girls), for several reasons:

A. The school is close to the researchers' residence, which facilitates work communication.

B. The school's female students belong to one social environment.

C. The school administration's willingness to cooperate with the two researchers.

Dr. The school is one of the few schools that includes more than one section for the fourth literary stage.

The two researchers also selected the experimental group and the control group, by lottery of paper slips, and the research sample was as in the following table:

Table (2) Sample of female students.

School	Section	Groups	Student No.	Excluded	Final No.
Al-Miqat Preparatory School for Girls	A	Experimental	30	-	30
	B	Control	30	-	30

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

Controlling the internal integrity of the experimental design: This control includes the process of controlling the external and internal variables and factors that affect the conduct of the experiment or the accuracy of its results.

1. Equivalence between the two research groups: The two researchers conducted equivalence and it was as follows:

Chronological age: The researchers calculated the chronological age of the female students, estimated in months until the date (10/1/2023), using the information card that they distributed to the research sample. The researchers used the t-test for two independent samples and the results were as follows:

Table (3) Equivalence between the research samples in the chronological age variable

Groups	No.	Mean	Standard Deviation	Degree of freedom	T-Value		Sig.
					Cal.	Tab.	
Experimental	30	184.60	3.616	58	0.278	1.96	N.S
Control	30	184.86	3.623				

The arithmetic mean for the chronological age of the female students in the experimental group was (184.60), while the arithmetic mean for the control group was (184.86). Using the T-test for two independent samples, the researchers found that the T-value was (0.278), which is smaller than the tabular T-value of (1.96) at the level of significance (0.05) with a degree of freedom (58), and thus the differences are not statistically significant.

Parents' academic achievement: The researchers obtained information about the parents' achievement through an information form. The researchers used the Chi-square test and the results were as follows:

Table (4) Equivalence between the research samples in the parents achievement variable

Variable	Groups	PhD	Master	Bachelor's	Preparatory	Middle	Elementary	Chi-Square		Sig.
								Cal.	Tab.	
Father ach.	Exp.	1	2	8	14	2	3	0.681	3.86	N.S
	Con.	2	1	7	13	4	3			
Mother ach.	Exp.	0	3	16	6	3	2	1.906	3.86	N.S
	Con.	1	3	17	4	4	1			

The Chi-square value for the father's achievement variable was (0.681), which is less than the tabular value of (3.86), and it is not significant, meaning there are no statistically significant differences between the two groups in the father's achievement variable, and the Chi-square value for the mother's achievement variable was (1.906). It is also less than the tabulated value of (3.86) and is not significant, meaning there are no differences in the mother's achievement variable between the two groups. Thus, the two groups are equivalent in the cultural environment variable.

Previous achievement: Since the variable to be researched is achievement, the two researchers must equate the two research samples (experimental and control) in the rate of achievement in the stage preceding the fourth stage of middle school. The two researchers obtained data on the achievement of female students in the previous stage by relying on school administration records, and they were Writing the data in the information card for each student, the researchers used the t-test for two independent samples and the results were as in the following table:

Table (5) Equivalence between the research samples in the previous achievement variable.

Groups	No.	Mean	Standard Deviation	Degree of freedom	T-Value		Sig.
					Cal.	Tab.	
Experimental	30	63.03	8.240	58	1.269	1.98	N.S
Control	30	65.59	7.149				

There were no statistically significant differences between the two research groups (experimental and control) in the previous achievement variable, as the calculated T-value (1.269) was less than the tabulated value of (1.98), meaning that the two research groups are equivalent in the previous achievement variable.

Intelligence: The two researchers adopted the intelligence test prepared by the Gifted Care Authority. This scale consisted of (25) items. Each item had a set of alternatives, one of which was correct. The correction range was (4) degrees for each correct answer, and (0) for the wrong answer. This scale was prepared due to its ease and wide application annually in selecting students for admission to gifted schools. The two researchers used the t-test for two independent samples and the results were as in the following table:

Table (6) Equivalence between the two research groups regarding the intelligence variable

Groups	No.	Mean	Standard Deviation	Degree of freedom	T-Value Cal.	T-Value Tab.	Sig.
Experimental	30	28.73	6.654	58	1.223	1.98	N.S
Control	30	31.17	8.578				

The results showed that there were no differences between the two research groups in the intelligence variable, as the calculated T-test value (1.223) was less than the tabulated value of (1.98).

Classroom interaction: The two researchers applied the Flanders card to measure the equivalence between the two research groups, and in two lectures before implementing the program, they monitored all activities and activities taking place in the classroom, using the (Chi-Square) test, and the results were as in the following table:

Table (7) The pre-test lessons in the experimental and control group

Groups	Indirect interaction Accept feelings	Appreciation and encourageme	Accept opinions	ask question	Direct interaction Explanation	Orders and directions	Criticism and power	Learner's words Response	initiative	Calm and chaos	Total
	1	2	3	4	5	6	7	8	9	10	
Exp.	3	8	6	11	51	23	5	13	1	2	123
(%)	0.02	0.07	0.05	0.09	0.41	0.18	0.04	0.11	0.01	0.02	%100
Con.	4	9	7	13	50	19	12	9	0	2	125
(%)	0.03	0.07	0.06	0.10	0.40	0.15	0.10	0.07	%0	0.02	%100

Groups	Case No.	d.f	Chi-Square Calculate	Chi-Square Tab	Sig.
EXP.	10	9	5.430	16.919	N.S
Con.	10	9			

There were no statistically significant differences between the experimental and control groups in the level of classroom interaction, as the calculated Chi-square value (5.430) was less than the tabulated value of (16.919), significance level (0.05) and degree of freedom (9), i.e. The two groups are equivalent in the level of classroom interaction.

Research tools: The current research requires the preparation of measurement tools that provide data and information that express the impact and effectiveness of the educational program. The current research tools were two tools: the achievement test in sociology, and the Flanders classroom interaction card, which were as follows:

Achievement test in sociology:

The achievement test is an indicator of the grade that reflects the level of female students in the academic subject, and it is a tool prepared according to specific steps that express the academic subject that the female students are studying (Suleiman and Abu Allam, 2010: 189).

The current research requires the preparation of an achievement test in sociology for the fourth literary grade. This test consists of a group of test items whose type is determined based on Bloom's classification with its six levels, and this goes through a set of steps, which are:

A. Objective of the test: The test is constructed based on the objective of its construction, and the two researchers have determined the objective of the test (measuring the level of literary achievement of fourth-grade female students in sociology for the academic year 2023-2024).

B. Scientific content: The scientific content of the achievement test is determined in the first four

semesters of the sociology subject scheduled to be taught for the fourth literary grade for the academic year 2023-2024.

C. Determining the behavioral objectives of the study subject: The two researchers identified the behavioral objectives that were presented to the experts and arbitrators, which were formulated from the content of the specific subject and numbered (134) behavioral objectives distributed over four chapters as follows:

Table (8) Distribution of behavioral objectives across subject classes.

No.	Class	Page No.	Remember	Understand	Application	Analysis	Installation	Evaluation	Total
1	First: sociology	5	10	5	2	--	--	2	19
2	Second: Theory and method	18	33	14	3	8	1	5	64
3	Third: The relationship of sociology to other sciences	6	2	4	1	6	4	--	17
4	Fourth: Social institutions	13	22	6	1	5	--	1	34
	Total	42	67	29	7	19	5	8	134

D. Table of specifications: The table of specifications is the test map that ensures achieving a fair distribution of the study material in the test and that the test represents the study material in a correct and balanced way. (Al-Chalabi, 2005: 235) The specifications table was built through the following:

1. Determine the relative weight of the educational content: This is done by dividing the number of chapter pages by the total number of pages of the study material.

2. Determine the concentration ratio of behavioral goals: by dividing the number of level goals by the total number of goals.

3. Determining the number of test items: By adopting the opinions of experts, arbitrators, and the opinions of the subject's specialty, (50) test items were determined, which is a number that the two researchers considered good to represent the study material, and the specifications table was as in the following table:

Table (9): Specifications for the achievement test in sociology.

Goals	Page No.	Levels	Remembers	Understand	Application	Analysis	Installation	Evaluation	Total
Content		Goal percentage	Relative weight of goals						
Content		Goal percentage	0.50	0.22	0.05	0.14	0.04	0.05	100%
Chapters		Concentration ratio	Paragraphs No.						
First: sociology	5	%12	3	1	1	1	-	-	6
Second: Theory and method	18	% 43	11	5	1	3	1	1	22
Third: The relationship of sociology to other sciences	6	% 14	4	2	-	1	-	-	7
Fourth: Social institutions	13	% 31	7	3	1	2	1	1	15
Total	42	% 100	25	11	3	7	2	2	50

E. Drafting of the items: The two researchers drafted the test items, which were (50) in number. They specified (40) test items that would be of the multiple choice type, and (10) items that would be of the essay type, with the aim of diversifying the test and ensuring the inclusion of all levels. Knowledge in Bloom's Taxonomy.

F. Formulating the instructions for answering the achievement test: The two researchers drafted the test instructions to be clear and comprehensive of all the data you need, including the name, grade, division, an illustrative example of how to answer, an indication of the location of the answer, and the test in its initial form.

G. Validity of the test: The two researchers verified the validity of the test by extracting face validity and content validity, as follows:

1. Apparent validity: The two researchers presented the achievement test in sociology to a group of experts and arbitrators, the number of whom was (20) experts and arbitrators, with the aim of identifying the appropriateness of the test items and its suitability for application. The two researchers calculated the percentages of the arbitrators' agreement and also used the chi-square equation, to identify the independence of the arbitrators' responses, it appeared that all items obtained an agreement rate of more than (80%), and the Chi-square value calculated for all items was greater than the tabulated value of (3.86) with a significance level of (0.05), and thus the test acquired the character of apparent validity. .

2. Content validity: Content validity expresses the extent to which the test represents the material in which the students are intended to be tested. This was confirmed by preparing a table of specifications, Table No. (15).

H. Exploratory analysis of the achievement test: The two researchers applied the test to an exploratory sample consisting of (250) female students from different schools, with the aim of extracting the difficulty and ease of the items, distinguishing them, the effectiveness of the alternatives, and the stability of the test. They corrected the responses and arranged them in the (SPSS) program, and they were as follows:

1. Difficulty and ease of the paragraphs: The difficulty factor is defined as the percentage of individuals who answered correctly to the paragraphs from the upper group more than the lower group. The responses were arranged in descending order, and a percentage of (27%) was chosen from the highest responses, and their number was (68) female students. And (27%) of the lowest were (68) students. By applying the difficulty equation of the paragraphs, all the values of the difficulty and ease factors were acceptable, as they ranged between (20% and 80%), which are acceptable percentages, according to what she indicated (Al-Chalabi, 2005: 73).

2. The effectiveness of the alternatives: The indicator of the effectiveness of the alternatives is one of the indicators that indicate the quality of the test structure. The effectiveness of the alternatives expresses the attractiveness of the incorrect options to individuals who do not know the correct answer. The two researchers used the effectiveness of the alternatives equation, and all the alternatives for the achievement test items were effective in attracting students. From the lower group more than from the upper group, as the effectiveness rates for all incorrect alternatives exceeded the value of (-0.05), which are acceptable percentages as indicated by (Al-Chalabi, 2005: 87).

3. The discriminatory power of the test items: The two researchers calculated the correct responses in the upper and lower groups for each of the test items, and used the discrimination equation for the objective tests, and the items had acceptable discrimination coefficients based on the Ebel 1963 coefficient to distinguish the achievement test items, which indicates the acceptability of the

items, and to extract the discrimination coefficients for the essay items. The results were as in the following table:

4. Reliability: Reliability expresses the stability of measuring the phenomenon or characteristic to be measured over the number of times the test is conducted. (Mikhail, 2015: 95), and since the test consists of objective paragraphs and essay paragraphs, the two researchers extracted reliability for both types:

Reliability of the objective items: The two researchers applied the test to a survey sample of (100) female students. Reliability was extracted in various ways to ensure the stability of the test, including:

Reliability by the repetition method: The two researchers applied the test to a survey sample on 12/4/2023. They also re-applied the test to the same sample on 12/24/2023, that is, 21 days after the first application. The two researchers used the Pearson correlation coefficient. To find the correlation between the two test times, the results were as in the following table:

Table (10) Stability by repetition method.

Test	Sample	Mean	Standard Deviation	Pearson correlation coefficient	Sig.
First	100	25.57	3.309	0.81	significant
Repeat	100	24.04	3.891		

The Pearson correlation coefficient between the two times of the test was significant, as the Pearson value was (0.80), which is an acceptable value for reliability, as indicated by (Al-Mayahi, 2011: 148).

Reliability by the split-half method: The two researchers found reliability by the split-half method by dividing the test into two parts (a part for the odd items, and a part for the even items), and they extracted the correlation coefficient between the two parts of the test, and since the correlation coefficient was expressing a part of the test, the researchers used the Spearman equation. Brown corrective results were as in the following table:

Table (11) Reliability by split-half method.

Test	Paragraph No.	Mean	Standard Deviation	Pearson correlation coefficient	Spearman's correlation coefficient	Sig.
First	20	11.81	4.275	0.66	0.80	significant
Repeat	20	13.76	3.771			

The Pearson value was (0.66), and after correcting it using the Spearman-Brown correction equation, it became (0.80), which is an acceptable reliability value.

Reliability of the essay paragraphs: The two researchers found the stability of the essay paragraphs, numbering (10) paragraphs, for a sample of (30) students, by finding the coefficient of agreement between the two proofreaders, between the two researchers and herself, and between the two researchers and another proofreader, and by using the Cooper equation for the stability of the two proofreaders, the results were as in the table. following:

Table (12) Stability of essay paragraphs.

Comparison type	Agreement times No.	Different times No.	Sample	Paragraph No.	Cooper value	Gig.
Debugger with the same	241	59	30	10	0.80	Significant
With another debugger	238	62	30	10	0.79	Significant

The value of the Cooper coefficient between the corrector and himself was (0.80), and the value of Cooper between the corrector and another corrector was (0.79), which are acceptable values of agreement.

I. The time required for the test and the clarity of the test instructions: The two researchers identified the time required to administer the test by applying the test to a sample of female students consisting of (30) students, and calculating the time it took to complete the answer to the test. The two researchers calculated the time taken by the first student to finish. The duration of answering the test was (42) minutes, and the researchers calculated the time taken by the last student to complete the test, which was (58) minutes, and the arithmetic average of the time taken to answer was (50) minutes. The researchers also made sure that the test instructions were clear, through this application, as The researchers confirmed by asking the students about the clarity of the instructions, and it was found that all the instructions were clear and free of typographical errors.

J. How to correct the achievement test: The correction mechanism for the objective paragraphs is to assign (2) marks for the correct answer, and (0) for the incorrect answer. Thus, the range of correction is limited to between (0 to 80) marks because the objective paragraphs were (40) paragraphs. As for the mechanism for correcting essay paragraphs, it is graded (0-1-2). This is because what is required in essay questions is limited to two requirements for each paragraph. The correct answer to the two requirements of the paragraph is given (2) two marks, and the correct answer to one requirement is given (1) one mark. An incorrect answer is given (0) zero. Thus, the range of grades for the essay paragraphs is limited to (0 to 20).

Statistical methods: The researchers used the Statistical Package for the Social Sciences (SPSS).

Research results:

Verifying the hypothesis: which stated, "There are no statistically significant differences at the level of significance (0.05) in the achievement of female students between the average of the experimental group that studied using the educational program and the control group that studied in the usual way." The two researchers calculated the arithmetic averages for the experimental and control groups in Achievement level. The t-test was used for two independent samples, and the results were as in the following table:

Table (13) T-test results for two independent samples for the experimental and control groups on achievement.

Groups	Sample	Mean	Standard Deviation	d.f	T-test		Sig.
					Cal.	Tab.	
Experimental	30	71.83	6.838	58	3.376	1.96	Significant
Control	30	64.80	9.137				

The arithmetic mean for the experimental group in the achievement test was (71.83) with a standard deviation of (6.838), and the arithmetic mean value for the control group was (64.80) with a standard deviation of (9.137), and the calculated T-value was (3.376), which is greater than The tabular value of (1.96) has a degree of freedom of (58) and a significance level of (0.05). It is clear that there are statistically significant differences between the average scores of the experimental group that studied using the educational program and the average scores of the control group that studied in the usual way and in favor of the experimental group. Thus, the hypothesis is rejected. The first null and we accept the alternative hypothesis which assumes the following:

There are statistically significant differences at the level of significance (0.05) in the achievement of female students between the average of the experimental group that studied using the proposed educational program, and the control group that studied in the usual way. The two researchers identified the effect size of the independent variable (the educational program based on the generative learning model). On the dependent variable (achievement), the two researchers used the (eta square) equation and the results were as follows:

Table (14) Effect size of the independent variable (educational program) on the dependent variable (achievement).

Independent variable	Dependent variable	T-test	d.f	η^2 value	d effect	The effect size
educational programs	Achievement	3.376	58	0.405	0.872	large

The value of the Eta square was high compared to Cohen's criterion for independent samples, which indicates the following values:

Results and Discussion

The results of the first hypothesis showed that the experimental group was superior in the level of achievement over the control group, and the researchers justified this because of the educational program and its ability to develop learning among the female students. There is also great effectiveness of the educational program in providing appropriate educational means for the female students and taking into account their needs and inclinations, as the program kept the female students active. Continuous attention to the lessons. The educational program based on generative learning transferred the focus of learning and teaching from the teacher to the students. The educational program also reflected the nature of planning on the ground and organization in educational work. The educational program also took into account the individual differences between the students by distributing them into groups that take into account Their abilities.

Conclusion

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

[1] The educational program based on generative learning is effective in increasing female students' achievement rates.
[2] The educational program based on generative learning made the focus of the educational process shift from the teacher and the book to the female students, and the female students became responsible for their learning.
[3] The educational program based on generative learning focused on activating the roles of female students in the educational process by allowing female students to participate in the activities it provides and have positive discussions within the class.
[4] The educational program based on generative learning provided the qualities of organization and careful planning for the educational process.
[5] The educational program based on generative learning helped the students understand and master the academic subject, and this is evident in the achievement results of the experimental group.

[6] The educational program based on generative learning works to make optimal use of class time.

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

1. Holding training courses for teachers focusing on the use of the educational program in teaching due to its role in developing student achievement.
2. The need to pay attention to providing the educational means that the researchers provided to the students, which were (data show devices, smart boards, and learning resources).
3. The necessity of diversifying the teaching methods used in the classroom because it has a significant impact on developing students' understanding of the subject.
4. It is necessary for every teacher to rely on a guide that paves the way for him to take organized steps away from randomness in implementation during the lesson.
5. It is necessary to take into account the needs of students in teaching by identifying them and including them in the teaching steps in order to make them feel their importance in the educational process.
6. It is necessary to present the behavioral goals to be achieved in the classroom to the students so that they know what they are required to achieve.

The two researchers proposed the following: Conduct a similar study on the effectiveness of the educational program based on generative learning on academic subjects and other stages

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