

Research Article

The Effectiveness of Active Learning on Students' Achievement in Islamic Education and Developing Their Citizenship Values

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Abstract

The current research aims to identify (The Effectiveness of Two Active Learning Strategies on the Achievement of Second Intermediate Grade Students in the Holy Quran and Islamic Education Subject and the Development of Their Citizenship Values.). The researcher adopted the quasi-experimental method, and used two scales to measure the variables of his research. The first scale was the achievement scale in mathematics and consisted of (40) paragraphs of the type of multiple choice, and verified its reliability, stability and discrimination, as well as conducting statistical analysis of its paragraphs, and the researcher prepared a citizenship values scale, and the scale in its final form consisted of (38) paragraphs and verified its reliability, stability and discrimination, and the results showed that the experimental group outperformed the control group in the mathematics achievement scale and the citizenship values scale. The researcher suggested conducting studies on the effectiveness of two active learning strategies in acquiring numerical concepts among first intermediate students and developing their logical thinking. The researcher also recommended emphasizing the necessity of teaching the use of active learning strategies in general at the intermediate stage. And the adoption of national values in the teaching of mathematics in the intermediate stages because of its importance in promoting and developing patriotism among students. The researcher also recommended emphasizing the need to teach the use of active learning strategies in general at the intermediate stage. And the adoption of national values in the teaching of mathematics in the intermediate stages because of its importance in promoting and developing patriotism among students.

Keywords

Active Learning, Achievement, Second Grade

1. Introduction to the Research

Our contemporary world is currently witnessing a great and continuous scientific development in all fields of science and in all fields of knowledge, and what scientific progress has produced is this huge knowledge explosion, as well as its natural acceleration, changes and developments in various fields of scientific and practical life, including school curricula,

which have witnessed tangible developments and rapid changes in recent times in all countries of the world.

The goal of education is no longer just to convey some information written on the lines of the curriculum, but to push the individual to educate himself and develop his abilities on

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how to acquire this information and knowledge in a continuous and organized manner and benefit from it in his life, that is, it is a process of change in the behavior of the individual and the development of his personality towards serving his community in which he lives, that is, he is no longer an imitator but a developer of himself and a beneficiary of others.

Education is a tool for the development of society and its first means of development, because the main goal is to prepare a scientifically educated learner who possesses knowledge and awareness of scientific matters related to various fields of life that enable him to make the appropriate decision about the situations and issues he faces in a constantly changing society, that is, he can make appropriate and timely solutions [16].

Many teaching strategies and models have emerged based on the constructivist theory, which aims to form the student and his self-knowledge, and allow him to engage all his senses in learning; which leads him to meaningful learning, and among these strategies that lead to meaningful learning are active learning strategies [1].

1.1. Research Problem

There are trends at the educational levels and all scientific and humanitarian disciplines of interest in national values in students and how to develop them, and from this point of view, national values have become one of the objectives of teaching any scientific subject, especially mathematics, because of the principles and charters that enhance the learner's political and religious participation, and therefore the researcher believes that if a student possesses national values, it may make him positive in his acquisition of the concepts of mathematics and form tendencies towards the subject and acquire values and give this subject its civilized role in the advancement of the nation..

From the above, the researcher found that the current research issue is the need for modern methods and strategies that take into account the process of building knowledge in an effective way to create a suitable environment for learning and expose the student to real issues that he needs to understand and assimilate to understand and assimilate knowledge in order to practice thinking processes other than rote learning and discovering information on their own without resorting to memorizing and memorizing it, and this prompted the researcher to use a modern teaching model that may address the aforementioned issues, Thus, the current research question is to answer the following question: - What is the effectiveness of two active learning strategies on the achievement of second grade intermediate students in mathematics and the development of citizenship values.

1.2. Importance of the Research

The relationship between education and education is a close relationship, as education is a means of educating and learning

the individual through the effort exerted between them, so it is an indispensable necessity that society is concerned with, aims for and utilizes. [13].

Accordingly, the importance of education emerges as a human necessity that performs multifaceted functions for the individual and the group, as no society, no matter how primitive or civilized, is devoid of an educational system that regulates the course of its life.

Education has a clear importance, because it strengthens the link between the individual and his environment, as the individual cannot perform his role in making life without it, as well as helping him to grow systematically and in the desired direction, in addition to that it is a process of knowledge transfer, including educational programs, strategies and teaching methods that provide the optimal educational climate, which is based on the basis of stimulating the interest and inclinations of students, motivating them, and facing individual differences in an effective manner and there are many of them to enrich the educational process, and stimulate the mind of the student which helps him to attention, absorption and retrieval through many theories. [2].

One of the theories that support the learner's activity is the constructivist theory, which believes that the learner creates his own knowledge and stores it inside him, and one of its principles is Active Learning, where the learner practices activity in processing information to change or modify his mental structure to discover knowledge himself. [12].

The importance of active learning is to help learners learn concepts and information that arouse their interests and form positive attitudes towards the educational material and allows an opportunity to link the content of the material to the real life of the learner. International studies have emphasized the importance of active learning and the need to use it to raise the level of learning.

Therefore, the researcher chose to use two active learning strategies that may raise learners' achievement, namely the role-playing strategy and the (think-pair-share) strategy because of their suitability for the level of mental development of the age group.

The role-playing strategy is one of the most effective activities, as it is used as a tool for teaching scientific material in science and other subjects, and this type of activity that stimulates learners' abilities and moves them towards research, investigation, observation of behavior, and the ability to measure and evaluate [3].

Teaching according to the role-playing strategy is only a continuation of what learners used to do in their normal lives to obtain knowledge, and role-playing may develop scientific attitudes among learners; because the learning process becomes a pleasure and helps learners to understand the time of the material well and discover individual differences between learners. [14].

From the above, the researcher concludes that the role-playing strategy works to change difficult abstract concepts into

tangible material concepts because they are related to the reality of social life, and this increases the activity of learners and their lives.

The Think-Pair-Share strategy is an effective way to change the pattern of discourse in the classroom, including intervention procedures that allow learners more time to think, respond, and help each other, and it is one of the most important strategies that grew in the shadow of cooperative learning.

Think-Pair-Share is a strategy that activates learners' prior knowledge of the learning situation and is used to elicit a reaction to a topic. After individually reflecting and thinking about the issue or topic for some time, each pair of learners discuss their ideas to solve the raised issue.

The researcher believes that science and thinking are two interrelated concepts that cannot be separated, so if the scientific level is to be improved, thinking should be taken care of. [15].

Citizenship is a value that has been and still is the subject of concern for most philosophers, scientists and educators of all ages, because they notice the lack of knowledge of young people about the responsibilities of citizenship and their alienation, and at the Arab level, young people face many issues, and there is no doubt that these issues in turn lead to a low practice of political participation values among this group towards their homelands.

1.3. Research Objective 4

The current research aims to identify

- 1) The effect of two active learning strategies on the achievement of second grade middle school students in mathematics.
- 2) The impact of two active learning strategies on the development of citizenship values among second grade middle school students.

1.4. Research Hypotheses

In light of the research objective, the researcher formulated the following null hypotheses

- 1) First null hypothesis: There is no statistically significant difference at the significance level (0.05) between the average scores of the experimental group students who were taught mathematics according to two active learning strategies and the average scores of the control group students who were taught the same subject according to the usual method in the posttest achievement scale.
- 2) The second null hypothesis: There is no statistically significant difference at the significance level (0.05) between the average scores of the experimental group students who were taught mathematics according to two active learning strategies and the average scores of the control group students who were taught the same subject according to the usual method in the citizenship values scale.

- 3) Third null hypothesis: There is no statistically significant difference at the significance level (0.05) between the mean differences in the scores of the experimental group students who were taught mathematics according to two active learning strategies in the pre and post scales of citizenship values.

1.4.1. Limitations of the Research

The current research is limited to:

- 1) Human limit: A sample of second grade middle school students in middle schools affiliated with the General Directorate of Education in Nineveh Governorate, morning study.
- 2) Spatial limitation: One of the middle schools in Nineveh Governorate, the center of Mosul district.
- 3) Cognitive Limit: The topics in the first three units set for the first semester, second edition 2020, for the second intermediate grade in Iraq.
- 4) Temporal limit: The first semester of the academic year (2022-2023).

1.4.2. Defining Terms

1.5. Effectiveness

Defined by

as "the achievement of the goal and the ability to achieve, and it is the measure by which we recognize the performance of the teacher and the performance of the learner for their role in the learning and teaching processes.

Procedural definition of effectiveness: The extent of the impact of the two active learning strategies as an independent variable on the achievement and attitude of second grade middle school students.

1.6. Strategy

Defined by

As "a set of procedures and ideas that deal with a field of human knowledge in a comprehensive manner, and proceeds towards achieving goals and then sets appropriate evaluation methods to know the extent of its success and the achievement of the goals it has set before". [3].

Procedural definition of strategy: These are the procedures and activities that the researcher planned and followed in teaching the two experimental groups to help second grade students follow the steps of the two active learning strategies in order to achieve the predetermined goals.

1.6.1. Active Learning

Defined by

As "learning that includes a set of learning strategies that allow the student to speak, listen, read, write and reflect on the content of the curriculum presented to him" (Al) [9].

From the above, the researcher defines it procedurally

It is educational activities available to the student through active participation in the learning situation according to sequential steps planned in light of the two strategies of the current research.

1.6.2. Role-Playing Strategy

Defined by

As “an illustrative abstract simplification of a real situation or process, in which participants play a role in interacting with other people or with elements of the environment and vary in the extent of their representation of reality.

The researcher defines it procedurally as

The set of steps and procedures in which the students of the first experimental group play representative roles prepared in the light of the topics of the mathematics book for the second intermediate grade according to the planned prior steps included in the role-playing strategy.

1.6.3. Strategy Think-Pair-Share

Defined by

It is “a strategy that includes distinctive important activities that can be used in class because it includes individuals, small groups and discussion of all class members and is an activity suitable for all learners for their responses to the question or text provided by the teacher

The researcher defines it procedurally

It is the strategy that the researcher applied to the students of the second experimental group in the research sample based on three sequential steps: individual thinking for each student, pairing her answer with her partner in the group, and sharing their answer with the rest of the class.

1.6.4. Acquisition

As “what students gain from facts, concepts, generalizations and skills after studying a topic, unit or course

From the above, the researcher defines it procedurally:

It is the amount of information obtained by students of the second intermediate grade (research sample) in the subject of mathematics as measured by the score obtained in the achievement scale prepared by the researcher for the purposes of the research.

1.6.5. Citizenship Values

Defined by

As: A set of standards for the preparation of a good citizen who believes in democracy, consultation, respect for the other opinion and commitment to belonging to and defending the homeland.

Procedural definition of citizenship values

The set of ethics, habits and behaviors possessed by the fourth grade literary student and measured by the scores obtained by the students of the research sample - the experimental group - when they responded to the paragraphs of the citizenship values scale prepared by the researcher.

2. Theoretical Aspects and Previous Studies

Section One: Theoretical Background

Active Learning

The Concept of Active Learning

Active learning is an educational philosophy based on the learner's positivity in the learning situation. It encompasses all educational practices and teaching procedures that aim to activate the learner's role and encourage them to rely on themselves in obtaining information and forming values and attitudes. It does not focus on memorization and indoctrination, but rather on developing thinking, the ability to solve problems, teamwork, and cooperative learning. (Al-Hashemi, 2008: 88)

Learners' listening in the classroom, whether during a lecture or computer presentation, does not in any way constitute active learning. For learning to be active, learners must be engaged in reading, writing, or discussion related to what they are learning. Active learning requires learners to utilize higher-order thinking tasks in relation to what they are learning.

Active Learning Strategies:

Active learning strategies reflect the ideas advocated by constructivist theory, which emphasizes the importance of learners building their knowledge through interaction with their environment. To implement active learning, a variety of methods and strategies is essential. Using a single strategy that can be applied in all educational situations is no longer effective. It has long been believed that using diversity increases learners' motivation and learning, positively impacts their attention, and thus makes learners more receptive to learning. Diversifying strategies is key to enhancing learning. Among the active learning strategies are: (Al-Azzawi, 2008: 34)

Role-playing strategy

The nature of play

Play, in general, is a voluntary activity performed by the individual himself with enthusiasm and desire. It is not imposed from outside, but rather stems from within. It is a manifestation of human behavior at various stages of development. Play is an innate tendency, born within the learner, equipped with it among a set of inclinations and motivations transmitted through heredity, which drives him to behave in a manner consistent with achieving his own goals.

Play is one of the most important ways for learners to understand the world or the environment around them, and a means of self-expression. It allows learners to use their senses and reason, allowing them to discover the world around them, understand their environment, and gain insight into themselves. [4].

Educational materials play an important role in the educational process as tools for embodying abstract concepts. Some of these tools present information to learners, but they also encourage them to interact with it in some way to acquire the information, such as simulation devices and educational

games. This type of tool makes students active and effective as they acquire facts, concepts, principles, and processes in learning situations that are close to or similar to reality.

2.1. Educational Objectives of Role-Playing

Role-playing requires effective preparation and planning from the teacher and focuses on educational objectives, the most important of which are

- 1) It helps learners gain self-confidence, which is reinforced by this activity, as it relies on the use of linguistic, motor, and intellectual skills.
- 2) It is an excellent method for developing scientific attitudes among learners, as the learning process becomes both fun and an art.
- 3) It connects the learning process to students' real-life experiences through their impersonation and simulation of roles from their own lives.
- 4) It significantly helps clarify scientific information and consolidate it in learners' minds, particularly abstract scientific concepts.
- 5) It helps enrich the learner's language through dialogue or spoken words used in role-playing [5].

2.1.1. Advantages of the Role-Play Strategy

Role-play has several advantages, including:

- 1) The possibility of employing role-playing to bring abstract concepts closer to concrete objects, making them easier for learners to grasp and understand.
- 2) It is effective for psychomotor objectives.
- 3) It provides opportunities for practice, training, and feedback.
- 4) It provides learners with direct learning experience.
- 5) It gives the learner responsibility and builds self-confidence.

2.1.2. Think-Pair-Share Strategy

This is one of the strategies used to activate learners' prior knowledge of the learning situation. It is used to generate a reaction to a given topic. After individually reflecting and thinking about the problem or topic for some time, each pair of learners discusses their ideas for solving the problem together. They then engage another pair of learners in their discussion of the same idea. Their combined conclusions are then recorded, representing a single idea for the group to solve the problem at hand.

Abdul Salam (2006) believes that the Think-Pair-Share strategy involves the teacher asking learners to divide into pairs (or pair with a neighbor) to discuss and think together about the question and activity presented for approximately five minutes. Afterwards, the teacher asks each pair, one by one, to participate in presenting their conclusions. It provides solutions and ideas for the activity under study. It is distinguished by giving the learner

the opportunity to reflect (internally with himself and externally with his colleagues), think and review before answering, and then cooperate and share ideas and solutions collaboratively. [6].

2.1.3. Think-Pair-Share (TPS) Strategy Steps

The strategy goes through specific steps as follows

1) thinking

The strategy begins when the teacher poses a question to the learners or provides them with a stimulus or feedback that reflects the important criteria in the lesson assigned for that day.

2) Pairing

After the thinking time, the teacher asks the learners to turn to their group partner to share their thoughts. During this time, the learners take turns sharing their ideas with their group partners.

3) Sharing

In this step, the teacher asks the pairs to share their discussion with the whole class. The teacher records the learners' answers on the board so that they are clear and can identify the correct answer.

4) Assessment

Assessment is conducted using discussion and short measures or scales, during or after the activity (lesson). Discussion can be used to determine the level of understanding of the learners by evaluating their answers.

2.1.4. Citizenship Values

Societies attach great importance to values. This is manifested in calling people in more than one situation to adhere to noble morals and make them a habit that they practice with discipline, as this elevates the individual and, consequently, society. The researcher will address values in terms of their importance, the relationship between values and certain concepts, how values are formed, the characteristics of values and their sources, and how values and citizenship values are measured. This is based on the premise that education and training are at the forefront of the means and methods through which values in general, and national values in particular, can be instilled and developed. This also protects the individual and society through what they learn, freedom of thought, objectivity in presentation and interaction, and credibility in their evaluation. [7].

We find that the concept of citizenship has several dimensions, which vary depending on the perspective from which they are approached. Some of these dimensions include the following:

- 1) The Legal Dimension: Citizenship is, by nature, primarily a legal status. This status includes, first and foremost, the right to vote and be elected, but it is also a set of rights and freedoms that citizens must enjoy.
- 2) The Political Dimension: Citizenship has become very close to a civic behavioral pattern, seeking the active participation of its citizens in public life. This legal status includes not only the granting of citizenship, but today

also includes the freedom to form political parties, the right to demonstrate, hold sit-ins, and participate in political formation.

- 3) The Cognitive and Cultural Dimension: Citizens primarily need education and knowledge as a means of building their skills and competencies. National education is based primarily on people's culture, taking into account the psychological, social, and cultural characteristics of society. Culture and knowledge are considered important elements for the formation of a competent citizen, and the state can rely on them.
- 4) The Skills Dimension: Citizens must possess intellectual skills such as critical thinking, analysis, and problem-solving. This means that citizens imbued with these skills will be able to discern matters rationally and more logically.
- 5) The social dimension: This also refers to the citizen's ability to achieve sound and efficient social interaction, give importance to the social system in which they live, and support its stability and progress in various fields.
- 6) The belonging dimension: This refers to instilling in individuals feelings and a sense of belonging to their homeland, culture, and society.
- 7) The values dimension: This includes the religious dimension, represented by the various principles established by the dominant religion in society, in addition to values such as justice, equality, tolerance, freedom, consultation, etc.
- 8) The spatial dimension: This refers to the local environment in which the individual lives and interacts with the individuals around him.

2.1.5. Levels of Citizenship

We find that citizenship varies from one individual to another, depending on the nature of the relationship between them and other individuals on the one hand, and between them and their homeland on the other. Therefore, we can distinguish between the levels of citizenship, which are as follows:

- 1) The individual's sense of common bonds with the rest of the group, such as blood, neighborhood, and way of life, including customs, traditions, systems, values, beliefs, professions, laws, and more.
- 2) His sense of the continuity of this group throughout the ages, and that he and his generation constitute the past and the seed of the future.
- 3) His sense of connection to the homeland and belonging to the group, meaning that his future is linked to its future, and that everything that befalls it is reflected in himself, and everything that befalls him is reflected in it.
- 4) The integration of these feelings into a single thought, a single direction, and a single movement.

2.1.6. Characteristics of Citizenship

The topic of citizenship is considered one of the most important and widespread topics in society. It is not limited to

duties and rights alone, but is much more comprehensive. It encompasses a society's culture, values, and a set of mechanisms for regulating relationships that must be acquired and practiced. For citizenship to be truly citizenship, several characteristics must be present, including the following:

- 1) A reciprocal relationship: This refers to the relationship between the citizen and the nation. It is the relationship between the individual and his nation, and the relationship between the nation and the citizen (the individual). It is a situation subject to development, advancement, and progress, depending on the relationship between the citizen and his nation.
- 2) Voluntariness: This means that citizenship is a voluntary and optional relationship between the citizen and the state, not based on restrictions and coercion. On the contrary, it is based on freedom.
- 3) Acquisition and Loss: This refers to the fact that citizenship is acquired; it is not merely an innate given, as it is often described. Citizens are not born, but rather made. Loss refers to the loss of certain rights under various circumstances, such as prolonged residence abroad.
- 4) Individualism: The set of individual rights granted by the state to its citizens, particularly those related to civil and political rights.
- 5) Mobility and Continuous Development: The concept of citizenship is alive and dynamic, constantly in flux, especially since this concept is susceptible to progress, weakness, and decline, as it is always in constant flux and dynamism.

2.2. Section Two: Previous Studies

- 1) The study (Joud, 2022): This study was conducted in Jordan and aimed to identify the impact of using oral history on the achievement of sixth-grade female students in national education and the development of national values within them. The study used statistical methods, including arithmetic means, standard deviations, and analysis of variance. The tools used were the achievement scale and the political participation scale (60) female students. The study results showed that the experimental groups outperformed the control group on the achievement scale and the national values scale.
- 2) The study by Al-Jamil (2021): This study was conducted in Iraq - Baghdad. The study aimed to identify the impact of role-playing on achievement in physics and attitudes toward it among second-year middle school students. The study sample consisted of (51) female second-year middle school students. The experimental group consisted of (25) female students who studied using the role-playing method, and the control group consisted of (26) female students who studied using the traditional method. The research tool was represented by the achievement scale and the attitude scale towards physics. Statistical

methods were used: the t-test for two independent samples, the Quedd-Richardson equation 20, the Cronbach's alpha equation, (item difficulty equation, super-discrimination equation, and alternative effectiveness equation). The results showed that female students who studied using the role-playing method outperformed those who studied using the traditional method in their physics achievement.

- 3) Al-Sumaidaie's study (2020): The study was conducted in Iraq. The study aimed to determine the effect of the (Think-Pair-Share) strategy on the achievement of biology and science processes for first-year intermediate female students.

The study sample consisted of (67) female students, with (33) students in the experimental group who studied using the (Think-Pair-Share) strategy, and (34) students in the control group who studied using the traditional method. The research tools were: constructing the achievement scale and constructing the science processes scale. Statistical methods: Quod Richardson equation, Cooper's agreement ratio equation, difficulty equation, discriminant power equation, alternative effectiveness equation, t-test.

The results showed the effectiveness of the (Think-Pair-Share) strategy in increasing female students' academic achievement in biology and its positive impact on developing students' mental skills (science processes).

Comment on postgraduate studies:

In the study of (Joud, 2022), the research sample consisted of (66) students, while the study of Al-Sumaidaie (2020) consisted of (33) students. The study of Al-Jamil (2021) consisted of (51) students, while the current study used (60) students.

2.3. Search Methodology and Procedures: re

This chapter includes the procedures adopted by the researcher to achieve the research objective and hypotheses, represented by the experimental design, defining the research community, selecting the sample, and equivalence of the groups. It also includes preparing the teaching plans and procedures for their implementation, preparing and adapting the

research tools, implementing the experiment, and adopting appropriate statistical methods to analyze the results. The following are detailed.

Research Methodology: In order to achieve the program's objectives, namely, identifying the effectiveness of the educational program on educational achievement and citizenship values among third-year students in the Department of Educational and Psychological Sciences, the researcher followed the experimental method, as it is the best research method for solving educational problems. In this type of research, an attempt is made to control all the basic factors influencing the dependent variable or variables in the experiment, with the exception of one factor that the researcher controls and changes in a specific manner with the aim of determining and measuring its effect on the dependent variable or variables. Therefore, experimental research is defined as: a deliberate, controlled modification of the specific circumstances of an event and an explanation of the changes that occur in this event as a result [8].

3. Experimental Design

The researcher adopted an experimental design, which is a control group design with a scale. Experimental design is the foremost step in the researcher's research process, as the validity of the design ensures accurate and sound results. Determining the type of experimental design depends on the nature of the problem and the circumstances of the research sample. It must be recognized from the outset that educational and psychological research cannot achieve a sufficient degree of control due to the complexity of social and human phenomena and the overlap of variables. This makes the process of controlling them extremely difficult, regardless of the measures taken to control such variables. The first experimental group is exposed to the independent variable, the LEED strategy, while the second control group is exposed to the traditional or conventional teaching method. Both groups were randomly selected. The experimental design can be illustrated in Table 1.

Table 1. Experimental Design of the Research.

Group	Tribal scale	independent variable	dependent variable	Dimensional scale
empiricism	Achievement and scale	Role-playing strategy	Achievement	Achievement Scale and
The officer	of citizenship values	Think-Pair-Share strategy	Citizenship Values	Citizenship Values Scale

Third: Defining the research community:

- 1) The Research Community:

The research community consists of second-year middle school students in secondary and middle day schools in the

center of Mosul Governorate for the academic year (2022-2023). The number of students in these schools reached (1,300) second-year middle school students, according to statistics conducted by the Educational Planning Department in the

General Directorate of Education in Nineveh Governorate. 2- Selecting the Research Sample: A sample is defined as: "A subset of the study community selected in a specific manner. The study is conducted on it, and the results are then used and generalized to the entire original study community. The researcher intentionally selected Al-Zawraa Intermediate School, one of the schools affiliated with the General Directorate of Education in Nineveh, to implement his experiment. He found that it included two classes for the second intermediate grade. Using a random method, the researcher selected Class (A) (to represent the experimental group) that would teach mathematics according to the (LEAD strategy), and Class (B) (the control group) that would teach mathematics according to the (traditional method). The number of students in the sample was (30), with (30) students for the experimental

group and (30) students for the control group. Fourth: Equivalence of the two research groups: For this reason, the researcher was keen, before conducting the experiment, to ensure that the students in the two research groups were statistically equivalent in some variables indicated by the literature and previous studies that might affect the results of the experiment. The variables are: the students' chronological age, calculated in months. 1. The students' chronological age, calculated in months: The researcher used the t-test for two independent samples to determine the significance of the statistical difference between the experimental and control groups. The results showed no statistically significant difference between the two research groups, as shown in Table 2. This indicates that the two research groups are equivalent on this variable.

Table 2. This indicates that the two research groups are equivalent on this variable. Arithmetic mean, standard deviation, and calculated t-value for chronological age scores.

Group	number	arithmetic mean	standard deviation	degree of freedom	The value of the letter T		Significance0.05
					The calculated	Tableau	
empiricism	30	201.59	17.55	58	0.8	2	Not significant
The officer	30	198.43	13.61				

2) Citizenship Values Scale scores:

The researcher administered the Citizenship Values Scale to the research sample before the experiment began, in order to ensure equivalence between the two research groups on this

scale. The researcher used the t-test for two independent samples, and no statistically significant differences were found between the two groups. Therefore, the experimental and control groups are considered equivalent on the pre-test for future thinking, as shown in Table 3.

Table 3. Shows the arithmetic mean, standard deviation, and calculated and tabulated t-values for the pre-test for Citizenship Values Scale scores.

Group	number	arithmetic mean	standard deviation	degree of freedom	The value of the letter T		Significance0.05
					The calculated	Tableau	
empiricism	30	73.52	10.41	58	0.18	2	Not significant
The officer	30	73.03	11.18				

Research Requirements

1) Defining the Academic Subject Matter

Before beginning the experiment, the researcher identified the academic subject to be taught to the students. This subject included topics from the mathematics curriculum for the second intermediate grade, with (5) lessons per week. These topics were included in the first three semesters [11].

2) Deriving Behavioral Objectives

The researcher prepared behavioral objectives based on the main concepts he identified, which are included in the first, second, and third semesters for teaching mathematics to the second intermediate grade. These objectives total (120) behavioral objectives based on Bloom's Taxonomy. 3. Preparing Instructional Plans:

The researcher prepared instructional plans for the mathematics subject to be taught during the experiment. The plans were based on two active learning strategies for teaching students in the experimental group, and on the traditional method for teaching students in the control group. The researcher presented two models of these plans to a group of experts and specialists in mathematics, its teaching methods, and educational and psychological sciences, to solicit their opinions, suggestions, and comments. The aim was to improve the formulation of these plans, making them sound and valid to ensure the success of the experiment. In light of the experts' comments, the necessary modifications were made to them, and they were finally ready for implementation. Sixth: Research Tools:

The researcher will explain the research tools, each separately, to achieve the desired objectives and hypotheses of the research. This requires two tools: a mathematics achievement scale and a citizenship values scale, as follows:

1) Achievement Scale

The researcher developed an achievement scale for mathematics, based on the behavioral objectives identified. The scale was multiple-choice because it is one of the most objective scales, reducing the chances of guesswork significantly. It is also more reliable in its accuracy and time-saving. Furthermore, this scale is flexible, as it can be used to evaluate educational objectives at various cognitive levels. Accordingly, the researcher prepared the scale consisting of (40) paragraphs, covering the material contained in the experiment, and he took into account that each concept has three processes that measure (the level of definition, the level of discrimination, and the level of application) and it consists of (40) paragraphs in mathematics achievement amounting to (12) concepts of the multiple-choice type. Then the researcher applied the scale to a survey sample consisting of (100) students from the same research community. After analyzing the results, the researcher extracted the difficulty and ease coefficient for the paragraph, which was found to range between (0.27-0.81). The researcher also found the discriminating power of the paragraphs to range between (0.30-0.57)). When the researcher used the Cronbach's alpha internal consistency method to determine the stability of the scale, the stability coefficient reached (0.82), which is a good percentage. Thus, the scale became ready for application in its final form consisting of (40) paragraphs [10].

2) Citizenship Values Scale

After reviewing numerous studies on citizenship values, the researcher prepared a scale for national values (citizenship values) consisting of five positions. For each position, there were four alternatives, one of which was correct. Thus, the scale, in its final form, consisted of (38) items. The researcher conducted a statistical analysis of the scale items, finding that the scale items were acceptable if their difficulty ranged between (24% and 80%). The difficulty coefficient was determined for each item on the scale, and after applying the appropriate equation, it was found to range between (0.35 - 0.76), which is an acceptable percentage. The discriminating power of the citizenship values items was determined according to the appropriate equation, and it was found that the discrimination coefficient values ranged between (0.26 - 0.70). The scale items were deemed acceptable and valid. The researcher also determined the reliability of the scale by calculating the reliability coefficient using the Kuder-Richardson equation and the statistical analysis package (SPSS). The reliability coefficient value was (0.86), which is considered a good reliability coefficient. Sixth: Statistical Methods

The researcher used the following statistical methods: (Test. T) for two independent samples, difficulty coefficient for the scale items, discrimination coefficient for the scale items, Pearson's correlation coefficient, Cronbach's alpha equation, and Kuder-Richardson equation.

3.1. Presentation and Interpretation of Results

First: Presentation of Results:

A. Result of the First Null Hypothesis:

To verify the first null hypothesis, which states that (there is no statistically significant difference at a significance level of (0.05) between the average scores of students in the experimental group who studied mathematics according to two active learning strategies and the average scores of students in the control group who studied the same subject according to the traditional method in the post-achievement scale), the researcher applied a scale to the two research groups. When using the t-test for two independent samples to measure the significance of the difference between the two averages, the calculated t-value reached (2.79), which is greater than the tabular t-value of (0.05). (2.00), at the (0.05) level and with a degree of freedom of (58), and Table 3 illustrates this.

Table 4. Results of the T-test for the students of the two research groups in the achievement scale.

Group	number	arithmetic mean	standard deviation	degree of freedom	The value of the letter T		Significance0.05
					The calculated	Tableau	
empiricism	30	26.78	4.26	58	2.79	2	significant
The officer	30	23.34	5.51				

This indicates that there is no statistically significant difference between the average scores of the experimental group, which studied using active learning strategies, and the average scores of the control group, which studied using the traditional method, in favor of the experimental group. Accordingly, the null hypothesis is rejected and its alternative is accepted.

B. Result of the Second Null Hypothesis.

To verify the second null hypothesis, which states that "there is no statistically significant difference at a significance

level of (0.05) between the average scores of students in the experimental group who studied mathematics using two active learning strategies and the average scores of students in the control group who studied the same subject using the traditional method on the Citizenship Values Scale," the researcher used the t-test for two independent samples. The calculated t-value reached (2.18), which is greater than the tabulated t-value of (2.00), at a significance level of (0.05) and with a degree of freedom of (58), as shown in [Table 5](#).

Table 5. Results of the T-test for students of the two research groups in the post-test of citizenship values.

Group	number	arithmetic mean	standard deviation	degree of freedom	The value of the letter T		Significance0.05
					The calculated	Tableau	
empiricism	30	80.64	13.01	58	2.18	2	significant
The officer	30	73.81	12.02				

This indicates that there is no statistically significant difference between the mean scores of the students in the two research groups, in favor of the experimental group. Accordingly, the null hypothesis is rejected and its alternative is accepted.

C. Result of the Third Null Hypothesis:

To verify the third null hypothesis, which states that "there is no statistically significant difference at a significance level of (0.05) between the mean differences in the scores of students in the experimental group who were taught mathematics

according to two active learning strategies on the pre- and post-tests of citizenship values," the researcher used the t-test for two correlated samples. The calculated t-value was (2.31), which is greater than the tabulated t-value of (2.04) with a degree of freedom of (29), and at a significance level of (0.05). This means that the result is not statistically significant, in favor of the post-test of citizenship values. [Table 6](#) illustrates this.

Table 6. Results of the t-test for two correlated samples regarding the pre- and post-tests of citizenship values for the experimental group.

Group	number	arithmetic mean	standard deviation	degree of freedom	The value of the letter T		Significance0.05
					The calculated	Tableau	
empiricism	73.52	10.41	4.26	17.37	2.31	2.04	significant
The officer	80.64	13.01	5.51	17.12			

thus, the third null hypothesis is rejected and its alternative accepted.

Interpretation of the results - Based on the results of the current research, which demonstrated the superiority of students in the experimental group, who were taught using two active learning strategies, over students in the control group, who were taught using the traditional method. This superiority can be attributed to the students' increased learning motivation, as follows:

A. The active learning strategy deepened students' concepts and generalizations, and provided them with facts and skills presented to them in a new and programmed approach that created excitement and enjoyment for them through the activities with all effectiveness, enabling students to understand and absorb the information presented to them.

B. The strategy's ability to stimulate students' thinking, through the mental visualization task, which aims to form mental images of the text and its events, which aids creativity,

innovation, and broadens vision. Third: Conclusions.

In light of the results of the current study, the researchers concluded the following:

- 1) Two active learning strategies demonstrated increased achievement among second-grade middle school students in mathematics, demonstrating the potential of middle school students by providing a learning environment enhanced with diverse educational tools and activities.
- 2) The steps of two active learning strategies facilitate the teacher's implementation of objective objectives and help learners meet and understand their learning needs based on the activities provided.

3.2. Recommendations

In light of the study's findings, the researcher recommends:

- 1) Emphasize the need to teach the use of active learning strategies in general at the middle school level.
- 2) Adopt national values in teaching mathematics at the middle school level, given their importance in enhancing and developing patriotism among students.

3.3. Suggestions

To complement this study, the researcher proposes future studies, including

- 1) Conducting a study to determine the effectiveness of two active learning strategies in acquiring numerical concepts and developing logical thinking among first-grade middle school students.
- 2) Conducting a study to identify the effectiveness of two active learning strategies in acquiring mathematical concepts among fifth-grade literary students and developing their numerical values.

Author Contributions

Bashir Khalil Ibrahim: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing

Conflicts of Interest

The author declares no conflicts of interest.

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