

The effect of the strategy of Number_Draw on the achievement of the fourth primary schoolgirls in the subject of science

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Abstract

The aim of the current research is to identify (the effect of the strategy of Number_Draw on the achievement of the fourth primary schoolgirls in the subject of science), by verifying the formulation of the following zero hypothesis:

(There are no statistically significant differences at the level of significance (0.05) between the average scores of the experimental group students who studied according to the strategy of drawing numbers and the average scores of the control group students who studied according to the usual method in the achievement test in the subject of science).

The experimental design was chosen with two experimental and control groups, one of which is partially controlled by those with post-achievement test. The current research community represents all the fourth grade primary schoolgirls in the primary schools of the Baghdad Directorate of Education/Rusafa III for the academic year (2021 - 2022). The sample of the research sample, which is (66) female students distributed over two classrooms (A, B), two divisions were chosen by simple random appointment (B, A) as a sample for research and there were no female students of the deposits, and it was (34) female students of the experimental group (B) that were studied according to the strategy of withdrawing numbers and (32) female students of the control group (A) that were studied according to the usual method.

The two groups were rewarded in variables (intelligence, previous achievement, prior information), and the experiment was conducted in the first semester of the academic year(2021-2022).

After the completion of the experiment and the application of both the test and the acquisition of the science material and obtaining the results, the data were statistically processed using the t-test for two independent samples and the following results were reached: -

The students of the experimental group who were taught according to the strategy of drawing numbers over the female students of the control group who were taught according to the usual method of testing the achievement of science), so the researcher recommends some recommendations and proposals.

Keywords: digit drawing strategy, collection.

INTRODUCTION

1. Research Problem:

The poor academic achievement of the fourth grade of primary science is one of the main problems that have a negative effect on students

, this is what the researcher noticed through her teaching experience for eight years because of the teacher's use of traditional methods of teaching science and the lack of interaction of students with the lesson while asking them questions, and the lack of use of modern

strategies and new teaching methods that motivate female students towards the lesson or weakness in the teacher's performance or lack of teaching in the delivery of the material well to raise the level of achievement or the lack of an appropriate environment for teaching or the poor level of compatibility between the curriculum experiences and the levels of students .

As well as informing the researcher of studies and research on confirming the low level of female students in academic achievement, a study (Al Bayati,2019) .

Therefore, the researcher wanted to carry out this study, perhaps it contributes to solving some aspects of the problem and developing the method of teaching and raises the level of academic achievement among fourth-grade female students in science through the strategy of withdrawing numbers (active learning), which contributes to the interaction of female students with the lesson. Therefore, the researcher was interested in determining the problem of her study according to the following question:

- What is the effect of the strategy of withdrawing numbers in the achievement of fourth primary students in science?

2. The Importance of the Research:

At present, there is increasing interest in different countries of the world in teaching and education as a basic standard for cultural and social progress in them, and interest in science has become one of the fundamentals of the progress of societies. Progress has never been a result of imitation and simulation , but rather of scientific and technological achievements. Countries are racing among themselves to excel in the scientific and technical field, and they have promised progress in the field of science as a key to progress and development in all fields , because faith in science leads to the possession of important fundamentals, which means a necessary change in the human race, so that it moves to higher levels described as (scientific) Of these, highly accurate and comprehensive processes have to be planned and implemented in order to change human behavior to be aware and aware. He believes in the scientific method, which leads him to sound assumptions and leads to sound results as well as the rest of all fields of life (Muhammad, 2014 : 37). Education is the main

factor for scientific and technological development that is taking place in our current era due to scientific research and studies that have provided scientific development to society and the development of human and economic development. Education is the effective tool to adopt the student's personality and make his role positive towards learning and the development of all its mental, psychological, cognitive and emotional aspects (bendy, 2013 : 11) .

Educational institutions in general and the school in particular are working to achieve what education seeks through textbooks, curricula and means that have various specifications and educational experiences with which the student interacts with educational attitudes and develops his information(Salama, 2009: 17).

And that good teaching strategies that have characteristics that work to achieve positive interaction between the teacher and students and direct the lesson towards achieving its desired objectives in advance , in addition to that, it does not focus on the cognitive aspect only, but on the emotional and skills side through social interaction between students and the teacher has an important role as a guide, assistant, organizer and source of ideas in the process of communication between students and not only teaching (Al-Kaabi, 2018: 24).

The strategy of withdrawing numbers is one of the active learning strategies that motivate students to interact with the lesson and participate positively with the teacher through the questions they are asked during the explanation to summarize the topic and express their previous ideas and information and link them to the new information they have acquired at this stage with the subject of science.

Based on the above, the importance of the research is concluded as follows :

A- Education has an effective role in building the student's personality, changing his behavior and actions, and achieving its goals.

B – The use of methods and methods of good teaching for the teacher helps him to deliver the study material easily and quickly to students, taking into account the age of time and the stage of study

C – The strategy of withdrawing numbers is active learning strategies that interact with

students in the primary stages and increase the level of academic achievement.

3. Objective and hypothesis of the research : The current research aims to identify:

- The effect of the strategy of withdrawing numbers on the achievement of fourth primary students in science

To achieve the goal, the following zero hypothesis has been formulated:

1. [There are no statistically significant differences at the level of (0.05) between the average scores of the experimental group's female pupils who were taught according to the strategy of drawing numbers and the average scores of the control group's female pupils who were taught according to the usual method in the achievement test of the subject of science].

4. Research Limits: The current research was limited to:

- Spatial limit: primary schools for girls belonging to the General Directorate of Rusafa Education III of Baghdad City .

Time limit: The first semester of the year (2021-2022) .

Human limit: 4th grade primary schoolgirls at Alkahl School.

Cognitive Limit: The subjects of study that include the modules (first, second and third), (Classification and diversity in living organisms, life cycles of living organisms , subject) of the book of science scheduled for the fourth grade of primary education, fourth grade, for the year 2022, Ministry of Education, Republic of Iraq .

Term Definition :

The strategy of withdrawing numbers is defined by: Naeema al-Jabr as: "one of the active learning strategies based on stopping the presentation every five minutes from the teacher and discussing what was presented and explained, and then summarizing it from the students with the withdrawn numbers by answering the questions set by the teacher" (www. Edu. gov.qa).

Achievement is defined by (Bed worth & Albert, 2010) as: "Measuring the degree to which the student achieves some scientific, pedagogical or motor knowledge, which can be measured by the

degree to which the student obtains it in the test" (Bed worth & Albert, 2010:136)

- The researcher defines it procedurally as: It is the total score obtained by the pupils of the research sample in the achievement test.

Theoretical background and previous studies

The first axis: Active learning

It is an educational philosophy that depends on the pupil's positivity in the educational-learning situation, and it includes a number of educational practices and teaching procedures that lead to activating the role of the teacher through learning, research and experimentation , and then the pupil reaches the information by relying on himself ,as well as acquiring skills, values and positive attitudes towards learning, thinking, problem solving, and collective and cooperative action. Active learning is learning the list of various activities practiced by the pupil and results in changing his patterns of behavior and active and positive participation in educational-learning situations (Abdelsalam, 2021 10).

1. Withdrawal strategy:

There are multiple strategies and teaching methods in active learning that are used according to the student's activity and the subject. The strategy of withdrawing numbers is one of the active learning strategies that Naima Al Jabr sees from the active learning strategy that is performed in presenting the lesson in the form of intermittent sequential paragraphs almost every five minutes by the teacher and discussing what has been presented and interpreted , and then summarizing it by the students with the withdrawn numbers by answering the questions set by the teacher .

Steps of the digit withdrawal strategy:

1. Discontinue the show about every five minutes and choose a student to summarize what has been talked about .

Strategic Actions:

A – Give each student a number, (give the same number to two or three students).

b. Put the same numbers in a bowl and explain to learners what will happen.

c. Start the show.

D – After each period of the show (five minutes or seven) stop your show and pull a number from the bowl, and the person or persons holding the same number should summarize the past five minutes, what was displayed? And what does it mean for them?

E - Hang up when needed , and push them to talk through some questions .

f. Place the number in the container again after you have finished the recap process, continue the display until another period passes, and then repeat the previous steps until the display is finished.

Crisis materials for applying the numbers withdrawal strategy:

Cards with numbers distributed to students , a bowl with cards bearing the same numbers (www . Edu. Gov. Qi(

2. Collect

Academic achievement is a manifestation of the success of the educational process and a result of its desired results. At the same time, it is considered one of the intended objectives of both the student and the community. For the student, achievement is one of his basic objectives on which his success in his study depends. Academic achievement measures the scientific concepts of students, which is one of the most important indicators on which educational systems depend to measure the amount of learning. Therefore, it is an indicator of the extent to which educational goals are achieved. The concept of academic achievement is used to indicate the degree or level of success achieved by the student in his field of study (Al-Fakhri, 2018: 11)

The second axis: Previous studies

- Studies dealing with the strategy of withdrawing numbers

No	Name of researcher, year of study and place	Methodology of the study	Study Title	Number of Sample, Gender and Grade	Equivalence of study	Subject and duration of the trial	Highlights of statistical methods	the most remarkable results
1	Kinani 2019 Iraq Baghdad	Demo	The effect of the numbers withdrawal strategy on the development of listening skills among students in the fifth grade primary	62 Males Five Primary	- Timescale - Parents' academic achievement - Previous achievement - The pre-hearing test.	Reading Semester	- T-test of two independent samples - K-square - Difficulty coefficient - Excellence coefficient - Effectiveness of wrong alternatives - Cronbach's equation	There are statistically significant differences in favor of the experimental group over the students of the control group in the post-test, and this excellence is due to the strategy of withdrawing numbers in the development of listening skills

- Studies on academic achievement

2	Al Bayati 2019 Iraq Baghdad	Demo	The effect of using the structural education model on the achievement of fourth grade students in science	53 Males Fourth primary	- Previous information.	Science Second Semester	T-testing for two independent samples Difficulty coefficient Distinction coefficient Wrong boiler efficiency Richardson coefficient	The students of the experimental group are superior to the students of the control group - this is due to the use of the constructive learning model in the achievement
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Research Methodology and Procedures

Research procedures: This chapter includes the procedures for the experimental application of the research as well as a description of the methodology used in the research, and the following is an explanation of those procedures:

1. Experimental design: The experimental design is a blueprint and work

program for how to implement the experiment. The experimental design with two groups (experimental and control) with a post-test, the achievement test and the scientific alertness scale were chosen, and it is one of the designs with partial control, as it is suitable for the research objective and to achieve the validity of the two hypotheses. As in Table (1)

Table (1) Pilot Design

The two groups.	Équivalence	The independent variable	Dependent variable
Experimental group	- Previous Acquisition	Withdrawal strategy	- Collection
Control group	- IQ - Advance Information - Scale of scientific vigilance	The usual way.	- Scale of scientific vigilance

2. The research community and its sample:

1- The research community: "It is all the individuals or people who constitute the subject of the research problem, and it is all the elements related to the problem of the study on which the

researcher seeks to circulate the results of the study" (Abbas et al., 217 : 2012).

B – Research sample: The Alkahal primary school for girls of the Directorate of Education Baghdad / Rusafa III was chosen intentionally,

the sample of female students consisted of two divisions, Division (B) represents the experimental group, which is studied according to the strategy of drawing numbers, and Division (A) represents the control group, which is taught according to the usual method, and the total number of female students was (66) without any failure, as shown in Table (2)

Table (2) *Distribution of the pupils of the research sample for the two groups (experimental and control)*

group	Section	Number of female students
Experimental group	B	34
Control group	A	32

The equivalence of the two research groups:
"Experimental research may be exposed to

factors that affect the integrity of the experimental design and to preserve them from the factors that affect the results of the research, the groups must be adjusted to know the effect of the independent variable on them" (Abbas et al., 2012: 216). Statistical equivalence was performed in the following variables:

-1 Previous Achievement: Means the scores of the female students of the research sample in the science subject for the third grade of primary school for the academic year (2021-2020), as the researcher obtained the scores of the previous achievement from the school records of the scores of the female students on Monday (11/1/2021), and after calculating the arithmetic average and the standard deviation of the scores of the experimental and control groups, the equation of the test (t-Test) was applied to the two independent samples that are not equal in number, and it was found that the value of (t-Test) calculated was 082) . (1) It is less than the tabular (2) at a degree of freedom (64) and that the difference is not statistically significant at a level of significance (0.05) This means their equivalence in this variable, as in Table (3).

Table (3) *The statistical significance of the previous achievement variable (for individuals of the research sample)*

Variable	group	Number of sample members	Arithmetic mean \bar{x}	Standard deviation S	Freedom degree	Value (t)		Significance level (0.05)
						Calculate d	tabular	
previous collection	Experimental group	34	8.7647	1.28060	64	1.082	2	Not statistically significant.
	Control group	32	8.4063	1.41100				

2. Intelligence test

For the purpose of identifying the intelligence variable, the research pupils on whom the strategy is applied and achieving parity intelligence experimental and control groups in order to be accurate in results and credibility, the researcher applied the Raven test for the successive matrices on Wednesday 10/11/2021 to the two experimental control groups. The test took (40 minutes), (36) test items distributed among three groups (A, A, B, B) at a rate of (12) paragraphs in each group and allocated (6) alternatives available for each paragraph of the

totals (A, A, B) (Abu Hamad, 2007:255) , and the answers of the pupils were corrected according to the answer key one degree for each paragraph and the calculation of the total score for each student, and after calculating the arithmetic mean and standard deviation of the scores of the two groups (experimental and control), (T-test) equation was applied to two independent, unequal number, and it was found that the value of the test - (815), which is less than the table (2) , and that the difference is not possible when the standard of the existence of the two groups (0.05) with a degree of freedom

is (0.64), which indicates the difference in their intelligence, which indicates the difference of this difference in intelligence.

Table(4) *Statistical significance of the intelligence variable (for members of the research sample)*

Variable	group	Number of sample members	Arithmetic mean \bar{x}	standard deviation	degree of freedom df	Value (t)		Significance level (0.05)
						Calculate d	tabular	
IQ	Experimental group	34	12.9118	5.13672	64	0.815	2	statistically nonfunctional
	Control group	32	14.0625	6.30380				

3. Testing previous information:

In order to verify that the students do not have the two groups of the research sample (experimental and control), any prior information related to the content of the current study subject, the researcher prepared a test for this purpose, which was adopted in the formulation of its experimental paragraphs in the science subject for the topics related to the educational subject under trial, the test included (20) test items of the type of multiple selection. The researcher applied the test on Thursday (11/2021) to the experimental and control

groups. The time took (60) minutes after the cooperation of the school administration, and after calculating the arithmetic mean and standard deviation of the two groups' scores (experimental and control), the equation of the T-test was applied to two independent samples that are not equal in number, and it was found that the value of (t-test) calculated (1.650) is less than the tabular (2) and that the difference is not statistically significant at the level of significance (0.05) and degree of freedom (64), which indicates that the two (experimental and control) groups are equal in this table shows (5).

Table(5) *Statistical significance of the pre-science test information variable*

Variable	group	Number of sample members	Arithmetic mean \bar{x}	Standard deviation S	Freedom degree	Value (t)		Significance level (0.05)
						Calculate d	tabular	
Past information	Experimental group	34	10.1765	2.72442	64	1.650	2	statistically nonfunctional
	Control group	32	9.1563	2.25917				

4. Control of extraneous variables: Experimental research may be exposed to many variables that affect the internal and external safety of the experimental design, and in order to reduce the error in the results and their sincerity about the existence of these variables must be controlled (Abbas et al., 2012: 67) .

- Effect of the experimental procedures:

1- Subject

Female students of the two groups (experimental and control) were taught the same subject represented in the units (first, second and third) of the science book scheduled for the fourth primary , edition 4, for the year (2021 - (2022AD .

2- Experiment Confidentiality

The researcher was keen on the confidentiality of the experiment by agreeing with the school administration not to tell the students the nature of the research and its purpose, so that their activity or dealing with the experiment will not change, which may affect the safety and results of the experiment. The effect of this factor was thus controlled.

3- School building (place of experiment): The experiment was applied in one school (girls' primary eyeliner), and in adjacent classes, similar in size, number of seats, type and size, number of windows and lighting.

4- The duration of the experiment: The duration of the experiment was uniform and equal for the students of two research groups, as the researcher began to apply the experiment on Saturday (11/13/2021) and ended on Sunday (23/1/2022) .

5- Distribution of classes: The weekly schedule was organized in agreement with the researcher and the school's administration of science for the two groups about the distribution of lessons for parity lessons between the two groups, where the number of classes for science for the fourth grade (four per week) for each group (experimental , control) (i.e. (8 lessons per week).

5. Research requirements: The researcher herself has prepared the necessary supplies to conduct the research experiment and apply it, namely :

1- Determination of the scientific subject: The researcher determined the scientific subject that she will study before applying the experiment. It included the units(first, second and third) in the science subject scheduled for the fourth grade of primary school, I 4, for the academic year (2021-2022) in the Republic of Iraq .

2- Formulation of behavioral goals: The researcher formulated (105) behavioral goals, in the formulation of which the behavioral goals were based on the classification of (Bloom) in the cognitive field, at the first three levels (memory, comprehension, and application)

3- Preparing teaching plans

The preparation of teaching plans is one of the requirements of the successful teacher. The researcher prepared teaching plans for the topics

to be taught during the trial period (20) plans in light of the content of the planned book and the behavioral objectives of each of the two groups (experimental and control) and according to the two methods adopted. The researcher prepared the teaching plans for the experimental group in light of the steps of the strategy of withdrawing numbers , and the control group according to the usual method. The researcher presented samples of the plans to a group of specialists and specialists in methods of teaching science, chemistry, biology and physics .

6. Research tool: One of the requirements of the current research is to build an achievement test to measure the achievement of the students of the research sample, and evaluate their progress in the subjects of science .

1- Construction of achievement test items:

The researcher formulated the test according to the test map and included the test of (40) objective paragraphs of the type of multiple choice, with four alternatives, one of which represents the correct answer. This type of vocabulary is the most flexible type, as it can be used in evaluating the achievement of educational goals from different levels of knowledge, and this type is useful in overcoming the problem of correcting the answers of a large number of students (Alam, 2009: 97) .

2- The validity of the test: This type of validity is an important basis in the construction of the achievement test because of its ability to measure specific areas of behavior, and it is one of the indicators of the validity of the content (Abdul Rahman and Adnan, 79:2007), as the researcher presented the test paragraphs and behavioral purposes to a group of specialists and arbitrators to express their opinions about the paragraphs and their suitability for a test. The number of (40) paragraphs of each paragraph measures the purpose of the behavior , and in light of the opinions of the specialists , some paragraphs were reformulated and amendments were made to some others and the percentage of the paragraphs was used statistically and their validity for the level of pupils.

3- Exploratory application of achievement test:

The aim of this procedure is to verify the clarity of the paragraphs, instructions and time limits that the student takes in answering the

paragraphs and the questions she raises about the achievement test paragraphs. Therefore, the researcher applied the test to a first exploratory sample of the fourth primary schoolgirls at the Al-Khansa Elementary School for Girls, affiliated to the General Directorate of Baghdad Education, Rusafa/the third, consisting of (30) female students. After agreeing with the school administration and the subject teacher to conduct the test after the completion of the first, second and third units of the fourth elementary science book, Edition 4, 2022, the date was set (15/1/2022) on Saturday for the test and they were informed of the date of the test a week before so that the students can study the subject well and in an integrated manner. The time of applying the test was also calculated by calculating the average time from the first student who answered the test to the last student who answered the test, and the average time was calculated. The time taken for the students to answer the test paragraphs. After the researcher confirmed the clarity of the achievement test paragraphs, its instructions, and the time taken for the test, the test was reapplied to a second exploratory sample in order to conduct the statistical analysis and extract the psychometric properties of the achievement test paragraphs by finding the values of the difficulty, ease, and discrimination factor to evaluate the test paragraphs, in the sense of passing a judgment on the validity or not to achieve the objectives of the test and its efficiency, the researcher applied the test on (18/1/2022) corresponding to (Wednesday) on a second exploratory sample of (200) fourth primary schoolgirls in three as shown in Appendix (3) schools affiliated to the General Directorate of Education of Baghdad Risafa/Third, who completed the study of the first, second, and third units of the fourth primary science book, Edition 4,2022. After

agreeing with the science teachers in the schools to inform the students of the date of the test two weeks before it is taken.

7. Procedures for applying the experiment

1 - The researcher began to apply the experiment to the students of the two research groups (experimental and control) starting on (Monday) corresponding to (13/11 /2021until Sunday) corresponding to (13/1/2022) in the first semester of the academic year (2021/2022) and by four sessions each week for each group.

8. Statistical means: The researcher received the Statistical Portfolio of Social Sciences (SPSS)

Presentation and Interpretation of Results

1. Presentation of Findings

A - Results of the hypothesis that states: (There are no statistically significant differences at the level of (0.05) between the average scores of the experimental group's students who were studied according to the strategy of drawing numbers and the average scores of the control group's students who were studied according to the usual method of achieving science), and after applying the experiment and testing the students with the achievement test, then the answers of the students were corrected, the arithmetic average and standard deviation were found, and the equation (t-Test) was applied to two independent samples that are not equal in number, I obtained the following results,as in Table (6)

Table(6) the selection scores (t-test) for the scores of the two research groups in the achievement test

group	Number of female students	Arithmetic mean \bar{x}	Standard deviation S	Degree of Freedom d f	Value (t)		Significance level (0.05)
					Calculated	tabular	
Experimen tal group	34	37.3824	2.18833	64	3.668	2	A statistical function in favor of the experimental group
Control group	32	34.9063	3.22650				

From the above table, it is clear that the mean scores of the experimental group (37.3824) and the average scores of the control group (34.9063), and the value of (t-test) calculated (3.668) is greater than the tabular value of (2) at the level of (0.05), at a degree of freedom (64), which indicates the existence of statistically significant differences in favor of the experimental group in the achievement test, between the average scores of the experimental group who studied according to the strategy of drawing numbers and the average scores of the control group who studied in the usual way.

2. Results interpretation:

1- Interpretation of the results of the zero hypothesis: The results shown in Table (6) showed the superiority of the experimental group that was studied according to the strategy of drawing numbers over the control group that was studied according to the usual method in the achievement test for the benefit of the experimental group.

Conclusions

In light of the result of the current research, the researcher was able to conclude the following: -

1 - The strategy of withdrawing numbers contributed to the participation and positive interaction of female students throughout the lesson and helps to increase the success rate in the achievement test.

2- The strategy of withdrawing numbers is one of the strategies that motivate female students to express their opinion and the extent of their understanding of the concepts and develop their abilities and help them to solve their problems and link the information they learned in their daily lives.

Recommendations:

In light of the results of the current research, the researcher recommends the following

Encouraging teachers to use teaching strategies and models that allow female students to participate and interact in the lesson, make them the focus of the educational process and increase the level of educational achievement.

2- Paying attention to educational means and illustrative examples from the environment in which they live in order to contribute to the easy delivery of the study material and make them link the science material to daily life.

3 - The need to pay attention to extra-curricular activities because they help to better learn for female students, as well as help to integrate the family into the educational process through following up their educational level.

Proposals

To complement the research, the researcher proposes to conduct a number of studies and scientific research as follows:

1-Conducting another study that uses the strategy of withdrawing numbers and their effect on other types of variables (scientific tendencies, love of scientific exploration, acquisition of concepts, scientific thinking..... stroke, etc.);

2-Conducting a study that uses the strategy of withdrawing numbers and their effectiveness in developing some of the objectives of teaching science.

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