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Research Article

The effect of the fishbowl strategy by using the electronic classroom (Google classroom) on the scientific achievement of fifth-grade students in biology

Rawaa Mohsen Abdel Karim
Prof. Dr. Ahmed Obaid Hassan
rawaa.mohsen1202a@ihcoedu.uobaghdad.edu.iq
College of Education Pure Sciences / Ibn AL-Haitham, University of Baghdad

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Abstract:

The current research aims to identify (the effect of the fishbowl strategy using the electronic classroom (Google classroom) on the achievement of fifth-grade students in the science of biology), and to achieve the goal of the research, the researcher adopted the experimental design with partial control for two equal groups, and the research sample was chosen randomly from scientific fifth-grade students from (Imam Al-Sadiq Junior High School for Boys) affiliated to the General Directorate of Education in Baghdad , Rusafa Al-Awla, as it reached (61) students by (30) students in the experimental group, and (31) students in the control group, the two groups of research were rewarded in the variables (chronological age, intelligence, past information test, previous achievement), and the scientific material was specified in the first four chapters of the biology book to be taught, and the behavioral objectives of the chapters were formulated and reached (315) a behavioral purpose representing the six levels of Bloom's classification of the cognitive domain, and the teaching plans were prepared for the two research groups, and the research tool was prepared, which is the achievement test, as it consisted of (50) objective paragraphs, the validity and reliability of the tool was confirmed, as the data were analyzed and processed statistically, using (t-test for two independent samples, alpha Cronbach's coefficient, Kioder Richshadson's equation 20, paragraph difficulty coefficient, discrimination coefficient, and the effectiveness of false alternatives) In light of this the researcher made a number of recommendations And proposals.

Keywords: The Fishbowl Strategy , electronic Classroom (Google Classroom), Scientific Achievement

First: - The research problem:

A Problem of the Research After the researcher obtained a book to facilitate a mission, he prepared an open survey questionnaire to survey the opinions of a random sample of teachers and teachers of the subject of biology for the fifth grade of the biological sciences, distributed among the schools of the General Directorate of Education in Baghdad, Rusafa Al-Awla, their number reached (10) with an experience of no less than five years, and the questionnaire included four questions about the methods and methods used in teaching biology, the extent of their knowledge of the fishbowl strategy, the level of scientific achievement of fifth-grade students, and whether they support the use of the on line class in teaching and after analyzing the answers, the following was found :

- 90% do not use modern teaching methods in teaching biology for the fifth grade, biological science.

- 100% of all teachers have no idea of a fishbowl strategy.

- 80% of the questionnaire results confirm the low achievement of students in biology.

- 70% support using an electronic classroom (Google classroom) to teach biology, especially with the circumstances we are going through (the Corona pandemic).

From the above, the researcher noticed that the problem is related to teaching methods and tools, so appropriate teaching strategies and methods must be used that help the student to improve his educational attainment to increase

the interaction between the student and the teacher on the one hand and between the students on the other hand and make it the main focus of the educational process, increase social relations and remove monotony and boredom for students and the preparation of human energies, In order to find a serious solution to these problems by searching for appropriate modern teaching methods and strategies that were the product of intellectual and informational development, and accordingly the researcher relied on applying a modern strategy in teaching biology, which is the fishbowl strategy using the on line classroom, therefore, the current research problem lies in the answer to Next question:

What is the effect of the fishbowl strategy using the electronic classroom (Google Classroom) on the achievement of the fifth graders?

Second: The importance of the research: The importance of the research can be summarized as follows

- This study is a response to recent scientific trends, which confirm interest in modern teaching methods in teaching biology, and this is what made the researcher interested in active learning strategies, including the fishbowl strategy.

- This study is, according to the researcher's knowledge, the first in Iraq and the Arab world, in which he used a teaching strategy via the electronic classroom (Google class room).

- Exerting more efforts by educators, teachers and researchers to implement the electronic classroom (Google classroom) because of the advantages it provides in the education process, such as managing the educational process and increasing communication between students and teachers.

Third: - Aims of the Research

The current research aims to identify: The effect of the fishbowl strategy using the electronic classroom in the Google classroom on the academic achievement of the subject of biology for the fifth grade students.

Fourth: - Hypothesis of Research: To achieve the aim of the research, the researcher put the following null hypothesis (there is no statistically significant difference at a significance level (0.05) between the average scores of the experimental group students who study biology according to the fishbowl strategy using the electronic classroom (Google classroom) and between the average grades of the control group students who study the same subject according to the usual method of attaining the biology subject.

Fifth: Limitation of the research: The research was limited to: -

1- Human borders: - Fifth-grade scientific students in Baghdad governorate within one of the schools affiliated to the General Directorate of Education in Baghdad Governorate, Rusafa Al-Awla.

2- Time limits: - The first semester of the academic year (2020-2021)

3- Spatial limits: - The General Directorate of Education for Baghdad Governorate, Rusafa Al-Awla

4- Cognitive limits: - The first four chapters of the science biology book for the fifth grade scientific.

Sixth: - Definition of Terms

1- Fishbowl: Define it:

- Qatami (2013): “The small-group strategy aims to research in depth about a specific topic and not to be satisfied with superficial treatments around it, as the student exercises mental processes in receiving, processing and organizing information to make it meaningful and store it” (Qatami, 2013: 621).

2- electronic classroom: define it:

- Abdul-Hay (2010): "They are classrooms that are similar to traditional classes in terms of the presence of the teacher and students, but they are on the global network where they are not restricted by time or place, and through them, virtual learning environments are created, so that students can gather via networks to participate in cooperative learning cases so that The student will be in the center of learning and will learn for comprehension" (Abdul-Hay, 2010: 192)

- Procedural definition: an on line application through which lessons, lectures, trainings, and assignments are presented and on the World Wide Web, it contains all the on line needed by both the teacher and the student, and it depends on the interactive teaching method and managing discussion and commenting in order to facilitate the educational process.

-Google Classroom: Define it:

- Al-Ajrash (2017): "Google launched it as its own system to add to the educational arena a distinct choice in the e-learning process, and this system is characterized by its high ease and full localization, and it is available in many languages, including Arabic, as it can be obtained upon submitting a request to Google with a condition that the specialist has a website that ends (.edu.)" (Al-Ajrash, 2017: 107)

- Procedural definition: It is one of Google's educational programs, through which the biology teacher can build an on line room or an on line classroom and publish educational content and assignments, share video clips and put forward ideas or questions to open the door for discussion about it, and the teacher can provide feedback to students by commenting on duties or share the discussion with them electronically.

Achievement: **Define it:**

- Al-Saadi (2020): "It is the outcome of what the student learns after a period of time has passed and can be measured by the degree obtained in the achievement test for the purpose of knowing how successful the strategy he creates, and the teacher plans his goals for it, and what the student gets is translated into grades" (Al-Saadi, 2020 : 17).

- Procedural definition: are the grades obtained by fifth-grade scientific students represented by the research sample after applying the achievement test for the biology subject to them, which was prepared by the researcher and after teaching them according to the strategic steps.

Chapter one: theoretical background and previous studies

Fishbowl Strategy: The fishbowl strategy is one of the strategies based on active learning based on group training, whereby the learner observes and follows up on a specific topic and discusses it among the group members and the extent to which this affects the behaviors and outcomes of the members (Zayer et al., 2017: 162).

Mase adds that it is an educational strategy that helps students train as contributors and listeners in discussion, dialogue and exchange of opinions through the strategy, students ask questions, present opinions, and exchange information when they are sitting in the fishbowl, while students outside the circle carefully listen to the ideas presented and presented during the session with full attention and then reflect the roles between them, so the listeners become participants and the participants are listeners. (Mase, 2013), as Dykeman & Sampson: 1995 assert (Miller: 2008)

The fishbowl strategy is a method of communication between students, through which the students are divided into two groups: a group of speakers and the second group: a group of observers, which is usually in the form of two concentric circles that form the inner circle for the speakers and the outer circle for the observers. Through it, the group of observers watches the discussion of the speakers through a specific discussion and taking notes is similar to watching fish through a glass container, after which the roles are exchanged as the group of speakers works under

the supervision or leadership of one or two students, to focus on each student performing an active course in the strategy from During discussion, listening, asking questions and taking notes (Dykeman & Sampson: 1995) (Miller, 2008: 16).

Fishbowl strategy steps:

1- Defining a specific topic or idea for discussion that everyone agrees on.

2- Arranging the classroom by making an inner circle of (5-10) seats in the middle in which the participants sit and the rest of the classroom seats in the form of a larger circle in which the observers sit.

3- After recalling the topic of the lesson, the teacher poses the problem or question and asks the group of participants (the fishbowl) to search for answers and a solution to the problem, or to consult among themselves about the question.

4- Allowing the students of the participants' circle to debate, while the students who are observers in the external circuit sit down and take notes silently and without interference, and the discussion period is (10-15) minutes.

5- Students change their positions after (10-15) minutes, where the foremen replace the participants, and the discussion begins with the new group, and the discussion time is (10-15) minutes.

6- After the discussion ends, the teacher asks the students of the two groups to come together to complete the discussion in a group manner, and the discussion period will be from (5-10) (Embu Saidi and Huda, 2016: 173)

The advantages of the fishbowl strategy: The fishbowl strategy has the following features:

1- The fishbowl strategy works well for larger classes.

2- Opening opportunities for students to delve into the topic of the lesson and participate by presenting opinions and points of view.

3- Developing motivation to learn, increase interest and critical thinking.

4- Focusing on the student's ideas and making them the focus of attention.

5- Developing dialogue skills and expressing ideas, in addition to verbal communication skills.

6- Developing communication skills and social communication among all students and strengthening relationships.

7- The discussion group contributes to establishing social relations between the teacher and the students through the participation of everyone in the discussion. (De afrigh, 2018) (Kasdi, J & Auzar, M, 186: 2016)

Google Class room:

It means an integrated educational program designed by Google that provides free services on the web and this service has been developed to meet the needs of learners and teachers, and the class aims to simplify the creation of tasks, distribute and classify them in the form of classified files without the need for paper and the main purpose of the Google classroom is to simplify the sharing of files and assignments between the teacher and the student and among the students among themselves thus increases the interaction and communication between the students (Al-Najjar, 2019: 2).

It is considered one of the ways to integrate digital into education and it allows students to work collectively with each other and reach a global audience, which increases verification and participation, as it allows students to share their ideas and opinions and verify their validity directly, allowing them to gain more meaning behind their writing and develop writing and reading skills like an editor google documents, which allows sharing documents,

presentations, and more in order to present or collaborate on a file, and also allows learners to share written claims, and students can work and send it to the teacher (Fallon, 2015; 2-3-4).

Second: Previous Studies:

1- Studies related to the strategy of the fishbowl: -

- Study (Hussein, 2013): - The study aims to know the effectiveness of the fish basin strategy in developing an understanding of the nature of science and its processes among middle school students, as the researcher adopted the quasi-experimental design, and his research sample was represented by the first intermediate students, and their number is (80) students by (40) A student for each of the experimental and control groups, and the research included two tools, namely: the test of understanding the nature of science and testing of science processes, and the data were analyzed statistically using (Spss), and the results showed the effectiveness of the fishbowl strategy in developing an understanding of the nature of science and its processes in favor of the experimental.

2- Studies related to the electronic classroom: -

- The study (Alimat and Youssef, 2016): - The study aims to know the effectiveness of the Google classroom program on acquiring biological scientific concepts in the blood unit of tenth grade students in the Negev district in Palestine 48, as the researcher adopted the quasi-experimental design,

The sample of the research was represented by students of the tenth grade of middle school, their number (132) students, (63) students in the experimental group and (69) students in the control group, and the research included one tool, namely: the test of acquiring scientific concepts, the data were analyzed statistically using (Spss), and the results showed the effectiveness of the Google classroom program in acquiring biological scientific concepts for the benefit of the experimental group.

Chapter Three: Research Methodology and Procedures:

First: The experimental design: Since the current research includes one independent variable and two dependent variables, the quasi-experimental design with partial control with (two equivalent experimental and control groups)

<table>
<tr><th>S</th><th>Group</th><th>Parity</th><th>Independent variable</th><th>Dependent variable</th></tr>
<tr><td>1</td><td>Experimental</td><td rowspan="2">1 - Chronological age.
2 - IQ test.
3-Academic achievement of the fourth grade.
4-Previous bioinformatics test.</td><td>Fishbowl strategy using on line grade</td><td rowspan="2">achievement</td></tr>
<tr><td>2</td><td>Control</td><td>The usual way is to use the on line classroom</td></tr>
</table>

was chosen to achieve the goal of the research. Diagram 1 illustrates the experimental design used:

Second: the research community and its sample:

A - The research community: It is a clearly defined community that the researcher seeks to study and generalize the results obtained from the research on it, and the community depends on the nature of the research and its purposes (Al-Bassiouni, 2013: 309), and the research community includes all students of the fifth grade of biological science

of the preparatory and secondary schools for boys affiliated with the General Directorate For education in Baghdad, Rusafa Al-Awla for the academic year (2020-2021)

B - Research sample: The researcher chose, using the random method, Imam Al Sadiq Prep for Boys of the General Directorate of Education in Baghdad, Rusafa Al-Awla conduct the experiment. Four divisions (each division contains 15 students due to the pandemic) were chosen randomly from a total of six divisions, to be Division (A) and Division (H) the experimental group, and division (C) and division (D) are the control group, as shown in Table (1)

S	Division	Group	Number of students	Failed students	Leaving students	The number after exclusion
1	A	Experimental	15	-	-	30
2	H	Experimental	15	-	-	
3	C	Control	16	-	-	31
4	D	Control	15	-	-	
Total			61	-	-	61

Table (1) The number of students in the research groups

Third: Control Procedures:

A - Verifying the internal integrity of the experimental design: The researcher tried to control the extraneous factors that would affect the results of the experiment as follows:

1 - Equivalence of the research sample groups: The researcher deliberately conducted statistical equivalencies between the two research groups in the following variables (chronological age in months, intelligence, previous information test for biology, previous achievement) based on the T-test of two independent samples, and the results showed no differences Statistical significance between students of the experimental group and the control group in these variables.

2 - Controlling experiment conditions and preventing accompanying accidents: It is the time period for the application of experiment, maturity and experimental extinction, application of measurement tools, the subject matter, the subject teacher, the distribution of academic lessons, the confidentiality of research, and the physical conditions.

B - Verification of the external integrity of the experimental design: which is the interaction of experimental situations, the overlap of choice with the experiment, and the effects of the pre-measurement interaction for the purpose of equivalence and the interaction of experimental situations.

Fourth: Research Preparing:

1 - Determining the scientific subject: The scientific subject that will be studied by the researcher during the first course of the academic year (2020-2021) has been determined, represented by (the first semester, the second semester, the third chapter, the fourth chapter) from the biology book for the fifth grade of science.

2 - Formulating behavioral objectives: The researcher formulated (315) behavioral objectives distributed over the six levels of Bloom's classification (remembering, understanding, application, analysis, synthesis, evaluation), and they were presented to a group of experts and referees with experience and specialization in the field of teaching methods to learn their opinions, and to verify the accuracy of their formulation and the extent to which they include the educational content of the scientific material, and in light of opinions and proposals, some goals were reformulated and others modified.

3 - Preparation of teaching plans: (16) teaching plans were prepared according to the fishbowl strategy for the experimental group and (16) teaching plans according to the usual method for the control group to teach by relying on them, and samples of these plans were presented to experts and specialists in the methods of teaching life sciences to verify the extent of its suitability with the goals for which it was set, the extent to which it takes into account the steps of the strategy, and therefore the appropriate adjustments have been made and the plans are ready and finalized.

Fifth: The Research Tool: It is the Test Achievement Test:

A - Determining the purpose of the test: The main objective of the achievement test prepared is to measure the academic achievement of fifth-grade students of scientific bioinformatics from the specific scientific subject.

B - Determining the scientific subject: The subject is defined for the first semester, and it is the first four chapters of the biology textbook for the fifth grade of the biological sciences.

C - Determining the number of test items: The researcher sought the opinions of a number of referees and experts in the field of teaching methods of life sciences and sciences and some subject teachers with experience in teaching and it was agreed to define (50) test items to include the achievement test used in the current research.

D - Preparation of the specification table: The researcher prepared a test map that included the number of pages of the first course topics for the fifth grade biology subject and the behavioral purposes for the six levels of the knowledge domain of Bloom's classification, Table (2)

Chapters	number of pages	Relative weight	Remember 37%	Accommodating 34%	Application 7%	analyzing 7%	Installation 7%	Evaluation 8%	Total 100%
First	45	45%	9	7	2	2	1	2	23
Second	23	23%	4	3	1	1	1	1	11
Third	14	14%	3	2	1	-	-	1	7
Fourth	18	18%	3	3	-	1	1	1	9
Total	100	100%	19	15	4	4	3	5	50

Table (2) Table of specifications for the achievement test

C - Writing the results of the achievement test: The researcher prepared an achievement test consisting of (50) test items of an objective type and based on (50) behavioral objectives out of a total of (315) distributed between Bloom's six cognitive levels that were taught during the specified period of time for the experiment, it is shown in the table of specifications above, Table (2).

H - Developing instructions for answering the test: After formulating the test items, the researcher developed a set of instructions for students explaining how to answer the achievement test, the time specified for the answer and the method for distributing the score, in addition to an illustrative example showing how to answer

G - Validity of the test: The validity of the achievement test was verified in two ways, which are as follows:

1- Apparent validity: The achievement test with a model of behavioral purposes that it measures was presented to a group of experts and referees in the field of teaching methods of life sciences and sciences, to express their views on the extent of the integrity of its paragraphs and the extent to which they represent the scientific purposes and material, and the wording of some paragraphs was modified and some alternatives changed with keep the paragraphs that won the acceptance of 80% of the experts.

2- Validation of the content and to ensure the validity of the content, the researcher prepared a table of specifications, Table (6), depending on the scientific content and behavioral purposes and the test was prepared in its preliminary form, relying on the specification table, and presented to a group of experts and referees with experience and competence to verify the validity of the paragraphs, and thus the test became ready to be applied to the first exploratory sample.

D - Exploratory application of the achievement test: The achievement test was applied in two stages as follows:

1 - The first exploratory sample of the test: The researcher applied the test to (31) students from the research community that had not appointed him, who are students of the fifth grade of high school (Gulls) for boys, and the arithmetic average of the response time was (34) minutes, and the researcher also made sure of the clarity of the paragraphs for all students And its safety.

2 - The second exploratory sample for the test: The researcher applied the test to (150) students from the research community who changed his designation, and they are students of the fifth grade of science for intermediate (Abdullah bin Rawahah) for boys

After applying the test and obtaining the answers for the students, the researcher analyzed the answers of the upper and lower groups statistically to extract the psychometric properties of the achievement test as follows:

- The difficulty factor for the achievement test items: The difficulty factor of the objective achievement test items for the subject of biology was calculated and found to range between (0.293 -0.549) this indicator is considered that the paragraph difficulty factor is good and acceptable, as confirmed by specialists in the field of educational measurement and evaluation. Al-Feqi (2014) points out that the difficulty factor is the ratio of students or individuals who did not answer the specific paragraph to the total number of students or individuals participating in the achievement test, and that good passages have a difficulty coefficient ranging between (0.20 -0.80) (Al-Feqi et al., 2013: 198)

- Discrimination coefficient for the achievement test items: The discrimination coefficient for each item of the achievement test for the biology subject was calculated by using the law of discrimination coefficient for the paragraphs, as it was found to range between (0.244 - 0.659).

Majeed (2014) indicates that the test items are considered valid if the strength of distinction is within (0.20) or more (Majeed, 2014: 186).

- Effectiveness of false alternatives (dispersants): Accordingly, the law of the effectiveness of false alternatives was applied by the researcher to the upper and lower groups of students, and the researcher found that all alternatives appeared with a negative value and ranged between (- 0.02 - 0.41), which indicates that they are good dispersants.

Stability of the test: The researcher relied on several methods to calculate the reliability of the achievement test for the biology subject as follows:

1- Stability using the Alpha Cronbach equation: The reliability coefficient of achievement test for the biology subject was found based on the Alpha Cronbach equation, whose value was (0.883).

2- Stability using the Kioder Richardson equation 20: The researcher extracted the reliability coefficient using the Kioder Richardson equation (KR20), by relying on the data and scores obtained from the second exploratory sample, with a value of (0.92).

Y - The achievement test in its final form: After the researcher undertook the statistical procedures regarding the achievement test for the biology subject (validity of the test - the stability of the test - the difficulty factor - the coefficient of distinction - the effectiveness of the wrong alternatives), the test became ready for application to the students of the two experimental research groups.

Sixth: Statistical means: In order to achieve the goal of the research, the researcher relied on the statistical bag (Spss) and some manual equations.

Chapter Four: Presentation and interpretation of results

First: Presentation of results: The researcher presented the results in two ways as follows: -

- For the purpose of verifying the null hypothesis, which states (there is no statistically significant difference at a level of significance (0.05) between the average scores of the experimental group students who study biology according to the fishbowl strategy using the electronic class (Google class room) and the average scores of the control group students those who study the same subject according to the usual method of obtaining the biology subject), the achievement test was applied to the two research groups, and after correcting the answers, the statistical differences of scores for the experimental and control groups were calculated using the T-test for two independent samples (T-test), as shown in Table 3):

Table (3) the results of the T-test for the scores of the two research groups in the achievement test

Groups	Number	Arithmetic average	standard deviation	Degree of freedom	T-value and significance		
Experimental	30	37.6	4.407	59	Calculated	Tabular	Statistical significance
Control	31	22.29	3.805	59	14.538	2	Function

It turns out that the calculated T value of (14,538) is higher than the tabular T value of (2.000) and with a degree of freedom (59), and in light of this indicates the existence of a statistically significant difference between the experimental and control research groups in the achievement of biology, thus, it rejects the first null hypothesis and accepts the alternative hypothesis, which states that (There is a statistically significant difference at a level of significance (0.05) between the average scores of the experimental group students who study biology according to the fishbowl strategy using the on line class (Google class room) and the average scores of the control group students who study the same subject according to the usual method of attaining biology subject) .

- To demonstrate the size of the effect of the independent factor, which is (the fishbowl strategy using the Google classroom) on the dependent variable, which is (academic achievement), the researcher extracted the size of the effect (d) after applying the Ita square equation, as shown in Table (4):

Table (4) the size of the effect of the independent variable on the achievement variable

Independent variable	Dependent variable	d-Value	The amount of impact size
Fishbowl strategy	**Achievement**	**0.782**	**Average**

Second: Interpretation and discussion of the results: The results in Table (4) showed a statistically significant difference between the mean scores of the experimental and control groups in the achievement test for the benefit of the experimental group. This means the superiority of the experimental group students who studied according to the fishbowl strategy using the electronic classroom (Google class room) over Control group students who studied according to the usual method of achievement, and the results of the current research are consistent with the findings of the study (Hammoud, 2014) and (Al-Masoudi and Sarah, 2014) and (Al-Zaidi, 2016) and (Gad, 2017) and (Al-Sayed, 2020) And the experimental group showed the superiority of the control group students in a variable, meaning that there is a positive effect of the fishbowl strategy on the students 'achievement.

Third: Conclusions: The existence of a positive effect of the fishbowl strategy by using the electronic classroom (Google class room) in improving the level of achievement of biology for fifth-grade students in biological science compared to the usual method, as the experimental group surpassed students of the control group.

Fourth: Recommendations:

1- Emphasizing the necessity of adopting a fishbowl strategy in teaching biology in middle school, according to the capabilities available within the educational institution.

2- Emphasizing the need for biology teachers to familiarize themselves with modern teaching methods, especially the fishbowl strategy, and to adopt it in teaching through the establishment of training courses for the teaching staff.

Fifth: Proposals:

1- Conducting a study similar to the current study at the intermediate stage.

2- Conducting a study similar to the current study on the fourth scientific grade and in other variables.

3- Conducting a similar study on other academic subjects.

4- Conducting a study similar to the current study to identify the effect of the fishbowl strategy without using the electronic classroom.

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