



Instructional-learning design according to the creativity theory of investment and its impact on the achievement of second grade intermediate students

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ABSTRACT

Research extract

This research aims to recognize an educational design - learning according to the theory of investing creativity and its impact on the attainment of middle-grade students. The researcher adopted the experimental curriculum with the experimental design of two equal groups, and the researcher deliberately selected the (middle of Iraq for boys) distributed to two divisions (a). b) The division (a) was selected in a random manner to represent the experimental group. In the same way, the division (b) was selected to represent the control group. The researcher was statistically rewarded among the members of the two groups in the following variables: (Chronological age calculated by months, degrees of science, test of intelligence Raven). The researcher identified the subject matter of the science book for the middle second grade, and then the researcher formulated behavioral goals as many as (180) behavioral goals representing the first four levels of Bloom's cognitive classification, as for the research tool, the researcher built an attainment test consisting of (40) Objective test paragraph of multi-quadrilateral choice of alternatives according to (Table of Standards) verification of honesty, differentiation, difficulty, effectiveness of alternatives and stability; Its stability has been verified in a halfway form of fragmentation; The researcher used appropriate statistical means to extract data, and the results showed that the pilot group outweighed the control group, in the light of which the researcher formulated a number of recommendations and proposals mentioned in chapter IV.

Keywords: Creative Investment Theory, Achievement, Middle Second Grade Students, Science

INRODUCTION

First: Research Problem:

Science is one of the foundations of natural science and is the core of many other sciences that are interested in studying, interpreting, analysing and investing natural phenomena. It is a fertile area of knowledge, facts, creative ideas, information and theories. s technological development in many spheres of life, About a year's science curriculum and physics science focus on characteristics in which students with creative mental abilities are characterized in investing creativity, generating ideas, motivation, knowledge, personal qualities, and ways of thinking and interacting with the surrounding environment and that it is the basic tasks in teaching physics that teach students how to learn and not how to save information without understanding or applying it in various areas of their daily lives, Despite the importance of physics science, we find that the actual reality of their teaching is still rigid. Based on meeting, receiving from the teacher, preserving and consulting the student, This resulted in neglect of educational activities, lack of student interaction and limited participation in the classroom and that teachers do not use modern teaching methods to effectively achieve educational objectives, This results in a significant decrease in his educational achievement (Al Butty & Saad, 2018:81).

The researcher found that the larger sample of teachers had confirmed that there was a decrease in the attainment level of middle grade II students in science, so in order to keep pace with scientific development, the researcher considered using educational-learning design according to the investment theory of innovation in science teaching that might help students increase their educational attainment in science.

Thus, the problem of seeking to answer the question is as follows:

(What is the educational learning design based on the theory of investing creativity and its impact on the achievement of middle second grade students?)

The importance of the research

Physics is one of the scientific subjects, in secondary and middle school as an important stage in a student's school life, A link between elementary and preparatory levels, through which the general objectives of teaching

physics, such as developing thinking and helping students learn about natural phenomena, are achieved. By examining the scientific relationship, related to these phenomena and the factors and changes affecting them, This helps students develop skills and enhance their hobbies. and also assists the student in scientific knowledge, the development of scientific thinking and the acquisition of scientific methods and its processes, and to promote the development of scientific trends and their scientific tendencies, and seeks to create and develop the appropriate scientific skills of the student, Through his scientific activities and laboratory experiments (Agent and Hussein, 2013:145).

Therefore, it was necessary to rely on strategies that were more relevant to the student's interests and abilities to reduce the gap between what students received within the classroom and the experiences gained from their surrounding environment. Today's student needs strategies that enable him to transmit scientific information, experience and skills creatively beyond the confines of the classroom and the school environment. The teacher can apply these strategies only if the teacher has appropriate knowledge and knowledge of the educational and learning design (Al Kaabi, 2018:19).

Educational design is a science that includes integrated, structured, interrelated, sequenced and interconnected steps of a continuous nature requiring numerous requirements that lead to the achievement of goals within a specified period of time and for a certain class of students. This educational design in its general concept cannot be realized its components and basic steps from the teachers of the subject unless there is a theory investing creativity that can be based on (Abdul Monim and Hamadi, 2019:26).

Attention to creativity and creativity in human societies is an absolute necessity for the cultural development and scientific progress achieved by this human being on the one hand and for addressing the problems of life and the challenges of the future on the other, hence the interest of modern education in creativity and its development among school students, as an essential objective of education (Al Barak and Ali, 2021:54).

The idea of investing creativity theory is that creative students look like investors investor buys at a cheap price and sells at a high price, The difference between the two is that the treatment of investors is material and financial while creative students deal with creative ideas, especially those that are not accepted by the public. But the distinction of creativity is its ability to convince others of its value. In the light of this custom, creativity must be embraced by encouraging creators to consider it as an attitude and a trend in life, Promote and strengthen students' capacity (Al-Jasim, 2010:195).

The Creative Investment Theory strategies make students more noticeable for creative ideas and new information. Every student has the ability to look at the problem they face in all directions and from all angles to find the perfect solution. This increases their ability and increases their educational achievement (Zair and Sarra, 2020:96).

Raising the level of educational achievement is one of the important educational goals in the student's life that the educational system improves in students It is the criterion of the student's progress in his studies and his transition from one stage to another and his importance does not depend only to this extent, It uses the information and expertise it teaches to meet the challenges and problems of everyday life. as well as being a basic criterion whereby the student's progress in his or her studies is measured, It is an approved basis in educational decision-making (Al Fakhri, 2018:109).

Further to the foregoing, the importance of research is reflected in the following themes:

- 1) The scarcity of local and Arab research and studies (to the scholar's knowledge) that dealt with the effect of educational design - learning according to the theory of investing creativity in the achievement of students in the middle second grade.
- 2) The importance of experimenting with the theory of investing creativity and its strategies as modern in the field of education, perhaps contributing to addressing the shortcomings caused by traditional methods.
- 3) The importance of educational achievement is a measure of the understanding and assimilation of the subjects taught, as well as the achievement of educational objectives.

Third: Objectives of the research

The research aims to achieve the following:

- 1) Educational Design-Learning in accordance with the theory of investing creativity for middle second graders in science.
- 2) Recognize the impact of educational-learning design on the academic achievement of students in the middle second grade in science.

Fourth: The research hypothesis

In order to achieve the research objective, the researcher developed the following zero hypothesis: "There is no statistically significant difference at an indicative level (0.05) between the average grades of the experimental group students who will study educational design - learning according to the theory of investing creativity in science and the average scores of the control group students who will study the same subject according to the usual method of study achievement test."

Fifth: Research boundaries

Research boundaries combine with the following:

- 1) Human boundaries: middle second graders.
- 2) Spatial boundaries: intermediate and secondary schools (daytime government) for boys belonging to the General Directorate of Education in Diyala governorate/Bakkab district.
- 3) Time limits: second semester for the academic year (2021-2022).
- 4) Cognitive boundaries: Part II of Science (Physics).

Sixth: Definition of terms

1) The theory of investing creativity is known by

De Bon, 2006: "A new vision of creativity, whether in terms of creative skills or strategies used to achieve skills "De bono, 2006:73) is a unified and integrated creative pattern of lateral thinking that helps individuals to produce new ways of thinking or decision-making tools whose learning will be reflected in how we perform day-to-day tasks.

2) Academic achievement

(Al Fakhri, 2018) is that: "That specific level of performance, achievement or competence in the education received by the student at school that is measured by the teacher or through tests" ((Baqli and Hasanin, 2017:128).

First Axis

Educational Design Stages - Learning

The procedures followed are described at each stage of the proposed design under consideration and the bases adopted, namely, analysis, preparation (design), implementation, evaluation and feedback.

Second theme: creativity

If we browse the Quranic verses, we will find that God has praised and heed the mention of creativity in many places, as the Almighty said. {*The Maker of the heavens and the earth, how can he have a child and not have a companion, he create all things, and he knows everything* } (Al ana'am 151) {*We have created man in the best form* }" (Al teen , vs 4), {*to change your likenesses and raise you up in what you do not know*" } (al-Waqi'ah/v. 61), {"*He is on his return capable* }" (al-Tariq v 8).

The first beginnings of the emergence of creative realization in ancient civilizations, have emerged in Babylonian civilization, Which has had the greatest effect in creative realization, such as producing laws and commenting on Hammurabi's obelisk And the ancient Egyptians were highly creative in astronomy, medicine, engineering, taxidermy, and Greek civilization. The likes of Plato, Socrates, Aristotle and others, and in modern times the 1950s are the first beginnings of interest in creativity (Al Fakhri, 2018:43)

Theme III: Investing creativity theory:

The idea of investing creativity theory is that smart individuals have an investor-like ability to buy at a low price and sell at a high price. The difference between the two is that investors deal with the world of finance and equity, while creators deal with creative ideas, especially ideas unacceptable from the public. The creator usually faces challenges and a negative view of his ideas, but the distinction of creativity is his ability to convince others of the value of his idea. In light of this custom, creativity must be embraced by encouraging creators to invest their thoughts despite all the obstacles surrounding them.

The term "investing in creativity" means authenticity, creativity or modernity and means trying to solve problems in non-traditional ways (Hussein, 2009:10).

Theme IV: Educational achievement

Educational achievement is one of the concepts commonly used in the field of education and educational psychology in particular, as it is important in evaluating a student's academic performance. It is seen as a fundamental test in the light of which it can determine the academic level of the student and judge the quantity and quality of educational production (Al Jidaani, 2020:42).

Theme II: Previous studies

After research and research by the researcher on previous studies, there was no previous study on the theory of investing creativity as an independent variable.

Research methodology and procedures

Choosing a demo design

The researcher adopted the experimental partial adjustment design with two equal sets of dimensional test to measure attainment, as this design is suited to the research conditions, the design consists of the first two experimental sets and the other control, as the pilot group studies the educational design - Learning in

accordance with the theory of investing creativity and choosing teaching strategies appropriate to the educational attitude, and studying control group in the usual way, scheme (2) showing independent and follow-up variables and how to measure them.

Chart (1) Experimental Design Approved in Research

Test	Dependant variable	Independent variable	parity	Group	T
Achievement test	Academic achievement	Instructional-learning design according to the theory of investing creativity	1The chronological age of students calculated in months. 2. Raven's IQ test. 3. Science test scores for the first semester.	Experim ental	1
		The usual method		Control	2

Second: Research society and its sample

1. Research Community

Research Society Section in two parts:

- School Community: The research community in the high and middle day boys' schools is in Diyala governorate/serving a penalty for the school year (2021-2022), numbering 28 middle and secondary boys' schools.
- Student community: The student community for research purposes included students who are continuing to stay in the middle second grade, all in schools belonging to the Directorate General of Diyala Education (Centre), with 3,349 students distributed to boys' schools for the academic year (2021-2022).

2. Search Sample

Current search sample is divided into two sections:

- School Sample: Selected the researcher in a way (simple random drag) (middle of Iraq for boys) located in the Mustafa neighbourhood.
- Student sample: The total number of students in both groups was 63, and after the exclusion of students from both groups is statistical, the final number (60) of students, and a table (5) shows this:

Table (1): Number of students in the two research groups before and after exclusion

The number of students after exclusion	The number of excluded students	The number of students before exclusion	Branches	Group	T
30	2	32	A	Experimental	1
30	1	31	B	Control	2
60	3	63		Total	

Third: Control procedures

In order to control these factors, the researcher divided them into:

A. Variables associated with the research community (internal safety of research design)

The researcher was paired with a number of variables, as per the following table:

Table (2): Parity of search variables

Indication level	T value		Degree of freedom	Contrast	Standard deviation	SMA	N.O	Group	Variable
	Tabular	Calculated							
Not statistically significant	2.000	0.24	58	20.16	4.49	159.36	30	Experimental	chronological age Science test
				12.25	3.50	159.60	30	Control	
		0.528		139.004	11.79	62.83	30	Experimental	Raven IQ test chronological age
				117.37	12.14	61.20	30	Control	
		0.598		35.88	5.99	24.00	30	Experimental	Science test
				30.36	5.51	23.03	30	Control	

a. Variables associated with experimental procedures and external variables (external safety of research design)

Experimental actions may affect the dependent variable, so the researcher did some experimental actions to obtain a high degree of honesty, by:

- **Selecting and rewarding sample individuals**
- One of the factors influencing research results is the way in which the sample chooses to research, so the researcher tried to avoid this variable in the research results by conducting statistical parity between the two groups in variables: (Chronological age calculated by months, parents' academic achievement, science grades for the first semester of the academic year (2021-2022), intelligence test (Raven)), as well as that there is homogeneity between the two research groups in social, cultural and economic aspects, because they belong to one environment.
- **Accompanying accidents**
- Some of the results are exposed to natural or abnormal accidents during experimentation that obstruct the course of the experiment, have an effect on the variant of the autonomous variable, and the research experience has not experienced any incident that hinders its conduct, so this factor can be avoided.
- **Experimental breakdown**
- The test sample individuals were not left or interrupted, except for some individual absences, a normal and equal condition in the two research groups.
- **Maturity processes**
- The effect of this factor was not significant because the duration of the experiment was uniform between the two research groups. It began on Monday 7/3/2022 and ended on Saturday 14/5/2022. Since this duration was short, these processes had no impact on the current research.

Research tools

The researcher prepared the research tools to measure the two variables: (study achievement test), to determine the extent to which the independent variable (educational design according to the theory of investing creativity) affects these two variables.

Test achievement

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

- ❖ Determination of the objective of the test: The objective of the achievement test is to measure the final achievement of the students of the second grade (research sample) in the three units (first, second and third) containing the six chapters, part II (4) of the science subject book to be taught for the academic year (2021-2022).
- ❖ Determination of the number and type of test paragraphs: The researcher adopted objective tests of the type (multiple selection) to measure Bloom's four rating levels (knowledge, understanding, application, analysis) Total collection test paragraphs (40), multiple selection type test paragraphs out of paragraph, four alternatives, one valid and three erroneous, Taking into account that it is appropriate for behavioural purposes, students' age, school stage, time of response and class time ", having seen a number of previous studies targeting a sample of middle second graders, These paragraphs were presented to a group of experts, arbitrators and specialists and, through their valuable observations, some paragraphs were amended in terms of drafting.
- ❖ Preparation of the specification table: The researcher prepared a specification table for the attainment test, according to the behavioral target levels of the four levels of the field of knowledge of Bloom classification (knowledge, understanding, application, analysis) and the following table shows this:

Table (3): Specification table for collectible testing

Total %100	Percentage of behavioural targets				Relative importance	N.O pages	Chapters
	Analysis	Applying	Understanding	Knowledge			
	%22	%23	%26	%29			
9	2	2	2	3	%22	14	the first
5	1	1	1	2	%13	8	Second
4	1	1	1	1	%11	7	Third
5	1	1	1	2	%13	8	fourth
7	1	2	2	2	%16	10	Fifth
10	2	2	3	3	%25	16	Sixth
40	8	9	10	13	%100	63	total

Test paragraphs

The researcher drafted the test paragraphs in their initial form in the light of what was included in the test map, the researcher selected the type of test (multiple selection) that is the best objective test) to measure Bloom's cognitive classification levels (knowledge, understanding, application, analysis), the three units the second part of the science book (movement, strength, energy, sound and light), and the test consisted of (40) selected paragraphs

Test instructions

The researcher prepared the special instructions on how to answer (choosing one valid substitute for the paragraph, answering all paragraphs, time to answer, writing triple name, row and division in the designated place).

Correction of test answers

Establish a criterion for correcting answers, having been established (one score per correct test paragraph), zero for the wrong answer, the left and unanswered paragraph and the paragraph for which more than one choice has been placed), and therefore the upper final score of the test is (40 degree) and the lower grade (0).

Sincerity Test

To make sure the sincerity of the attainment test the researcher adopted two types of honesty:

- Apparent honesty: After verifying the veracity of the test ostensibly, the researcher distributed the test attaching the behavioral objectives and specifications table to a group of education professionals and their teaching methods. In the light of their opinions and suggestions, the paragraphs or alternatives that need to be adjusted after extracting the calculated KAI value and comparing it to the extreme tabular value (3.84) At an indicative level (0.05) and a degree of freedom (1) the results showed the validity of all test paragraphs.
- Authenticity of content: The researcher adopted a table of specifications in the construction of test paragraphs in order to ensure that the paragraphs represent the content of the subject and for behavioural purposes, and thus the test is genuine in terms of content.

Survey application of the test

The test was applied to two reconnaissance samples as follows:

- First exploratory application: After verifying the veracity of the test, the test was applied in the first phase of the survey on Sunday (8/5/2022) to a group of students in the middle grade of boys. The number of students (30) was intended to know the clarity of the test instructions as well as the clarity of its paragraphs and understanding of the alternatives to the answer and to know the appropriate time to answer, and adopt the formula.

$$\text{Test duration} = \frac{\text{first student time} + \text{srcond student time} + \text{the last student time}}{\text{total numbet of students}}$$

$$\text{Test time} = 1288/30 = 42.93 \text{ minutes} \sim 43$$

Time The researcher set the test time at 45 minutes.

Second exploratory application

After the researcher ascertained the clarity of the test instructions, vertebrae and time needed to answer, and to extract the cyecomtric properties of the test the researcher applied the test to a second reconnaissance sample of up to (100) Middle Second Grade Students in (Middle Islamic Martyrs for Boys) On Monday (9/5/2022), the researcher himself supervised the application in cooperation with the teacher of the subject at this school.

1. Statistical analysis of paragraphs

In order to conduct the following statistical analyses:

a. **Difficulty coefficient of vertebrae**

its value was found to be between (0, 35-0, 70).

b. **Differentiation coefficient**

The differentiation coefficient was calculated for each of the test paragraphs, and the researcher found that it was confined between (0, 22-0, 55).

The effectiveness of false alternatives

when calculating the effectiveness of correct alternatives to test paragraphs, the researcher found that they were confined between (-0,03--0,25).

2. Test stability

The researcher verified the test stability in two ways:

a) **Halftime method**

Test stability using the Pearson correlation coefficient (0.804) and then corrected with the Siberman Brown equation (0.891).

b) **Keyder-Richardson - (20)**

The constant coefficient on Keyder-Richardson equation is 20 (0,936).

Statistical means

The researcher used the t-test equation for two separate samples to perform parity between the experimental and control groups, and the Pearson correlation equation. The researcher used the equation to correct the correlation factor between the two test parts (individual and marital vertebrae scores) after being extracted by the Pearson correlation factor, the statistical bag spss, and the Excel program.

Presentation, interpretation and discussion of results

The results will be presented in accordance with the research objectives of the agencies:

The first objective

(Educational design according to the theory of creativity for investment to teach the subject of science to students in the middle second grade); Details of the achievement of this objective have been presented through the procedures and steps included in the educational design stages in accordance with the theory of creativity for investment and detailed in chapter III, item II.

Second objective

Recognize the impact of educational design according to the theory of creativity to invest in the achievement of students in the middle second grade

This goal was verified by the first zero hypothesis test, which states that: (There is no statistically significant difference at an indicative level (0.05) between the average scores of pilot group students studying according to the educational design of the theory of creativity to invest in science and the average grades of control group students who will study the same subject according to the usual method in the study achievement test prepared for the purposes of this research).

To verify the validity of the previous hypothesis, the researcher extracted the computational average, variability and standard deviation of the students of the two research groups, showing that the average scores of the experimental group studied according to the educational design reached (28.033) that the variation reached (13.476), the standard deviation reached (3.671), and that the average grades of control group students who studied in the usual manner reached (4). (24.933), the variance was (13.439), the standard deviation was (3.666) and when using the T test (t - test) For two separate samples, the statistical results showed a statistically different D, that the calculated T value (3.272) was greater than the tabular value (2,000) at an indicative level (0.05), a degree of freedom (58) and the table below shows this .

Table (4): Arithmetic average, variability, standard deviation and T value (calculated and tabular) of the grades of my group's students in the achievement test

Indication level	T value		Degree of freedom	Standard deviation	Contrast	SMA	N.O	Groups
	Tabular	Calculated						
Statistically significant	2.000	3.272	58	3.671	13.476	28.033	30	Experimental
				3.666	13.439	24.933	30	Control

The table above notes a statistically significant difference between the average grades of the two research groups' students in the achievement test and for the benefit of the experimental group.

This result demonstrates the superiority of the pilot group students who studied according to the educational design of the innovation theory to invest in the control group students who studied according to the usual method of the achievement test; Thus, it rejects the first zero hypothesis and accepts the alternative hypothesis that: (There is a statistically significant difference at an indicative level (0.05) between the average grades of experimental group students studying according to the educational design of the theory of creativity to invest in science and the average scores of control group students studying the same subject according to the usual method of study achievement test prepared for the purposes of this research).

Impact profile of the independent variable in the first (attainment) variable:

The researcher used the Cohen equation to extract the impact volume (d) of the independent variable in the dependent variable. The impact volume (d) (0.845) is an appropriate value for interpreting the impact size and an average teaching design variable according to the creativity theory to invest in the attainment test and for the benefit of the experimental group, and a table (8) shows this:

Table (5): Impact size of the independent variable in the collection variable

Volume of impact	Impact Value d	Dependant variable	Independent variable
Average	0.845	Achievement	Educational design according to the theory of creativity for investment

The researcher adopted Cohen's step-by-step and table (9) showing this:

Table (6): Impact Size and Impact Values by Cohen Rating

(8, 0) and above	(7.0 -4.0)	4.0 -2.0)(Impact Volume Value d
Big	Average	Small	The amount of impact

Second: Interpretation of results

The researcher attributes this to several interactive reasons, including:

- ❖ Educational design according to the creativity theory of investing by presenting or providing information is compatible with students' learning thinking, and therefore learning is more effective and accessible which may increase students' attainment.
- ❖ Educational design follows systematic steps and these steps are important as it works to fill and address gaps in any aspect, whether in objectives, content or teaching strategies.
- ❖ Using innovation theorem strategies to invest in teaching the experimental group that stimulated and supported several capabilities, the most important of which is the ability to think effectively and creatively about the problem and to deepen its distance and interpretation and to discover the relationships between its elements to reach the right solution to the problem, thereby increasing their educational achievement.

Third: Conclusions

In the light of the findings of the present research, the following can be concluded:

- ❖ The adoption of various activities contributed to the understanding, discovery and consolidation of the relationships between different information concepts in the students of the experimental sample.
- ❖ The teacher's role in directing students to multiple extracurricular sources of information has effectively contributed to their knowledge development, which in turn leads to greater attainment.

Fourth: Recommendations

In the light of the findings and conclusions of the present research, the researcher came up with the following:

- ❖ Adopt various evaluation methods to accurately measure the outcomes of the educational process, monitor students' learning, diagnose their strengths, promote them and vulnerabilities, and address them to

determine student levels, not rely on how much information the learner keeps as an indicator of achieving educational goals.

- ❖ Organizing courses to qualify and train science teachers on how to build educational and learning designs and implementation procedures, because of their high efficiency in giving good results and assisting teachers in achieving educational goals with minimal time, effort and expenditure.

Fifth: Proposals

Based on the findings and conclusions of the present research and updated and extended it, the researcher suggests:

- ❖ The effect of teaching according to the theory of creativity to invest in achievement and parallel thinking in primary students in science.
- ❖ Educational design - learning according to the theory of creativity to invest and its impact on the attainment of middle school students and their cognitive motivation.

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