

## THE EFFECT OF THE STRATEGY OF IMAGINATION ON THE ACHIEVEMENT OF SECOND GRADERS IN SCIENCE SUBJECT

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### Abstract:

The research aims to identify the effect of the strategy of imagination in the achievement of second-grade students in the intermediate science subject, as the research sample included two groups, one of which was the experimental group and the number of its students was (40) students, and the other represented the control group and the number of its students was (36) students, and in the intentional way the researcher chose (Al-Hassan Bin Ali High School (PBUH)) from the research community represented by the middle schools affiliated to the Directorate of Education of Diyala Governorate / Baquba. The researcher adopted the experimental research method as a method for conducting her research, which includes one independent variable (imagination strategy) and a dependent variable (scholastic achievement). As the researcher chose the experimental design to control the research variables, and before starting to apply the experiment, the researcher rewarded the two research groups for the purpose of obtaining accurate results with the following variables: (chronological age calculated in months, students' previous achievement, previous information test, Raven's intelligence test). After making the equivalence between the two research groups, the researcher prepared the requirements of the application of plans, objectives and tests for the two research groups, and after completing the application of the experiment, the researcher applied her research tools to the two research groups, as the researcher obtained data for the two research groups, as these data were statistically processed by a test ( t-test) for two independent samples and the results are shown; The students of the experimental group outperformed the students of the control group who studied according to the (Imagination strategy) in the achievement of science subject.

**Keywords:** imagination strategy, academic achievement, second-intermediate students, science subject

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## Introduction

### Section One: Introduction to the Research

**First,** the Study problem

The impact of progress and rapid development and the accompanying explosion of knowledge that affected all disciplines, which became necessary to pay attention to learning based on the use of modern educational strategies and contemporary technologies in line with scientific progress and technological development, where interest is increasing day after day in the need to improve and develop teaching strategies and methods. (Al-Jubouri et al., 2011: 7-8). Science is a natural science that includes theories, facts, and inventions. Despite the importance of science subject, we find that the actual reality of its teaching is still characterized by stagnation and boredom, and this is due to shortcomings in the strategies, methods and methods used in teaching students to science subjects. It was also found that there is a weakness in the achievement in science, especially for middle school students, due to the specificity of this critical age stage and the fact that students are going through physical, mental and psychological changes, and these methods may be limited from the point of view of many educators. The requirements of this development, some studies found weakness in achievement, such as the study (Saleh, 2015) and the study (Abdul Hassan, 2016). Hence, the main research problem emerges, and thus the research problem can be determined by the following question:

### **The effect of the imagination strategy on the achievement of second-grade intermediate students in science**

**Second:** The importance of research:

The strategy of imagination is considered as an essential pillar affecting academic achievement, because it has the ability to attract students' attention, and follow events through imagining a realistic story that carries in its folds scientific concepts as links between events, and it also provides students with scientific information and presents it indirectly (Al Harahsheh, 2014). :193). And that achievement in all its forms and colors is one of the goals of education because of its educational importance in the life of the student. As well as their distribution in different educational disciplines or their acceptance in colleges or universities of higher education, and also achievement is the basis for most educational decisions in education. (Al-Shahrani, 2010: 38).

**Third: Study Objective:**

1. The current research aims to identify the effect of the strategy of imagination on the achievement of students of the second intermediate grade in science.

**Fourth: Study Hypothesis:**

For the purpose of verifying the goal of the research, the researcher developed the following hypothesis: "There is no statistically significant difference at the level of

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significance (0.05) between the average scores of the experimental group students who study according to the strategy of imagination and the average scores of the control group who study according to the usual method on the achievement test.”

#### **Fifth: Limitations of the Search:**

The search is determined by:

1. Spatial boundaries: Intermediate and secondary schools (governmental day schools) for boys only are affiliated to the General Directorate of Education in Diyala Governorate / Baquba.
2. Time limits: the first semester of the academic year (2021-2022).
3. Human limits: second-grade intermediate students.
4. Cognitive limits: the science book for the second intermediate grade, 3rd floor, for the year (2019), which is scheduled by the Ministry of Education for the academic year (2021-2022), and the study classes were identified, which is (the fourth unit) represented by (the seventh chapter: simple organisms, and the chapter The eighth: the kingdom of plants, and the ninth chapter: the kingdom of animals), and the (fifth unit) represented by (the tenth chapter: the environment and its components).

#### **Sixth: Study terms**

##### **1- The strategy of imagination was defined by:**

Ambo Saidi and Suleiman (2009) mentioned that imagination is a strategy based on the formulation of an imaginary scenario that transports students on an imaginary journey and urges them to build a mental image of what they hear. Students are directed to build mental images rich in colors of various sizes, and the integrated work is done between the five senses, so smell, taste, and a sense of heat are combined. texture and sound within the mental image that is being constructed. (Ambo Saidi, and Suleiman, 2009: 3).

The researcher defines them procedurally: as a series of carefully organized and planned steps by the science school in the formation of pre-prepared imaginary representational situations, which contribute to transferring the second-grade students in an imaginary journey to form mental images that enable them to form a sensory image of these ideas in order to formulate them In a new image for a specific purpose.

##### **2- Academic achievement: - defined by:**

Abu Jadu (2008) defines it as: the outcome of what the learner learns after a specified period of time, and it can be measured by the degree he obtains in an achievement test to determine the extent of the success of the strategy that the teacher sets and plans to achieve his goals and the knowledge that the student attains that is translated into grades. (Abu Jadu, 2008: 425).

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The researcher defines it procedurally as “the sum of information acquired by the students of the second intermediate grade after the passage of the specified trial period, which can be measured by the degree obtained in the achievement test that was developed for the purposes of this research and which was applied to the students of the second intermediate grade in science.”

## **Section two: Theoretical Background and Previous Studies**

### **Theoretical Background:**

#### **First, active learning**

Active learning is "that type of learning that depends on the participation and positive interaction of students in all educational situations in the classroom, and that depends on a group of effective methods such as role playing, brainstorming, problem solving, and decision-making, under the supervision and guidance of the teacher." (Khairy, 2018: 26).

#### **Second, the strategy of imagination**

The strategy of imagination is one of the cognitive and contemporary strategies that help the student in the activities and processes of learning and recall previous experiences. It also helps the student in mental preparation, directs him towards different methods of solving problems, and works to improve the student's levels of academic achievement. Also, students who are more skilled in activities and practices of imagination are more superior in visual educational situations and verbal educational situations, and they are more able to recall previous experiences in intertwined educational situations, and imagination strategies enhance familiarity with scientific concepts, focus attention and use deeper levels of information processing and processing. (Youssef, 2020: 69).

#### **Third: Academic achievement**

Academic achievement is a form of the success of the educational and educational process and a result of its desired results, and at the same time it is considered one of its intended goals for both the individual and society, and that academic achievement is the result of what the learner acquires from the educational process of knowledge, information and experiences and as a result of his effort during his learning at school or Studying it at home, or what he acquires from reading books or references. (Al-Fakhri, 2018: 7) g

#### **Previous Studies:**

After reviewing the previous studies and literature, the researcher did not find any study that dealt with the strategy of imagination as an independent variable.

**Section Three: Research Methodology and Procedures**

**First: Experimental Design:**

The researcher chose the experimental design with partial adjustment as shown in Figure (1).

Groups	Independent variable	Dependent variable	Tool
Experimental	Imagination strategy	Academic achievement	Academic achievement test
Controller	The usual way	+ existential intelligence	+ Existential Intelligence Scale

Figure (1): Experimental Design

**Second: The Study Community and Sample:**

1. Research community: The current research community represents the morning intermediate schools for boys only affiliated to the Diyala Education Directorate / Baquba

2. Research sample: The research sample is divided into:

- School sample: The researcher chose (Al-Hassan Bin Ali (P) High School) in Diyala Governorate / Baquba on purpose to conduct her research.

- Sample of students: after the researcher chose (Al-Hassan Bin Ali (P) High School) to apply the experiment, she found that it contains two divisions, as shown in Table (1).

**Table (1):** distribution of the research sample to the experimental and control group before and after exclusion

No.	Groups	Number of students before exclusion	Number of excluded students	Number of students After exclusion
1	Experimental	41	1	40
2	Controller	39	3	36
Total		80	4	76

**Third: Equality of the two research groups:**

The researcher was keen to conduct equivalence with the following variables: (the chronological age of the students calculated in months, the previous academic achievement of the students, previous information, the intelligence test), and the following is a table showing the equivalences above:

**Table (2): Arithmetic mean, standard deviation, and the two T values of the research variables for the two research groups.**

Variables	Groups	No.	SMA	Standard deviation	Variance	Temp.	The two t values		Significant
							Calculation	Tabular	
Chronological age	Experimental	40	166,250	12,082	145,974	74	0,579	2.000	Not statistically significant
	Controller	36	167,916	12,988	168,688				
Previous achievement of students	Experimental	40	65,175	12,695	161,163		0,177		
	Controller	36	64,666	12,294	151,142				
IQ test	Experimental	40	23,550	5,601	31,371		1,124		
	Controller	36	22,000	6,418	41,190				
Test	Experimental	40	13,050	3,665	13,432		1,025		
	Controller	40	166,250	12,082	145,974				

#### Fourth: The Study Tools:

##### Procedures involved in building each of these two tools:

1. The achievement test: The researcher prepared the achievement test according to the following steps:

A- Determining the objective of the test: The test aims to measure the amount of information acquired by students of the second intermediate class (the research sample) during the duration of the experiment.

B - Determining the number and type of test items: The researcher adopted objective tests of the type (multiple choice) to measure Bloom's cognitive levels, which are (remembering, understanding, application, analysis, synthesis, evaluation). The total number of test items reached (40) test items from Multiple choice type.

- The validity of the test: In order to ensure the validity of the achievement test, the researcher adopted two types of validity:

- ❖ Apparent honesty: The researcher distributed the achievement test, accompanied by the behavioral objectives and the specification table, to a group of arbitrators, and in light of their opinions, the percentage ranged between (85% - 100%), and therefore the test items were kept (40) items.

- ❖ Validity of the content The researcher prepared a table of specifications, and its validity was confirmed through the table of specifications that were presented with the achievement test to a group of arbitrators. Therefore, the paragraphs of the achievement test are representative and comprehensive of the academic content.

- The exploratory application of the achievement test: the achievement test was applied in two stages:

- ✓ First exploratory application: After verifying the validity of the test, the achievement test was applied in its first exploratory stage on Wednesday (12/1/2022) on a group of second-grade intermediate students in (Birir Intermediate School for



Boys), where the number of students was (30) students. Its purpose was to know the clarity of the instructions, paragraphs and instructions for the test.

✓ The second exploratory sample: It numbered (100) students from the second intermediate grade at (Taleb Al-Zaidi High School for Boys) on Sunday (16/1/2022). The students were informed a week before the test, as the researcher extracted the coefficient of difficulty, coefficient of ease, discrimination and the effectiveness of the wrong alternatives for the achievement test by using the method of the two extreme groups (27%) for the upper group that reached (27) students, and (27%) for the lower group that reached (27) students from the statistical analysis sample, and then the scores for both the upper and lower groups were statistically analyzed for the purpose of extracting the psychometric characteristics of the achievement test.

### **1. Statistical analysis of the achievement test items:**

**First:** The difficulty coefficient of the test items: Its value ranges between (0.35 - 0.68), and thus, the achievement test items are good and appropriate in terms of difficulty, ease and acceptable.

**Second:** Discrimination coefficient: the researcher found that it ranges between (0.22 - 0.55)

**Third:** The effectiveness of the wrong alternatives: limited between (0.03-0.22).

**Fourth:** Test reliability: The researcher verified the test's reliability by:

The split-half method: The researcher relied on the scores of the exploratory sample in the achievement test that was applied at (Taleb Al-Zaidi High School for Boys) on Sunday (16/1/2022), and the stability was reached using the Pearson correlation coefficient (0.858), then corrected by the Spearman-Brown equation, which amounted to (0.923).

Kewder-Richardson 20 method: The stability coefficient when calculating with this equation was (0.875).

### **Section Four: Presentation and Interpretation of Results**

#### **First, show the results:**

The results of the null hypothesis: The researcher prepared an achievement test for science, and it was applied to the two research groups. After applying the test, the researcher corrected the papers of the two groups and wrote down the scores of the students of the two groups. The arithmetic mean of the scores of the students of the two research groups and the standard deviation was calculated, and then the t-test was applied to two independent samples as shown in Table (3):

**Table (3): The scores of the students of the two research groups in the achievement test for science.**

Groups	No.	SMA	Standard deviation	Variance	Temp.	The two t values		Significant 0.05
						Calculation	Tabular	
Experimental	40	23,225	3,158	9,972	74	3,830	2.000	Experimental Statistically Significant
Controller	36	20,472	3,102	9,622				

Through the results, it is clear that the students of the experimental group outperformed the students of the control group in the achievement test for science.

**Second:** Interpretation of the results: Teaching with the strategy of imagination provided a comfortable psychological atmosphere for students, which led to the freedom to express their thoughts and fantasies, which were strange and funny, and to think and retrieve the knowledge stock and link it to new knowledge, which enhanced the students' self-confidence.

**Third:** Conclusions: Teaching according to the strategy of imagination contributed to improving the achievement of second-grade students in science in general and biology in particular, increasing their abilities to understand information, facts and knowledge, and raising their academic level.

**Fourth:** Recommendations: Informing science teachers of modern methods and methods of teaching, especially the strategy of imagination in secondary and university education through holding conferences, seminars and training courses that guide them on how to prepare and use these strategies.

**Fifth:** Suggestions: Conducting a similar study using the strategy of imagination in different subjects and other study stages such as (chemistry, mathematics, physics).

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