



THE EFFECTIVENESS OF PROGRAMMED EDUCATION IN THE ACHIEVEMENT OF FIFTH GRADERS IN THE SUBJECT OF SOCIAL STUDIES

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Article history:	Abstract:
<p>Received: 7th December 2021 Accepted: 6th January 2022 Published: 13th February 2022</p>	<p>The research aimed to know the effectiveness of programmed education in the achievement of fifth-grade students in the subject of social studies, the research was limited to a sample of fifth-grade students, who numbered (64) students in a primary school for boys in the district of Hilla, Babil governorate. The researcher identified the scientific material for the students of the research, which is the topics of the first, second and third chapters of the social studies book decided by the Ministry of Education, and prepared behavioral goals according to the content of the study material, which numbered (121) goals and typical teaching plans of (16) plans, and the first three levels of the classification of (Bloom) for the cognitive domain were identified and presented to A number of specialists, and for the purpose of achieving the goal of the research, the researcher put a null hypothesis and chose an experimental design with partial control for two groups, one of them is experimental and the other is control, as Division (C) represented the experimental group that was studied according to the use of programmed education and Division (B) the control group that studied according to The traditional method, the researcher conducted the process of parity between the two research groups and to find out the significance of the differences between them, he applied the achievement test of (40) items of the type of multiple choice, The following statistical methods were used: t-test for two independent samples, chi-square, Pearson correlation coefficient, Spearman-Brown correlation coefficient. The results of the research indicated the superiority of the experimental group in the achievement test over the control group, and these results indicated the effectiveness of programmed education in the educational process compared to the traditional method. In light of this, the researcher reached several conclusions and developed a number of recommendations and suggestions.</p>

Keywords: Programmed Education, Primary School

CHAPTER ONE: INTRODUCTION TO RESEARCH

First, Research Problem:

The fifteenth annual scientific conference held at the College of Basic Education, Al-Mustansiriya University in (2013) recommended motivating researchers to research the best means and ways to produce programs and ideas that achieve capabilities and skills that are based on international standards of education (Al-Mustansiriya University, 2013: b).

The researcher noticed through her review of the sociology book that the geographical and historical information it contains is new to the fifth grade students, as they have not previously known about it, and thus it will be difficult and ambiguous for them and they will not be able to absorb it, in addition to that, the lack of pictures, charts and illustrations related to these information, they need modern teaching aids that keep pace with the developments of the times, especially computer programs that help them raise the level of their academic achievement. The researcher did not stop at observing, but also directed a questionnaire to the fifth grade students ⁽¹⁾ that included the following two questions:

- 1- Do you understand well from the teacher when explaining the subject of social sciences?
- 2- Do you like computers? And why?

¹ - The researcher chose (25) students randomly from one of the primary schools in the district of Hilla.

Their answers emphasized their poor understanding of the social subject in the used manner, and they also emphasized their love for the electronic computer. Based on the foregoing, the research problem could be determined by answering the following question: What is the effectiveness of programmed education in the achievement of fifth-grade students in the subject of social sciences?

Second: Research Importance:

Education is the primary factor in the scientific and technical development experienced by the world in this era. It seeks to nurture a productive individual armed with knowledge, skills and individual capabilities that push him to actively participate in serving the community in which he lives, and thus is the main engine for all progress and development witnessed by the community (Khataebah and others, 2002: 18).

The curriculum represents the effective means between the various means of learning that translate educational philosophies and policies into the reality of my life. It is the mediating element between the teacher and the student, and in itself represents the sum of required and desired behaviors. Therefore, the basics of its construction differed from one level to another and from one age stage to another (Al-Zind and Obeidat, 2010: 17).).

Social materials have a prominent place in the school curricula because of their importance and effective impact in preparing generations culturally, scientifically and professionally, and making them useful members of their society, their nation, and humanity in general (Al-Fatlawi, 2004: 22). In addition, these materials play a major role in organizing the historical and social context of the lives of individuals and achieving psychological and social adaptation to them and helping them to be able to deal effectively with each other, as well as achieving their adaptation to their communities (Bar, 1986: 11-23).

The main purpose of the social subjects is to help students develop their abilities to make decisions that serve the public interest and develop the spirit of good citizenship in a democratic, multicultural society, with diverse interests (Harb, 2010: 24).

The researcher believes that teaching social studies cannot provide the desired benefit without using modern means that keep pace with the development taking place in the world, and that its teaching does not require the teacher and writers only, but also needs educational means that keep pace with the development taking place in different countries.

The master of rhetoricians and the most eloquent theologian, the Commander of the Faithful, Imam Ali bin Abi Talib (peace be upon him) mentioned the importance of the senses and the means and aids needed by man. He (peace be upon him) said, "You seen if you have sighted ." ((whoever consider sees, and whoever perceives understands, and whoever understands knows)) (Al-Sharif Al-Radi, 2010: 522-516).

Perhaps the common saying (maybe a picture is worth a thousand thousand words) is verified in word and deed in those blessed verses from the Holy Book of Allah and the sayings of Imam Ali bin Abi Talib (peace be upon him). Therefore, it becomes clear to the researcher that modern educational means are an educational tool that is used to achieve learning.

In the current research, the researcher chose programmed education as an educational method, which we will learn about its effectiveness in the achievement of fifth grade students, their clear awareness of the facts, and the extent to which they are provided with rich experiences that are often difficult to obtain through other means.

Based on the foregoing, the importance of the current research is evident in the following:

- 1- The importance of education because it is a tool for changing nations and peoples and the reason for their advancement and progress.
- 2- The importance of school curricula as it is the main focus of every educational process, and these curricula must keep pace with the development witnessed by the world today.
- 3- The importance of social materials as study materials that contribute to building a good citizen, developing a scientific understanding of the social environment with all its elements and complexities, and forming a future outlook on life.
- 4- The importance of the social subject as a study subject whose study contains educational values that have a distinguished position in education in general.
- 5- The importance of the electronic computer as an educational medium in the learning process.

Third: Research Objective:

The current research aims to identify: The effectiveness of programmed instruction in the achievement of fifth graders in the subject of social studies.

Fourth: Research Hypothesis:

There are no statistically significant differences at the level (0.05) between the average achievement scores of students who study using programmed education (the experimental group) and the average achievement scores of students who study in the usual way (the control group) in the social studies achievement test for the fifth grade of primary school.

Fifthly: Research Limits:

The current research is limited to the following limits:

- 1- The official primary day schools for boys in Babil Governorate, Hilla District Center.

- 2- Students of the fifth grade of primary school in one of the schools in the province of Babel, the center of the district of Hilla, were chosen intentionally.
- 3- The social book for the fifth grade of primary school, which is approved by the Iraqi Ministry of Education for the academic year 2017-2018.
- 4- Programmed education program.

Sixth: Defining Terms:

First: Effectiveness: Al-Shammari (2012) defined it as: the ability or efficiency with which a specific performance is described according to pre-determined criteria to achieve a specific goal or action (Al-Shammari, 2012: 18).

Second: Programmed education: Abdul-Khaleq (2008) defined it as a method of self-learning that depends on direct interaction between the student and the curriculum, and the use of tools and devices is a catalyst for increasing this interaction and is not a substitute for the teacher. (Abdul-Khaleq, 2008: 253)

Third: Attainment: Al-Jalali (2011) defined it as: a mental and cognitive activity of the student inferred from the total marks obtained in his academic performance (Al-Jalali, 2011: 25).

Fourth: The procedural definition: The fifth primary grade: It is one of the grades of the primary stage, which represents the compulsory basic education that lasts for six years. This grade is the penultimate in the primary stage, after which the student moves to the sixth grade.

Fifth: Social procedural definition: the scientific material that deals with geographical and historical concepts for the vocabulary of the first, second and third chapters of the Social Book, which is scheduled by the Ministry of Education of the Republic of Iraq for the fifth grade of primary school for the 2017-2018 academic year.

CHAPTER TWO: THEORETICAL ASPECTS AND PREVIOUS STUDIES

The first axis: theoretical aspects:

First, a brief history of programmed education:

Some educators see that programmed education is not a modern method. They see that its roots extend to the era of the ancient Greek philosophers. Socrates followed what he called the generative method. He started with his students in a logical progression from the known to the unknown, from easy to difficult and from near to far. He resorted to dialogue and discussion in education, as it adopts the method of give and take with the student and takes advantage of his answers to ask new questions, but he was limited to teaching one student. These characteristics are closely related to the works of many nineteenth century scholars, such as the works of the Russian scientist (Pavlov) on the conditional link and the works of the American scientist (Thorndike) on the law of effect, which refers to the link between the stimulus and the response and strengthens the result of saturation that follows the response and weakens if the response follows a painful situation.

In the first third of the twentieth century, the psychologist (Sydney Pressy) designed the first educational machine, a machine to test student achievement using multiple-choice questions, but it did not excite educators at that time (Al-Jaghoub, 2002: 127).

In the fifties of the same century, the philosophy of programmed education emerged in its current form following a lecture delivered by the behavioral scientist (Skinner) at a psychology conference at Harvard University, during which he presented his experiments on mice and pigeons, and then on humans, through which he studied the process of learning and behavior modification and the role of the teacher as a source of reinforcement for his students. Then many international conferences were held on programmed education, the first of which was the (Berlin) conference in 1963, then the (Varna) conference in 1968, and it was used as one of the teaching methods in the curricula of preparing in-service teachers in England, France, America, Japan and the former Soviet Union (Jagob). , 2002: 127).

Second: Foundations of Programmed Education:

There are foundations for programmed education to be based on, the most important of which are:

- 1- Analyzing the work and the educational task: by dividing it into small parts that are easy to understand and master.
- 2- The stimulus and the response: - considering the situation in which the learner is placed as a stimulus, and that this situation requires a response from the learner, and that the response in programmed education is the result of the interaction between the learner and the material.
- 3- Reinforcement: because the educational situation requires the learner's response, and the response does not come without interaction, and that the level of interaction is based on the amount of motivation, and one of the requirements of motivation is reinforcement.
- 4 - Adaptation and abilities of the learner: - that the learner proceeds according to his own abilities and without being restricted to a specific time.
- 5- Self-evaluation:- This type of learning enables the learner to evaluate his own learning without limiting interference (Atiya, 2008: 139-140).
- 6- Finding the appropriate design for presenting the educational material to be presented through special books, educational machines, audio-visual devices, or through an electronic computer (Al-Zaghoul and Al-Mahamid, 2007: 227).

Third: Programmed Teaching Methods:

Programmed education has many means that differ according to the nature of the learner and the learning machine. The most important means are the following:

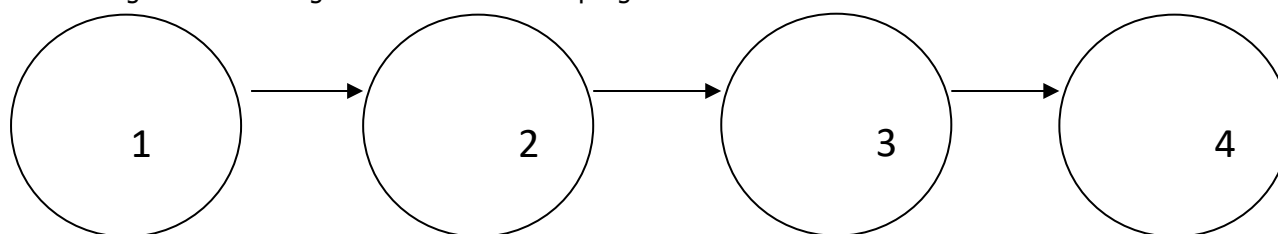
- 1- Mechanical and electronic machines: These include electronic computers, audio-visual machines, letter-forming machines, and others.
- 2- Non-mechanical inventions: they include cards, posters, and perforated boards: they are used in educational programs in their broad sense, as the program is a kind of behavioral engineering that uses all possible means to change behavior in order to be desirable. It can also be used in many fields, including literacy and adult education and in the field of industry and economics, teaching, personnel and and Medicine to update doctors, nurses and administrators (Eyadat, 2004: 24).

Fourth: Types of Programmed Education:

Programmed education has many types, the most important of which are the following:

1 - Linear programs: in which the material is analyzed and divided into small successive units in a straight line so that each unit forms a statement, one or two sentences that ends with a question that the learners are supposed to answer it, as they are not allowed to move to the next step and unit unless the previous step is mastered, and written programs are often presented to a group of learners at the same time so that they progress in learning the material in the same sequence, but they differ in terms of their speed in completing this program. (Zogoul et al., 2007: 227-228) It is preferable to use it when teaching concepts and skills that are clear in the programmer’s mind or in the event that the material is large in size, but this type needs speed and accuracy in choosing different reinforcements for many different individual responses (Abdul-Khaleq, 2004: 257).

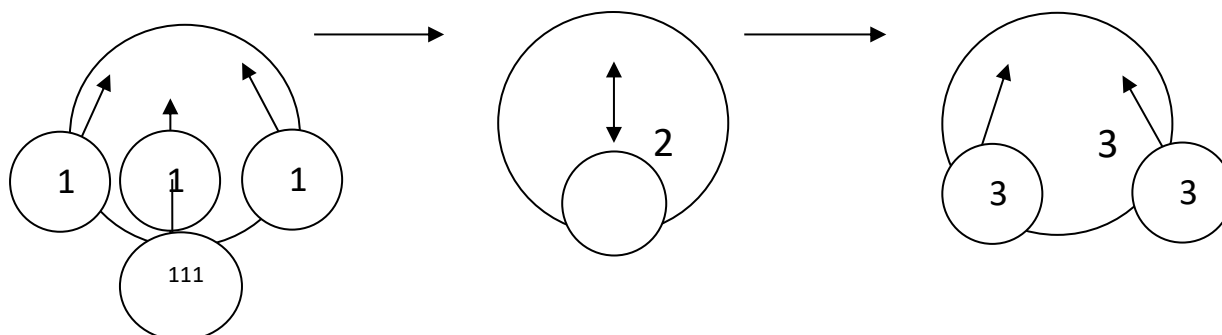
The following schematic diagram shows the linear program:



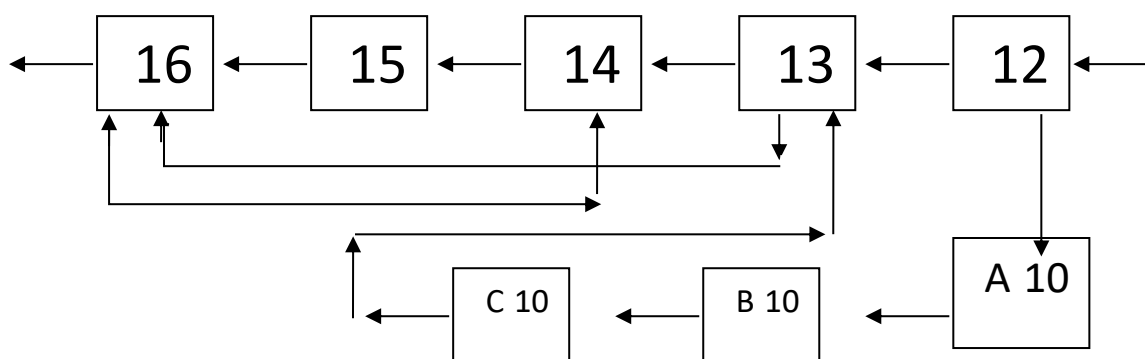
2- Branched programs (manifold): This type of program is associated with the name of the researcher and technical trainer (Crowder), who applied it during his work, where he noticed that the technical student’s position is clearly different from the student studying mathematics Eyadat, 2004: 30).

Such programs consist of forked frames that solidify other subframes that include more than one idea. These frames are usually followed by questions of the type of multiple choice, as the learner must choose the appropriate answer. If his answer is correct, he receives immediate reinforcement and moves directly to the next frame and the main sequence, but if he fails In the answer to the framework, it takes the framework that explains the error and helps it reach the correct answer (Zogoul et al., 2007: 228).

The following schematic diagram shows the hyperlinked program:



Intermediate programs: which are a mediator between linear programs and branched programs, as they mix between single answers and multiple answers, and it also allows the learner to skip sometimes some frames or return it to previous frames for repetition or provide him with additional information and the following planning explains this type of program (Abdul Khaliq)



Fifth: Steps to prepare the program:

- 1- Determine the goals to be achieved.
- 2- Analyzing educational behavior into small tasks.
- 3- Arranging the small tasks in a coherent order so that the previous response leads to the next, gradual from easy to difficult.
- 4- Practicing some related activities or requesting a referral to a specific material that helps the learner to proceed in the program.
- 5- Starting the program, so the learner records his response and then balances it with the correct hidden answer to obtain the appropriate reinforcement if the answer is correct (Atiya, 2008: 139-140).

Sixth: Areas of using programmed education:

Perhaps the most important field of programmed education is the field of literacy and adult education, where a lot of educational materials can be programmed into small brochures and presented to the illiterate, especially those who could not wait in literacy centers such as tanker drivers, boat and ship workers, shepherds and others. Also, programmed education can be used on a large scale to educate adults in military service, and the experience of the United States of America and most European countries in this field is the best evidence of the suitability of programmed education to train recruits. These countries have used this type of education to train their armed forces to develop themselves and provide their members with technical knowledge with how to use various, modern and advanced weapons such as mechanical and electronic weapons and machines, and it can also be used in many other fields such as updating the information of doctors, nurses and administrators (Mohammed, 1988: 117).

Seventh: The advantages and disadvantages of programmed education:

- 1- Provides students with immediate feedback (Abu Alam, 2004: 99).
- 2- It helps with technical learning.
- 3- It reduces errors by adopting the principle of dividing the material into small parts that are easy to master.
- 4- It increases the learner's positivity and effectiveness in learning to obtain immediate reinforcement.
- 5- It does not require much effort from the learner.
- 6- Aware of the logical thinking of the learner.
- 7- It avoids the impact of individual differences in the learning process because it gives the learner the opportunity to learn according to his abilities and speed (Atiya, 2008: 144).

Eighth: The disadvantages of programmed education and its cons:

- 1- Its limitations in achieving emotional goals.
- 2- Limited use of it in teaching.
- 3- It may require devices and materials that are difficult to provide.
- 4- Teachers may not be able to properly design and configure the program.
- 5- It reduces the creativity of the learner.
- 6- Learning's lack of social interaction, which leads to weak social skills of learners. (Atiya, 2008: 144).

The second axis: previous studies:

- 1- The effect of using the programmed teaching method on students' achievement in science for the sixth grade of primary school.
- 2- The effect of using the programmed teaching method in psychology on the achievement of students of the College of Education at Al-Mustansiriya University.
- 3- The effect of using the programmed teaching method on the achievement of students in mathematics in the fourth grade of primary schools.
- 4- The effect of the interaction between the response pattern and the size of the frame in the programmed education on the retention of the ninth graders in the basic education stage.

CHAPTER THREE: RESEARCH METHODOLOGY AND PROCEDURES

Research Methodology:

The researcher followed the experimental method because it is the appropriate method for the nature of her research, and what is meant by the experimental term (changing one thing and observing the effect of changing something else) (Abu Hawij, 2002:59).

Research procedures: They include:

First: Experimental design:

Despite the presence of a large number of experimental designs, the researcher adopted the experimental design with partial control, which consists of two groups. Figure (1) illustrates the experimental design of the experiment:

shape (1)
Experimental design of the experiment

Group	Parity	independent variable	dependent variable	the test
Experimental	1-The age of the students in months	programmed education	Academic achievement	Multiple-choice
Control	2- Parents' achievement 3- Previous collection 4- Raven's test	traditional way		

Second: Determine the research community:

The current research community includes the official primary schools for boys in the center of Hilla District of the Babil Governorate for the academic year (2017-2018 AD), which totaled (9) schools.

Third: Selecting the research sample: In order to choose a representative sample of the community, the researcher divided the research sample into two parts:

A-Sample of schools: This research required the selection of one school from among the official primary schools in the center of Hilla District of Babil Governorate (the research community), and as the researcher was a teacher at Ali Jawad Al-Taher Primary School for Boys, she chose it to be the sample of the current research for the academic year (2017-2018), and field of application of the experiment.

B - Sample of students: After the researcher identified the school, she found that it contains three divisions for the fifth grade of primary school for the academic year (2017-2018 AD), which are (A - B - C) and using the random choice method ⁽²⁾ the researcher chose the divisions (B) and (C) to be The two research groups, and in the same way, the researcher chose Division (B) to represent the control group and the number of its students (33 students), whose students will study in the traditional way without exposure to an independent variable, and Division (C) represented the experimental group and the number of its pupils (35 students), whose students will be exposed to the independent variable. (Programmed education).

The total number of the students of the research sample initially amounted to (68 students), and information about the students' academic status was obtained from official records, and there were previous failure cases in the fifth grade of primary within the two research groups that were treated by excluding students who failed statistically and continuing their teaching in order to preserve the school system, and thus the final number of the sample Research (64 students) as shown in Table (1).

Table No. (1)
The number of students in the two research groups before and after exclusion

Group	Class	No. of students before exclusion	No. of fail students	No. of students after exclusion
Experimental	C	35	1	32
Control	B	33	4	32
Total		68	5	64

Fourth: Equality of the two research groups:

Before commencing the experiment, the researcher was keen on the statistical equality of the two research groups in some variables that may affect the results of the experiment.

² - The researcher used the simple random drawing method, as the researcher wrote the names of the three people in the school and put them in a bag and pulled one of them, to represent the control group and the other to represent the experimental group.

- 1- The age of the students is calculated in months.
- 2- The father's academic achievement.
- 3- The mother's academic achievement.
- 4- Previous academic achievement (fourth primary).
- 5- Raven intelligence test.

The parity between the two research groups was achieved at the beginning of the first semester, a week before the application of the experiment, which began on (28/10/2017). The students write their information regarding the collection of parents and mentioned the births of each student (day, month and year) after the personal cards were obtained for them, and the researcher checked these data with what is in the school card.

The following is an explanation of the procedures for statistical equivalence in the previously mentioned variables between the students of the two research groups.

1- The age of the students calculated in months: After the researcher used the school card and the information form that she prepared and distributed to the students, the average age of the students in months was calculated for both groups until (28/10/2017). The average age of the students of the experimental group was (128,741) months, while the average The ages of the students of the control group reached (127.612) months, and by using the T-test for two independent samples to compare between the two averages, it was found that the calculated T-value amounted to (0.583), which is smaller than the tabular T-value (2,000) and with a degree of freedom (62) when The level of significance of ability (0.05), so that the two groups are equivalent in the variable of chronological age in months.

2- Academic achievement of the fathers: The information on the academic achievement of the parents was obtained through an information form presented to the students as previously mentioned. The researcher used the Kai square. The results showed that the differences between the two research groups were not statistically significant in the father's academic achievement, as the calculated Kai value amounted to (1.202). It is less than a value like any tabular value (9.487) at the ability significance level (0.05) with a degree of freedom (4).

3- Academic achievement of the mothers: The information related to the academic achievement of the mothers was obtained through an information form distributed to the students of the two research groups, as we mentioned previously.

The results showed that there were no statistically significant differences between the two groups (experimental and control), in this variable, as the calculated Kai value reached (1.418), which is less than the tabular Kai value (9.487) at the ability significance level (0.05) with a degree of freedom (4).

4- Previous academic achievement: The researcher obtained the students' grades in social studies for the fourth grade of primary school for the academic year (2016-2017) from the students' documents. It was found that the average scores of the experimental group students reached (83.709), and the average scores of the control group students reached (84.064). To find out the significance difference between the scores of the two groups, the T-test was used to compare the two averages. It turned out that the difference was not statistically significant at the level (0.05), as the calculated T value (0.283) was less than the tabular value (2,000) with a degree of freedom (62), which indicates the equality of the two research groups in this variable.

5- Intelligence test:

The Raven test of intelligence was shown to the students of the two research groups through the display device (Datachu). The answer form was filled out by the students, and after correcting the answers ⁽³⁾ the arithmetic mean of the scores of the students of the experimental group reached (37,064), while the arithmetic mean of the scores of the students of the control group was (37,774). When using the T-test to find out the significance difference in the test scores, it appeared that there was no statistically significant difference at a significance level of (0.05), if the calculated T-value was (0.366), which is less than the tabular value (2,000) by a degree. Freedom (62), and this indicates that the two groups are equivalent in the intelligence variable.

Fifth: Controlling the extraneous (non-experimental) variables:

In addition to the above procedures of statistical equivalence between the two research groups, the researcher tried to control some extraneous variables that are believed to affect the integrity of the experiment, and the following are these extraneous variables and how to control them:

First: Factors that may affect the internal safety of the experiment, which are:

- 1- Selection of the sample members: Although the sample was chosen at random, the reward was statistically done between the students of the two groups in (the age of the students calculated in months, the educational attainment of the parents, the previous academic achievement and the intelligence test) and the conditions of the students were almost similar as they belonged to the same social environment.
- 2- Associated accidents: the experiment in the current research was not exposed to any emergency condition or accident that hinders its functioning, such as natural accidents (earthquakes, floods, and hurricanes) and unnatural such as administrative, so there was no effect on that in the dependent variable next to the independent variable, and thus the impact of these could be avoided factors.

³ - A score was assigned for the answer to each item so that the total test scores were (36) as much as the items.

- 3- Experimental extinction: it was not exposed to such a variable throughout the duration of the experiment to leave, interrupt or move one of its members from one class to another or from and to school, except for some cases of absenteeism that the two research groups were exposed to in small and almost equal proportions.
- 4- Processes related to growth (maturation): These processes had no effect on the research, as the experiment began on Wednesday, 28/10/2017 and ended on Thursday, 12/15/2017. If growth occurred in the psychological and biological aspects, this growth is equal to the students of the experimental and control groups.
- 5- Measurement tool: The researcher used a unified tool to measure the achievement of the students of the two research groups in the social subject, which is an achievement test of the type of multiple choice prepared by the researcher for the purposes of the current research after the validity and reliability of the test was confirmed.

Second: Factors that may affect the external safety of the experiment, namely:

1- The study subject: During the experiment, the study material was unified for the two research groups, which are the first three chapters (first, second and third), of the social book to be taught to fifth grade students from the Iraqi Ministry of Education for the academic year (2017-2018).

2- The teacher: the researcher herself taught the two research groups, and this gives the results of the experiment accuracy and objectivity, because the individual teacher for each group makes it difficult to return the results to the independent variable, as it may be attributed to one teacher’s ability to study the subject more than the other, or to his personal qualities or other factors.

1- Classes distribution: The researcher adopted the school schedule for the distribution of classes, as the two groups were taught at three classes per week, and each group had two classes per week, as shown in (Table 2).

Table (2)

Distribution of the research groups' shares per week

Day	Group	Share	Time	Group	Share	Time
Wednesday	Experimental	Second	8,45	Experimental	Third	2,05
Thursday	Control	Second	8,45	Control	Fourth	2,55

1- Duration of the experiment: The duration of the experiment was equal for the students of the two research groups, which is seven weeks, as it started on Wednesday 28/10/2017 and ended on Thursday 15/12/2017.

2- School building: The experiment was applied in one school, in similar classes in terms of space, number of windows, lighting and ventilation, wall colors, and the type and size of seats.

3- Ensuring the confidentiality of the experiment: The researcher was keen on the confidentiality of the experiment through an agreement between her and the school administration, so that the students should not be informed of the nature of the research and its objectives, in order to reach accurate results so that the students do not try to change their behavior and scientific activity during the duration of the experiment.

4- Teaching aids: The researcher was keen to use similar teaching aids for the students of the two research groups, such as the blackboard, soft colored pens and maps.

Sixth: Research Requirements:

In order to achieve the objectives of the research and its hypothesis, it is necessary to prepare some requirements and apply the tool, and this can be clarified according to the following:

1- Determining the scientific material: Before the start of the experiment, the researcher identified the scientific material that she will study during the experiment. It was three chapters from the social book, which are the first chapter (geographical concepts), the second chapter (the climate and surface of Iraq) and the third chapter (historical concepts), which are chapters planned for study in the first chapter From the academic year (2017-2018).

2- General and behavioral goals:

A - The general objectives of the subject: The researcher obtained a copy of the general objectives of the social book for the primary stage from the Babel Education Directorate.

B - Formulation of behavioral objectives: After the researcher was briefed on the general objectives of the social subject for the primary stage, she derived a number of behavioral objectives in the light of which for the subject of social studies and the content of the study material for the chapters (first, second and third) of the social book, the number of which reached (121) behavioral objectives in its initial form They are divided into the first three levels of the cognitive domain of Bloom's taxonomy (knowledge, understanding, application).

In order to demonstrate the safety and validity of the formulation of these goals and the extent of their comprehensiveness to the content of the study material, they were presented to a number of experts and arbitrators of teaching methods in history, social sciences, educational sciences, psychological, and ancient history, whose number reached (20) experts and arbitrators, to express their opinions and observations about the formulation and clarity of these goals, and after the analysis of the experts’ responses some goals are modified that needed to be modified or added, and since the researcher adopted a percentage (80%) as a minimum for accepting the behavioral goal (Darwaza, 1997: 167), the percentage of agreement on the behavioral goals was obtained (93.83%_91, 66%).

3.Preparing teaching plans and selected teaching aids:

A- Preparation of teaching plans: The researcher prepared the teaching plans of the two research groups for the topics that will be studied during the experiment period in the light of the independent variable (programmed teaching) in the experimental group and the use of the (ordinary method) in the control group, which numbered (14) teaching plans for each group.

Samples of the plans were presented to a group of experts and arbitrators in the methods of teaching social sciences and history, and in the field of education, to express their views on them, their suitability for the method of teaching and the content of the material, and in light of the observations made by the experts and arbitrators, the necessary amendments were made to them.

B - Program preparation: The researcher prepared the research requirements from electronic programs related to the topic of the lesson and according to the plans prepared for each lesson. The researcher used specialists to choose the appropriate programs in each lesson and to choose the appropriate colors as well, and the program obtained a percentage of (100%).

Seventh: Preparation of the achievement test:

A- Building the test: One of the research requirements is to build an achievement test to measure the effectiveness of programmed instruction in social studies for the two research groups, and due to the absence of an objective achievement test ready in the fifth grade social subject for the classes identified for research, it was required to prepare an achievement test characterized by the characteristics of honesty, stability and objectivity .

B- Test levels: The researcher committed to measuring the first three levels of Bloom's classification of the cognitive domain (knowledge, understanding, application) for their suitability for the fifth primary stage.

C- Type of test: The multiple-choice test was chosen because it is one of the best, most honest and stable types of objective tests, as well as the possibility of using it to measure teaching objectives at most levels of the cognitive domain (such as knowledge, understanding and application) (Saadha, 1985: 508).

D- Preparation of the test map (specification table): The researcher prepared (specification table) for the content of the first three chapters that she taught for students during the experiment period and for the first three levels of knowledge of Bloom's classification of the cognitive domain (knowledge, understanding, application), which determined the number of questions for each chapter and its distribution on The first cognitive levels to ensure the achievement of the content validity of the test, and thus the specification table provides an acceptable degree of the validity of the test content or the validity of the items' sample representation of the objectives. Therefore, the researcher developed the test map that contains the number of questions for each unit of the prescribed study subject, and according to the cognitive levels (knowledge, understanding, application), as shown in Table (3)

Table (3)

Specification table (test map)

Content	of No.	Percentage Content %	Level of Behavioral Goals			Total	Achievement test items			Total 100 %
			60%	27%	13%		Knowledge 60%	Understanding 27%	Application 13%	
			Knowledge	Understanding	Application					
Chapter One	3	23 %	14	12	4	30	5	3	1	9
Chapter Two	4	%31	29	9	9	47	8	4	2	13
Chapter Three	6	%46	30	11	3	44	10	6	2	18
Total	13	100 %	73	32	16	121	22	13	5	40

Accordingly, the researcher chose (40) behavioral goals from among those that were presented to the arbitrators, and determined the items of the total test on the basis of these goals.

Formulation of the achievement test items: The researcher determined the number of items of the achievement test in its initial form as (40) test items of the type of multiple choice that was determined according to the test map (specification table) and with four alternatives and distributed the position of the correct answer randomly among the test items for the purpose of measuring the achievement of the students of the two research groups experimental and control in social sciences.

When preparing the alternatives for the items, the researcher took into account the following:

- 1- The alternatives should be homogeneous in their content.
- 2- It should be free from ambiguous terms and expressions.
- 3- Not subject to interpretation.

4- Balanced distribution of the correct answer sites (Mahmoud, 1999: 17-18).

Drafting the test instructions: After the researcher prepared the test items and ascertained their validity; By presenting it to a group of experts and specialized arbitrators, she formulated the instructions for the test, explaining how to answer them in a clear and understandable manner. These instructions included the following:

A- Answer instructions: Dear student, in the test before you, note the following:

- 1- Each of the items has four answers, only one of which is correct.
- 2- Write in a clear handwriting your name and class on the answer sheet.
- 3- Think carefully before you prove the answer that you think is correct by placing a sign (O) on the letter that precedes the correct answer 0

B- Correction instructions: The researcher prepared an exemplary answer for all test items, as she gave a score for the correct answer and zero for the wrong answer. As for the items left behind or for which more than one alternative was chosen, they are treated as the wrong items and given (zero), and thus the total score of the achievement test ranged from (0-40) degrees; Because the number of test items is (40) items.

Validity of the test: The researcher chose two methods to verify the validity of the test:

A - Apparent honesty: the researcher presented the test to a number of experts in history and methods of teaching social sciences, psychology, measurement and evaluation, and the items of the achievement test obtained a percentage of agreement (100%) from the opinions of experts and specialists, and the achievement test became ready for application with its final items amounting to (40) items.

b - Construction validity: The literature on measurement and evaluation indicates that the process of analyzing the test items from calculating the coefficients of difficulty, item discrimination, and the effectiveness of alternatives is an indicator of construct validity. As the researcher carried out the above-mentioned procedures, so the test is considered honest in terms of construction, and based on the foregoing, the test prepared by the researcher is considered true in terms of apparent and construction sincerity.

Eighth: Applying the test to the exploratory sample:

The researcher applied the test to an exploratory sample consisting of (100 students) of the fifth grade students in (Al-Hudaybiyah) school on Tuesday (8/12/2017) after it was proven to the researcher that the scientific material has been studied by the students of the two research groups, and the researcher aimed from that to:

1- Determining the appropriate time for the test:

After applying the test to the exploratory sample, the researcher found that the fastest student completed his answer in (34 minutes), while the slowest student took (40 minutes), while the other students' answers ranged between these two levels (⁴) and the appropriate time to answer the test was calculated by the following equation:

$$\text{average test time} = \frac{\text{The total time each student took to answer}}{\text{The number of students participating in the test}} = 36 \text{ minutes}$$

It turned out that the time taken by the students to answer the test was (36 minutes).

2. Statistical analysis of the test items: After applying the test to the exploratory sample and correcting the answers, the researcher arranged the final scores in descending order, then took two extreme groups of scores, taking the highest (27%) of the scores to represent the upper group, and the lowest (27%) of the scores to represent the lowest group. Thus, it took the highest and lowest (27%) of the scores as the best percentage of comparison between two different groups of the total group to study the characteristics of the items, and thus the number of students in each group of the upper and lower groups reached (27) students, and then the level of difficulty and discrimination was calculated. The effectiveness of the wrong alternatives is as follows:

A - The difficulty of the test items: The difficulty coefficient of each item was calculated using the equation of the difficulty coefficient, and it was found that it lies between (0.30 - 0.57), and the items are considered good, if their difficulty coefficient ranges between (0.20 - 0.80), Items are rejected if they are outside this range (Bloom, 1971: 66).

B - Strength of item discrimination: Ebel indicates that an item is good if its discriminating ability is (0.30) and above, but if it is less than that, it is considered weak items that are deleted or improved (Ebel, 1972: 40). After calculating the distinguishing power of each item of the achievement test, the researcher found that it ranges between (0.30 - 0.48).

⁴ - The time of the least student and then the time of all students were recorded according to the time of the end of their answers and divided by the total number of students.

C - Effectiveness of Wrong Alternatives (Camouflage): The test designer seeks to obtain negative values for the wrong alternatives, in order for the item to be good (Al Kubaisi, 2007: 184).

The alternative is more effective the more its value in the negative, and after the researcher conducted the necessary statistical operations for this, it appeared to her that the wrong alternatives for the post-test items have attracted to it a greater number of students of the lower group than the students of the upper group (Imam et al., 1990: 113).

The stability of the test in a split-half method: the researcher relied on the scores of the exploratory sample members in the exploratory test in the (Al-Hudaybiya) school by drawing (40) answer sheets in a random manner from the students' answers, which numbered (100), then divided the test items into two halves, the first half included scores of the odd items and the second half are the scores of the even items, using the Pearson correlation coefficient, as it is the most widely used and common correlation coefficient in this field (Al-Bayati, 2008: 93).

The results showed that the stability coefficient between the two halves (0.63), after correcting it with the Spearman-Brown equation, was (0.77), which is a good stability coefficient compared to the unregulated tests.

Ninth: The final application of the achievement test:

After the researcher completed the statistical procedures related to the test and its items, and became ready in its final form (40) items of the type of multiple choice, the researcher applied the achievement test to the basic research sample on Thursday, 12/15/2017, and they were informed of the test date a week before it was conducted, and that to prepare them for it, the researcher personally supervised the process of applying the test with the help of the social teacher in the same school. The researcher devoted the first page to the test instructions, writing the name of the pupil, class, division and school, and an illustrative example of the answer. The other pages included the test items of (40) multiple-choice test items.

Tenth: Correction of the test:

After applying the test by the researcher, she corrected its items and assigned one point for the correct answer and zero for the incorrect answer. The left-over items and items containing more than one answer were treated as the incorrect items.

Eleven: Statistical means:

- 1- T-test for two independent samples.
- 2- Pearson correlation coefficient.
- 3- Spearman-Brown correlation coefficient.
- 4- Chi-square test.
- 5- Difficulty coefficient.
- 6- Item strength coefficient.
- 7- The effectiveness of alternatives.

Chapter Four: Presentation and interpretation of the results

First, presenting the results:

The arithmetic mean, standard deviation, and variance of the scores of the students of the two groups were found in the achievement test and by using the T-test for two independent samples, then the T-value was found as shown in Table (4).

Table (4)
The t-test for the two groups of research in the achievement test

Group	Sample number	Arithmetic average	Standard deviation	Variance	Freedom degree	T-Value		Significance level (0,05)
						calculated	tabular	
Experimental	32	27.62	4.24	18.04	62	6.575	2,000	Statistical function
Control	32	20.87	3.95	15.67				

It is clear from Table (4) that the calculated t-value amounted to (6,575) which is greater than the tabulated t-value of (2,000) at a significance level of (0.05) and with a degree of freedom (62).

This indicates the superiority of the students of the experimental group that studied using programmed education over the students of the control group that studied in the traditional way and thus rejecting the null hypothesis, and accepting the alternative hypothesis which states (there is a statistically significant difference at a significance level of (0.05) between the average achievement of students of the experimental group that studied using programmed

instruction, and the average achievement of the students of the control group that studied in the traditional way, in favor of the experimental group).

The result of the current research agrees with the results of previous studies, which confirmed the superiority of the students of the experimental group that studied using programmed education over the students of the control group that studied in the traditional way.

Second: Interpretation of the results:

The results showed the superiority of the experimental group that was taught using programmed instruction over the control group in the post-achievement test that was applied after the end of the experiment, and this superiority may be attributed to one or more of the following reasons:

- 1- The percentage of the learner's memory of what he sees and touches is more than what he hears, as it remains in the learner's memory for a longer period.
- 2- What is characterized by programmed education of important advantages when used in teaching and its impact on students' achievement because it depicts historical events and geographical concepts in an interesting and attractive way and establishes information in the minds of students.
- 3- The use of programmed education is extremely important in the education process, as it helps the students to understand the subject of the lesson and brings them closer to what was far from them, picturing a lot of difficult and ambiguous information and simplifying it for them to facilitate the process of understanding it.

Third: Conclusions:

- 1- The use of programmed instruction in teaching adds to educational situations the character of vitality, serious communication and follow-up, as well as developing their inclination towards studying social studies.
- 2- Programmed education gives an interesting and attractive sensory picture that tells the reality of the past and its distant events that are difficult for students to perceive, and difficult for the teacher to explain in words.
- 3- Programmed education is effective and influential in the hearts of students, especially if the program is accompanied by bright colors and beautiful schemes, and from the level of their experience, which leads to an increase in their academic achievement.

Fourth: Recommendations:

- 1- Equipping schools with the minimum number of modern educational means so that members of the educational staff can use them in the educational process.
- 2- Holding intensive training courses for male and female teachers at the Preparation and Training Center on how to make and produce educational programs in the educational process, especially for teachers of social sciences.

3- Fifth: Suggestions:

- 1- Conducting a similar research on learning technology devices and other recent innovations.
- 2- Conducting a research similar to the objectives of the current research on female students and in other grades and classes, in addition to knowing the students' attitudes and tendencies towards social studies.

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