

## **The effect of (shor) strategy on acquiring biological concepts for fourth-grade students in science major in biology**

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### **Abstract :**

The current study's goal is to determine The effect of (shor) strategy on acquiring biological concepts for fourth-grade students in science major in biology .

As the experiment began on Thursday (4/11/2021) and ended on Monday (24/1/ 2022), the research sample was purposefully chosen, with (Al-Zahraa High School for Girls- the Anbar Education Directorate / Haditha Department representing it. The sample size was (50) female students, and the experimental design with partial control was chosen for the two equal groups (experimental and control). The experimental group consisted of (25) female students studying the (shor) strategy, while the control group consisted of (25) female students studying the usual method. The two research groups were statistically rewarded in some variables (previous information test, intelligence test, age calculated in months), as well as behavioral objectives (358) for the study material, which included the first five chapters (first, second, third pp. 29-36, fifth, sixth) from the book Biology for the fourth scientific grade, and the research tool, which is the test of acquiring biological concepts, was built. The results were statistically analyzed and revealed that in the test of acquiring biological concepts, students in the experimental group who studied using the (shor) strategy outscored students in the control group who studied and used the conventional way.

**Keywords :**Shor Strategy -Acquiring Biological Concepts

### **Chapter One: Introduction to Research**

#### **1- Research Problem**

Biology is one of the subjects related to the environment whose teaching requires everything that is modern in terms of educational concepts and strategies, but the teacher still maintains his usual and experienced role, which is based on two basic pillars: providing students with information and asking them to memorize it and measuring the extent to which this is achieved through exams, as it is rarely What poses questions to his students that begin with how? And what for? And why? As it remained focused on the type of questions that require minimal thinking skills, which caused the loss of enormous human potential and energies, as it was found that the majority of students suffer from difficulty in acquiring .science concepts in general, and biological concepts in particular, as evidenced by the findings of numerous investigations, including the one described here (Al-Hasnawi, 2016). And the studies (Al-Shammari, 2017) and (Kata', 2020), which found that students in the fourth scientific class have difficulty grasping biological concepts, and that continuing to teach this subject in the usual way generated great obstacles for students represented in the difficulty of their assimilation of the scientific subject

So The following question was used to identify the research problem:

WhatThe effect of (shor) strategy on acquiring biological concepts for fourth-grade students in science major in biology ?

#### **2- Importance Of The Research**

The importance of teaching biology, as it includes multiple topics that contribute to students' acquisition of biological concepts. ▪

The importance of using modern strategies and methods in developing teaching and in addressing the criticisms leveled against the traditional methods currently used in most middle schools. Among these methods and strategies used in teaching is the shor strategy that depends on cooperative learning. ▪

The methods of teaching sciences, including biology, emphasize that teaching should take place through the practice of practical activities carried out by the student under the guidance of the teacher, ▪

whether in the classroom or in the laboratory, as well as the adoption of contemporary teaching strategies.

A scarcity of studies and research that used the shor approach to learn biological concepts. It has the potential to improve the level of biological idea acquisition in fourth-grade science, so contributing to the advancement of biology education.

### 3- Research Objective and Hypothesis

**The goal of this study is to discover:**

The effect of (shor) strategy on acquiring biological concepts for fourth-grade students in science major in biology

**The following null hypothesis was derived from the objective:**

In the test of acquiring biological concepts, there is no statistically significant difference at the level (0.05) between the average scores of the experimental group students who will study using the (shor) strategy and the average scores of the control group students who will study to use the (normal method).

### Limitation of the Research

The current search is restricted to the following terms: Students of the fourth scientific grade in a secondary school affiliated to the Anbar Education Directorate - Haditha District

In the academic year 2021-2022 AD, the first semester : The first (categorization of living organisms), the second (ecology and ecosystem), and the third (the food chain and natural element cycles p. Fourth Scientific, Tenth Edition, for 2019.

### 5- Define terms

**(Shor Strategy)** He defined it (Shor: 1992) as "one of the cooperative learning strategies, based on democracy in terms of students' criticism of any topic and the self and social interaction within the classroom under the supervision and guidance of the teacher to achieve a common goal, and it takes the form of a dialogue in which teachers and students investigate daily topics and social issues mutually by provoking Critical dialogue about answering and providing a solution to the problem" (Shor, 1992: 93) **acquiring concepts The acquisition of the concept** (Bleibla, 2001) that "it is the learner's ability to know the concept, comprehend and apply it, and it is determined by the student's total score on the idea acquisition test".

**Chapter two:** the theoretical framework and previous studies

### The first axis :Theoretical framework

**Strategy (Shor):** is one of the most important cooperative education initiatives , as it is a social constructivist model that came to challenge the common traditional pedagogical models that are less democratic and seek to enable students to solve problems creatively within the group. (Bertrand, 2007:203)

I also found that collective thinking is superior to individual thinking, as the group can reveal its production and produce by brainstorming in hours what the individual produces in several months, and this is known as cooperative thinking as it is practiced within the group. (Al-Samarrai, Raed, 2014: 68) This strategy is based on democratic education that allows all students to express what is on their minds freely, without restriction. Education and transforming the traditional approach into democratic approaches, which in this way build individuals capable of changing society. (Bertrand, 2007: 204)

### Strategic Characteristics (Shor) Short strategy characteristics

Shor carried Freire's thought to the United States, where it started from a social problem of education and asked the following questions:

- Can education make students active thinkers, critics, skilled workers?
- Can we promote democracy and help with fairness to all students?

Based on these questions, (Shor) presented several characteristics of this strategy that help us answer the above questions:

**Share:** (Shor) confirms, based on the ideas of (Freire & Dewey), that the student should be active and participate in various school and semi-school activities, and the teacher must create situations that allow the student to participate permanently and actively and not passively, as the individual and society change each other mutually.

**Emotional and cognitive learning:**

Modern literature promotes the generation of positive feelings among students through their active participation in the learning process, but what we seek in traditional education today is to encourage them to compete and spread negative feelings that lead to frustration and surrender to the bitter reality.

**Students questions:** This strategy encourages asking questions that gradually turn into a research activity that builds the student with his knowledge, and through it he reaches a more critical view of society. ❖

**Dialogue:** Shor emphasizes critical dialogue on topics of interest to the student, as he learns through dialogue, develops his view of his abilities and circumstances, and develops his language and knowledge in a way that works for him in society. ❖

**Socialization :** The teachers should share the role with the students in order to reconsider their social upbringing, making them reconsider the social experiences and behaviors that organize the structure of their academic life. (Happy, 2016: 15) ❖

**Democratic Education:** Flexibility in the teacher's dealings with his students makes them feel freedom, safety, respect and appreciation of others, self-expression, and building human relations among the members of the educational community, which creates a democratic climate whose essence is collective participation and the opportunity for free thinking. (Al-Hajji, 2002: 181) ❖

**The second axis: previous studies**

- Studies on the (shor) strategy in the previous

Researcher's name, year and country	The Aim of the Research:	Research Material	The method used:	Sample type and size	RESEARCH TOOLS	Statistical means	Results
Rana Muhammad Jassim (2020) Iraq	To identify the effect of (Shor) strategy on the expressive performance of fourth-grade literary female students	Arabic	Partially controlled experimental design for the two groups (experimental and control).	(59) female students, with (30) female students for the experimental group and (29) female students for the control group	expressive performance test	T-test equation (t-test) for two independent samples, square kai ( $k_a^2$ ), the equation of the Pearson correlation coefficient, the equation of the square of eta	The results showed that there was a statistically significant difference in favor of the experimental group in the expressive performance test

**Chapter three: Research methodology and its procedures**

**1- Research Methodology**

Since of its relevance to the nature of the research and because it is one of the ways that uses experiment to uncover the links between the two variables, the researchers selected the experimental method to attain her research objectives. to accurate results. (Al-Kubaisi, 2010: 59)

**2- The research procedures:**

**Experimental Design -A**

Choosing the right experimental design for your research is crucial since it promotes accuracy in answering your hypotheses and is a notion that governs the experimental foundations that determine the experiment's parameters (Abdul-Khalek, 2001: 179)

Because the current study has only one independent variable (shor strategy) and one dependent variable (acquisition of biological concepts), the researcher used an experimental design with partial control for the two experimental and control groups, one of which partially controls the other, and a post-test, as shown in Figure( 1) :

the two groups	Équivalence	The independent variable	Dependent variable
Experimental group	- Previous information test What?	<b>shor strategy</b>	- Acquisition of biological concepts

Control group	Age in months	the usual way
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The experimental design used in this study is shown in Figure( 1)

**The research community and its sample: -B**

**Community of Researchers ♣**

For the academic year (2021-2022), the current research community consists of all fourth-grade science students who attend all government preparatory and secondary day schools for girls affiliated with the General Directorate of Anbar Education, Haditha District Center, with a total of (414) students spread across (7) middle and high schools.

**Research sample ♣**

(Al-Zahraa High School for Girls) was purposefully chosen for the academic year from among the secondary schools associated with the General Directorate of Anbar Education / Haditha Department (2021-2022). The two divisions (B and C) of 50 students were chosen by simple random assignment, with Division (B) representing the experimental group that will be taught on and above the (shor) strategy, and Division (C) representing the control group that will be taught according to the technique.

The average number of pupils is ( 25).

**The Research Groups of Equivalence -C**

Despite following the method of random selection and Because the two research groups are from the same homogeneous environment, the researcher worked to control some variables that affect the experiment's internal safety, such as cultural, economic, and social variables. In order to ensure parity between the two groups, the researcher worked to control some variables that affect the experiment's internal safety, including such (previous information test, intelligence test, age calculated in months).

**Controlling for Extraneous Variables -D**

Adjusting extraneous variables is one of the most important procedures used in experimental research to ensure an acceptable level of internal validity of the experimental design, as well as allowing the researcher to attribute the majority of the variance in the dependent variable to the study's independent variable rather than other variables. . (Melhem, 2010: 73)

**The effect of the experimental procedures: -**

Subject B - confidentiality of the experiment C - duration of the experiment -a  
d- the place of the experiment (physical conditions) e- the distribution of the lessons f- the teaching of the subject

Experimental conditions and associated accidents -

Experimental extinction -

Maturation related processes -

Measurement Tool -

The Researchs Requirement -E

1-Decide what kind of scientific material you want to use.

2- Determining behavioral goals 3- Creating lesson plans

4- Define biological concepts

**The Research Tool -F**

The researcher is required to prepare a tool to measure the dependent variable for research (a test of acquiring biological concepts) in order to achieve the research's goal and null hypothesis of measuring the effect of the independent variable on the dependent variable. This tool has been prepared as follows:-

**Biology Acquisition Test •**

Complete By following the procedures below, you may create a concept acquisition test:

1- Determining the test's main objective 2- Determining the number of test items 3- Drafting the items: The test items were formulated according to objective tests and based on what is recommended by measurement and evaluation experts because of this type of preference compared to essay tests. The items were of the multiple choice type consisting of (42) test items.

**Putting instructions for answering the test 5- Instructions for correcting test paragraphs -4**

**6- The validity of the test :** One of the most significant features to consider in developing tests is honesty, as it is the most crucial characteristic that leads to the goal.The honest test is defined as its ability to measure the thing that was set for its measurement or is the test that achieves the cognitive goals for which it was set. (Majid, 2014: 93)

**Experimental application procedures •**

It was ready in its final form for application to the students of the two research groups after the validity and stability of the test were determined, as well as the statistical analysis of its paragraphs (experimental and control) After completing the teaching of the subject specified in the first five chapters of the biology book for the fourth scientific grade on the day corresponding to Sunday 23/1/2022, the researcher administered the test of acquiring biological concepts to the two research groups, and after correcting the answers of the students in the two research groups, she obtained the total score for the test of acquiring biological concepts.

**Means of statistics**

The data was evaluated and statistically processed using acceptable statistical procedures.

**Chapter Four: The results are presented and interpreted**

**Findings**

**View Results**

**To check the hypothesis which states:** (In the test of acquiring biological concepts, there is no statistically significant difference at the level (0.05) between the average scores of the experimental group students who studied using the (shor) strategy and the average scores of the control group students who studied using the traditional method). and following the application of the exam and the correction of the answers The arithmetic mean and standard deviation for the students were calculated, and the (t-Test) equation was used for two independent samples. The following outcomes were obtained, as shown in Table (2).

Table (2) t-test for the Biological Concepts Acquisition Test scores of the two research groups

Groups	Number of female Students	Arithmetic mean	standard deviation	Freedom degree	t value (t)		Statistical significance level (0.05)
					Calculated	tabular	
Experimental group	25	32.48	4.62	48	6.17	2.01	Statistical function
Control group	25	24.08	4.98				

The calculated value of (Test-t) (6.17) is greater than the tabular value of (2.01) at the level (0.05) and with a degree of freedom (48), rejecting the null hypothesis, indicating that there is a statistically significant difference in favor of the experimental group in the test of acquiring biological concepts, between the average scores of the experimental group students who studied according to the (shor) strategy and the average scores of the control group students.

The researcher used the eta-squared equation (2) to calculate the effect size of the independent variable (shor strategy) in its dependent variable (Biological Concepts Acquisition Test) to ensure that the t-Test results were real differences that went back to the research variables, or were they due to chance and amounted to nothing (0.44). According to the Cohen (Cohen, J.1988) gradient referred to in (Murphy & Myors, 2004), it appears to be (very large), indicating that (shor strategy) had a very significant effect in increasing the acquisition of biological concepts by the experimental group students when compared to their peers in the control group.

**Interpretation of the results:** In the test of acquiring biological concepts, the experimental group that studied according to (Shor strategy) outperformed the control group that studied according to the traditional approach in favor of the experimental group. This result, according to the researcher, is due to the following factors:

The step of thinking about the problem encouraged them to have a dialogue and discuss hypotheses and appropriate solutions to the problems presented.

Teaching steps according to the (shor) strategy is concerned with presenting the topics at the beginning of each lesson in the form of questions related to the concepts, principles and generalizations that are related to the topic of the lesson, which encourages students to study these problems and questions carefully and try to link them to their ideas and information, which helps them to formulate their answers in a clear and understandable manner. Related to the scientific material included in the topic of the lesson.

The method of teaching through working in the form of cooperative groups that increases the enrichment of dialogue and discussion among the students of the group and the school's use of the available educational means that play an important role in enhancing their understanding of biological concepts, which contributes to raising the level of acquiring biological concepts.

- conclusions :** The following conclusions can be formed based on the findings: -3  
The results of the research showed a significant impact on the use of the (shor) strategy, as it contributed to increasing the acquisition of biological concepts by the experimental group students, with an effect size of (0.44) that was very large.
- recommendations** -4  
Using the shor strategy in teaching because of its importance in acquiring different concepts. -  
Encouraging teachers to use teaching strategies and models that provide the opportunity for students to learn within cooperative groups without being restricted to one method of teaching and moving from one method to another smoothly and smoothly in a way that achieves the educational goals to be achieved. -  
Paying attention to students' involvement in learning and allowing them the freedom to share their opinions rather than imposing barriers to their learning. -
- Suggestions:** The researcher offers the following to complement and expand on the existing research: -5  
Conducting a similar study in which the (Shor) technique is used to various study stages and individuals. -  
Conducting a study examining the impact of the shor method on various factors (positive thinking, multiple intelligences, scientific curiosity, stroke, and so on) -
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