

(Strategy (via - plans - people) in the acquisition of science and natural intelligence for students of the fifth grade of primary school)

prof M. Dr. Hossam Youssef

Diyala University/College of Basic Education

dr.husamyusif@gmail.com

Researcher Rana Thamer Allai

Diyala University/College of Basic Education

rana.thamer1990@gmail.com

Abstract:

The current research aims to identify the effect of the strategy (cross-plans-people) in the achievement of science and natural intelligence among fifth grade students, as the researcher relied on the experimental design with partial control, which is (the design of the experimental group and the control group with a post-test), and the researcher chose Fifth graders of primary school from Al-Wasiti Primary School affiliated to the General Directorate of Education in Diyala Governorate / Baqubah District for the academic year (2021-2022) AD; For the purpose of applying the experiment, the sample consisted of (80) students, with (38) students in the experimental group that studies with the strategy (cross - plans - folk) and (42) students from the control group that studies in the usual way, and the researcher prepared two tools for research, the first represented With an achievement test in science, it consisted of (30) test items of the type of multiple choice according to the specification table, and the validity, stability, level of difficulty of its paragraphs, the strength of its distinction, and the effectiveness of its incorrect alternatives were confirmed. The second tool was represented by the natural intelligence scale consisting of (20) A paragraph, and its validity, stability and psychometric properties were confirmed, and in light of that result, the researcher recommended some recommendations and suggestions that were mentioned in the fourth chapter.

key words: Strategy (through - plans - people), science acquisition, natural intelligence, fifth grade students

Chapter One: Introduction to Research

First, the research problem:

The idea of the current study stemmed from the desire to improve the methods of teaching science in the primary stage, by addressing a method that might meet the needs of the students on the one hand and develop their thinking and abilities to solve the problems they face on the other hand, so the researcher chose a strategy (via - plans - people) to test it In teaching science in the fifth primary, so the research problem can be determined by the following question:

(The effect of a strategy (across - plans - people) on the achievement of science and natural intelligence among fifth graders of primary school?)

Second: The importance of research:

The importance of the research is crystallized through the following axes:

- 1) The importance of the strategy (cross / plans / folk) as it is one of the active learning strategies in teaching science, which may contribute to the development of academic achievement and natural intelligence among primary school students.
- 2) The importance of academic achievement, as it is a measure of the extent of understanding and assimilation of the topics that have been taught and measures the extent to which educational goals are achieved.
- 3) The importance of natural intelligence in helping students to make correct decisions in their lives and reach useful creative results.

- 4) The importance of the primary stage in general as it is the basic building block for all stages, and the fifth grade in particular, as it contributes to building and developing the student's personality in its cognitive, skill and emotional fields.
- 5) The importance of science subject for primary school teachers in understanding modern strategies for teaching, including the strategy (via / plans / folk) to deliver information to the student in a proper manner.

Third: Research Objective:

The research aims to identify the effect of the strategy (cross - plans - people) on the achievement of science and natural intelligence among students of the fifth grade of primary school.

Fourth: The two research hypotheses:

- There is no statistically significant difference at the level of significance (0.05) between the average scores of the experimental group students who will study the science subject according to the strategy (cross - plans - folk) and the average scores of the control group students who will study the same subject according to the usual method in Science acquisition.
- There is no statistically significant difference at the level of significance (0.05) between the average scores of the experimental group students who will study the science subject according to the strategy (cross - plans - folk) and the average scores of the control group students who will study the same subject according to the usual method in A measure of natural intelligence.

Fifth: Limitations of Research:

Spatial boundaries: primary (government day) schools for boys and girls affiliated to the General Directorate of Education in Diyala Governorate.

Time limits: the first semester of the academic year (2021 - 2022) AD.

Human limits: Fifth graders.

Cognitive limits: the science book for the fifth grade of primary school.

Sixth: Defining Terms:

1) Impact: It was known by:

- Samara and Abd al-Salam (2008) as: "the result of a desirable or undesirable change that occurs in the student as a result of the education process" (Samara and Abd al-Salam, 2008: 52).
- The researcher defines it procedurally as: the extent of the expected change as a result of teaching with (strategy (cross - plans - people)) in the achievement and natural intelligence of fifth graders in science, and it is measured by identifying the increase and decrease in their average grades in achievement and natural intelligence.

2) Strategy (through - plans - people): defined by:

- (Ambo Saidi and Hoda, 2016) as: "An educational strategy that passes through three main stages, which is to identify the educational needs of learners in any subject to be learned by expressing their special needs, planning appropriate activities for them, and then placing them in small groups based on the similarity of their needs and measuring their level of learning through assessment activities" (Ambo Saidi and Huda, 2016: 132).
- The researcher defines it procedurally as: "A learning strategy that depends directly on determining the educational needs of the students in the subject to be learned and providing the opportunity for the students to express their educational needs and placing them in groups according to the similarity in the educational needs and choosing the appropriate activities for the topic to be learned and then evaluating what has been learned.

3) Al-Tahseel: Known by:

- Al-Tamimi and others (2018) as: "The set of knowledge and skills acquired and developed during the study subjects, which are usually indicated by test scores or grades assigned by teachers, or both" (Al-Tamimi et al., 2018: 32).
- The researcher defines it procedurally as: the grades obtained by the students in the achievement test prepared by the researcher from the topics of the first semester of the science book for the fifth grade of primary school, and through those grades we judge what the fifth grade students have comprehended.

4) Natural intelligence: known to everyone:

- (Atiya, 2015): “The ability to distinguish between living and non-living organisms and their classification and the ability to deal with the environment with respect, which includes sensitivity and awareness of changes that occur in the surrounding environment, while his skills are represented in classification, discrimination, understanding nature and the use of binoculars and microscopes” (Atiyah, 2015). : 299.
- The researcher defined procedurally as: the ability of the fifth grade students to identify the elements of the natural environment and deal with them in a manner that suits their lives, and to feel the problems of the environment and his willingness to contribute to finding a solution to them and his awareness of his role in preserving them, and it is measured by the degree that the student obtains when answering the test used for this purpose.

Chapter Two: A theoretical framework and previous studies

The first axis: theoretical framework:

First: the concept of active learning:

Active learning is a purposeful educational process that takes into account all the constituent factors of education, during which both the teacher and the students cooperate to achieve the educational goals. It is consistent with the spirit of the age and the various requirements of life.

Second: Strategy (cross - plans - people)

A strategy that depends directly on determining the educational needs of each learner about the subject to be learned, giving the learner the opportunity to express his educational needs himself, choosing activities appropriate to those needs, and placing learners in groups according to the similarity in their own needs (Afaneh, 178: 2009).

Cross-Plan-People Strategic Steps:

First: Expressing Needs (Hebrews): This step aims to identify the learner’s previous experiences to build on, as well as discover the misperceptions that the learners may have to treat them and the information that the learners need during the study of the concepts of the lesson, and there are several ways to identify the learners’ needs, including the following: :

Giving the learner a specific task and observing him while doing this task using certain techniques such as photography or sound recording and others.

Asking revealing questions through which the teacher can identify the student's abilities and needs in a particular field or specific concepts. These questions may be individual to help discover what the learner has of certain concepts.

- Using the individual interview to determine directly what the learner possesses of certain concepts, by talking with the learner and discussing it in determining the tasks he wants to learn and his necessary needs to do or practice.

Third: Academic achievement:

Academic achievement is one of the concepts commonly used in the field of education and educational psychology in particular, because of its importance in evaluating the student’s academic performance, as it is seen as a basic test in the light of which it is possible to determine the student’s academic level, and judge the size of educational production in quantity and quality. (Al-Jalali, 2011: 22).

Fourth: natural intelligence

The ability to understand nature and its animals and plants, the ability to classify, awareness of the environment, and sensitivity to changes that occur in the environment. Intelligences have multiple manifestations according to cultural contexts, in which they vary, both in terms of theoretical classification methods for natural phenomena and things or daily practical interest in them. Its components and elements to maintain its survival and development of its lifestyle, its functions extended through human evolution to include many aspects of human life, and this extension was done through the integrated and interactive employment between natural intelligence and other intelligences (Al-Tawab, 2014: 123).

The second axis: previous studies:

After reviewing the previous studies and literature, the researcher did not find any study that dealt with (cross - plans - people) strategy as an independent variable, nor any study that dealt with (natural intelligence) in science.

Chapter Three: Research Methodology and Procedures

First: Experimental Design:

The experimental design with partial control was chosen for two groups: one is an experimental group and the other is a control group with an achievement test and a natural intelligence test, as shown in Scheme No. (1):

the test	dependent variable	independent variable	parity	the group
achievement test + natural intelligence	Academic achievement natural intelligence	Strategy (through - plan - get up)	- Chronological age (in months). - Test the previous information. - .IQ test. - A measure of natural intelligence.	Experimental
		the usual way		control

Scheme 1: Experimental design of the research

Second: Determining the research community and selecting its sample:

- **Research community:** The research community includes fifth-grade students in government day schools affiliated with the General Directorate of Education in Diyala Governorate / Baquba for the academic year (2021-2022).
- **The research sample:** After identifying the names of the government primary day schools in Diyala Governorate / Baquba, the researcher chose by random method (Al-Wasiti Elementary Mixed School) from among (20) schools, to implement her research experiment.

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 (1): Arithmetic mean, standard deviation, and the two T-values of the variables (chronological age, students' previous achievement, intelligence test) for the two research groups.

Statistical significance	The two t values		degree of freedom	standard deviation	SMA	the number	the group	variable
	t for tabular	calculated						
Not statistically significant	2.000	0.997	68	12.25	171.48	35	Experimental	Chronological age
				16.45	174.9	35	control	
		0.198		16.91	54.65	35	Experimental	Previous student achievement
				15.65	53.88	35	control	
		0.785		7.81	27.77	35	Experimental	IQ test
				7.27	29.14	35	control	

Fourth: Controlling extraneous variables: Procedures for controlling these variables: (accidents associated with experience, experimental extinction, maturity factor, measurement tools, impact of experimental procedures).

Fifth: Research requirements: For the purpose of implementing the research procedures, the researcher prepared some requirements: (defining the scientific material, formulating behavioral objectives, preparing teaching plans).

Sixth: The search tools:

1) Building an achievement test:

Determining the objective of the test: The objective of the test is to measure the achievement of the students of the experimental and control groups in the subject during the trial period from the science book for the fifth grade of primary school to be taught for the academic year (2021-2022).

Determining the content: It included the content of the four chapters of the science book for the fifth grade of primary school, i8 for the year (2019).

Determining the number of test items: The researcher sought the help of a number of science teachers and the opinions of specialists in the methods of teaching science after they were briefed on the behavioral objectives of the content of the four chapters of the science book for the fifth grade of primary school, as it was agreed to define the test items as (40) test items .

Preparation of the specification table: the achievement test items were distributed and arranged between the classes of the subject and the levels of the cognitive domain (remembering, understanding, application, analysis, synthesis, evaluation) in a more accurate distribution and arrangement, and table (2) shows the details of that:

Table (2): The achievement test specification table

number of questions	level of goals			Content	
	Application	comprehension	remember	Percentage of classes	seasons
	9%	27%	64%		
6	1	2	3	22%	Third
8	1	2	5	25%	the fourth
8	1	2	5	28%	Fifth
8	1	2	5	25%	Sixth
30	4	8	18	100%	the total

- Test validity: In order to verify the validity of the test, the researcher adopted two types of validity: (apparent validity and content validity).

The exploratory application of the test: It was in two stages:

- The first exploratory application of the achievement test: to reveal the clarity of the paragraphs and the answer instructions, and to determine the time of the test, the test was applied to a survey sample consisting of (30) students from the fifth grade primary school (Al-Khwarizmi Mixed Elementary School) on Wednesday (1/1/ 2021) AD.
- Second exploratory application:
- Paragraph difficulty coefficient: After calculating the number of correct answers for each paragraph, the researcher applied the difficulty coefficient equation for each of the test items and found it ranging from (0.59- 0.83).
- Item discrimination coefficient: The researcher calculated the discrimination power for each of the test items using the item discrimination power equation and found it ranging from (0.212 - 0.457).
- Effectiveness of Wrong Alternatives: After applying the alternatives effectiveness equation, it appeared that all the alternatives for the test items had negative results.

The stability of the test: The reliability coefficient of the test was (0.822).

- **Natural Intelligence Scale:** Determining the goal of the scale: This scale aims to measure the natural intelligence of the research sample, who are students of the fifth grade of primary school.
- Drafting the scale items: the scale items were formulated, as a set of items were obtained, numbering (20), and the researcher was keen that these items are appropriate to the nature of the sample, and they were reformulated more than once to be clear and understandable.

The validity of the test: the apparent validity of the natural intelligence scale was extracted, which is as follows: (apparent honesty, content validity).

- Applying the natural intelligence scale to the exploratory sample:
- The first exploratory sample: To ensure the clarity of the paragraphs and to determine the time taken to answer all the test paragraphs, the researcher applied the scale to a survey sample consisting of (30) students from (Al-Khwarizmi Elementary Mixed School), on Wednesday (12/1/2022 AD).
- Alpha-Cro-Nbach stability coefficient: Alpha-Cro-Nbach's stability coefficient was calculated using the SPSS program, and the researcher found that the stability coefficient is equal to (0.844), and therefore the scale has good stability.

Seventh: Statistical means: The researcher used the statistical package SPSS program for statistical analysis. the fourth chapter

Presentation and interpretation of results

First: View the results:

It includes two axes: The first axis: the results related to the first null hypothesis: The researcher extracted the arithmetic mean and variance of the scores of the students of the two groups (experimental and control), and a table (3) shows that:

Table (3)

The arithmetic mean, variance and the calculated and tabulated T-value of the scores of the experimental and control groups in the final achievement test

Statistical significance	T value		degree of freedom	deviation	average	the number	the group
	tabular	calculated					
dal	1.66	2.181	78	19.92	5.83	38	Experimental
				17.31	5.05	42	control

We note from table (3) that the arithmetic mean value of the scores of the experimental group students is (5.832) with a standard deviation of (19.92), while the arithmetic mean value of the scores of the students of the control group is (5.051) with a standard deviation of (17.31) supplement (17), and using T-test for two independent samples of unequal number The results showed that the calculated T-value amounted to (2.181), which is greater than the tabular value of (1.66) at a degree of freedom (78) and a significance level of (0.05).

Statement of the effect size of the independent variable on the dependent variable:

The researcher used the square equation (ETA) to extract the effect size (d) for the independent variable (strategy (cross - plans - people) in the dependent variable (scholastic achievement). With the strategy (through - plans - people) in the achievement test and for the benefit of the experimental group.

The second axis: the results related to the second null hypothesis:

To verify the validity of the previous null hypothesis, the researcher extracted the arithmetic mean and variance of the students' scores in the two groups (experimental and control), and a table (4) showing this:

Table (4)

The arithmetic mean, variance, and the calculated and tabular T-value for degreesMy research group in the scale of natural intelligence

Statistical significance	T value		degree of freedom	deviation	average	the number	the group
	tabular	calculated					
dal	1.66	3.086	78	6.84	49.66	38	Experimental

				5,89	45.26	42	control
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We note from table (4) that the arithmetic mean value of the scores of the experimental group students is (49.66) with a standard deviation of (6.843), while the arithmetic mean value of the scores of the students of the control group is (45.26) with a standard deviation of (5.894) Supplement (18), and using T-test for two independent samples of unequal numbers The results showed that the calculated T-value amounted to (3.086), which is greater than the tabular value of (1.66) at a degree of freedom (78) and a significance level of (0.05).

Statement of the effect size of the independent variable in the dependent variable: The researcher used the square equation (ETA) to extract the effect size (d) for the independent variable in the dependent variable. evaluated) in the scale of natural intelligence and in favor of the experimental group.

Second: Interpretation of the results:

- Interpretation of the result related to the first hypothesis:
 - The "cross-plans-people" strategy allowed the students to take organized steps that greatly contributed to increasing the students' abilities to express and actively participate in the implementation of the proposed activities based on their desires.
- 2) Interpretation of the result related to the second null hypothesis:
- The "cross-plans-people" strategy is a key factor in developing the natural intelligence of students, and that diversification in educational activities is of great importance in harmonizing the mental abilities of students and each according to his abilities and inclinations, and this makes the teacher to be in line with his teaching accordingly. .

Third: Conclusions:

The strategy of "cross-plans-people" contributed to raising the level of academic achievement of fifth-grade students in science.

Fourth: Recommendations:

- The necessity of using the "cross-plans-people" strategy in teaching science subjects; Because this strategy contributed to raising the level of achievement of fifth grade students, and also contributed to improving their natural intelligence.

Fifth: Suggestions:

- Using the "cross-plans-do" strategy according to learning patterns in other subjects and stages of study, such as the stage: (elementary, intermediate or university).

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