

The effect of dual situated learning model (DSLML) on the achievement of fourth grade students in biology

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Abstract:

The research aims to identify the effect of the DSLM model in the achievement of fourth grade female students in biology by verifying the validity of the following hypothesis: There is no statistically significant difference at the level of significance (0.05) between the average scores of the experimental group students who study according to the DSLM model and the average scores of the control group students who study according to the usual method of achievement. The two researchers adopted the experimental design with two experimental groups and the partial control of the same post-test for achievement. The research community and a sample of the fourth grade female scientific students in the daytime preparatory schools for girls in Babylon Governorate for the academic year (2021-2022 AD). The warning setting was chosen as a deliberate sample consisting of (70) students and two experimental groups with a number of (34) female students and the control group whose number reached (36) female students, and the equivalent between the two research groups in the advanced information for the previous semester (20-20) . After the completion of the experiment, the application of an achievement test for the biology material consisting of 40 paragraphs of a type of multiple test and obtaining the results, the data were statistically processed using a test t-test for two independent samples, and the following results were reached: - (The experimental group that was studied with the model of learning based on dual situations (DSLML)) surpasses the control group that was studied in the usual way in the achievement test), so the researcher recommends some recommendations and proposals.

Keywords: Dual Situational Learning Model (DSLML) ,Achievement

ignoring the role of the learner who primarily preserves and indoctrines, and this is confirmed by many studies that have been conducted In Iraq as a study (Al-Alawani, 2018), and in order to research the reasons for this decline and identify the difficulties faced by teachers in teaching biology and the method adopted in teaching , the researcher distributed an exploratory questionnaire to a group of teachers of biology, who numbered (20) schools whose service is not less than (10) years distributed among the preparatory schools of the Directorate General of Education of Babylon, so the result of the questionnaire was as follows : 90% of teachers of biology

Chapter One : Definition of Research

First: The problem of research: The general orientation in the teaching and educational system in our country is preservation on the back of the heart, indoctrination and neglect of educational activities, and traditional teaching methods are prevalent in educational institutions, and most teachers and teachers rely on one method of teaching that depends primarily on preservation and retrieval , through the experience of the modest researcher in the field of teaching, I noticed that there is a weakness in achievement , one of the reasons for weakness is that teachers are the focal point in the educational process,

techniques have emerged that make the process of learning and education art not Only those who have mastered it and knew how to deal with it (Grey , 2017 : 123) , and the subject of biology is one of the most important natural sciences that can be studied and verified by conducting experiments that concern multiple aspects of life and living organisms in terms of their various aspects such as their type, type, structure and function and how to grow and develop. This branch of science is divided into many branches and disciplines. These branches are classified on different bases as the type of living organism that has been studied and what is the method used during the study (Saeidy , 2009 : 10), and one of the modern methods and models is the model of learning based on dual attitudes(DSLM)is a model for changing educational concepts based on the foundations of the structural theory that can facilitate the development of student concepts with the existence of alternative concepts (She, 2001). Attitude-based learning means that the process of conceptual change is a reality between the nature of scientific concepts and the beliefs of students about these concepts in order to determine which mental structures are necessary to form a more scientific view of concepts. The word "dual" means that conceptual change must be based on the nature of scientific concepts and the beliefs of students about these concepts on the one hand. On the other hand, the process of conceptual change must create a imbalance in the previous knowledge of students and provide them with a new mental model to achieve a scientific view of the concept, which ultimately leads to changing or modifying the existing model and creating a completely new model. The process of causing dysfunction or provoking contradiction to both stimulating students' motivation and increasing the level of achievement of female students and challenging their beliefs about concepts (Rabat, 2015 : 740), and **achievement** is the process of mastering a set of skills and knowledge that the learner can possess after his exposure to educational experiences in a subject or a group of subjects. It is considered the measurement of the learner's ability to absorb the prescribed subjects and

use regular teaching methods, 10% of teachers use modern teaching methods as a method (exploration and five-year learning course), and (100%) of teachers of biology have no information about the learning model based on dual attitudes (DSLML) and 80% of teachers of biology confirmed There is a weakness in the academic achievement of biology

Therefore, the problem can be formulated by the following question:

- What has been the effect of using the dual-situations learning model (DSLML) in the achievement of fourth-grade scientific students in biology?

Second: The importance of research: The real importance of science lies in its ability to explain phenomena and events. This is achieved through the abstraction of similar facts and their linkage in the form of scientific concepts (Grace, 2015: 3) Education aims to prepare the individual for life, which enables him to face its requirements, changes and complexities because learning and education are its tool in this task. Hence the importance of learning, education and the acquisition of knowledge. Learning is a necessity of the necessities of life, education, the message of the prophets and the profession of scientists (Attia , 2014 : 21),and education is a planned, organized and intentional process aimed at creating Positive changes desired educationally and socially in the behavior of the learner and thinking and conscience , and this requires the teacher, especially the science teacher, to be of sound thought and a creative educational effort that engages the learner with his personality, thought and conscience through education in general and practical education more accurately (Zeitoun, 2013, 5), and the teaching process needs many factors to be integrated in order to achieve its goals and is not limited to the presence of the teacher and learner and the educational material that is the focus of this process, but must be concerned with how learners acquire knowledge and try to discover and develop their energies and mental, behavioral and emotional potential, and this is not only to keep pace with the scientific development that the world is witnessing and benefit from this large amount of information, especially in the field of teaching, as models, methods, means and

- Cognitive limits: - The first five chapters (I: Classification of living organisms ,II : Ecology and the Ecosystem , III Food Chain, V, VI Fit for Animals) of the Biology Book for the fourth scientific grade.

Fifth: Definition of terms

- The **learning model based on dual situations (DSLML)** defined it: (Rabat, 2015) as an educational model based on dual situations and focuses on that the conceptual learning of students makes them build on previous concepts according to six consecutive stages used in the classroom. This model is based on researching the characteristics of the scientific concept, detecting the misconceptions of students, decomposing mental buildings that lack students, designing and teaching educational events based on predictions and interpretations, and applying what they have learned in new situations that confirm the occurrence of the process of conceptual change (Rabat , 281:2015).

The researcher defines it procedurally: A model followed by the researcher in teaching the students of the experimental group and consists of six stages (examining the characteristics of the scientific concept, saluting the misunderstanding of the students on the concept, analyzing the mental groups that students lack, designing the events of learning based on double situations, teaching the events of learning based on double situations, and raising the challenge of the events of situational learning).

- **Achievement:** Defined by (Al-Fakher, 2018) as: "The extent to which the learner understands what he learned from certain experiences and through courses and is measured by the degree to which the learners get in achievement tests prepared for this purpose (Al-Fakher , 2018 :34).

The researcher defines achievement procedurally: The total score obtained by the same students researching in the achievement test .

Chapter Two: Theory Background and Previous Studies

The first axis: theoretical background

the extent to which he is able to apply them through different means of measurement conducted by the school. The results of academic achievement obtained by the learner are an important indicator that gives a positive or negative picture of the nature of the learner's environment that directly affects his academic achievement and that helps him to obtain a result in a time and place (Ghassani , 2010 : 3).

From the above, the importance of the research can be summarized as follows

1- The educational model contributes to the achievement of education, which is based on making the learner the center of the educational process

2- The importance of the model of learning based on dual situations DSLM As it gives the individual freedom to express his opinion and change their misconceptions and acquire new concepts

3- The importance of biology, which has become a basic and important focus in many areas that have made it a fertile field for scientific activities

Third: The goal of the research and its hypothesis: The current research aims to not identify (the effect of the dual situated learning model (DSLML) in the achievement of fourth-grade scientific students in the subject of biology and scientific thinking).

For the purpose of verifying the two research objectives, the following zero hypothesis was developed:

[There is no statistically significant difference at the level of (0.05) between the average scores of the experimental group students who studied in the dual situation-based learning model (DSLML) and the average scores of the control group students who studied in the usual way in the non-achievement test].

Fourth: The limits of the research: The current research was limited to the following :

- Spatial Limit: - Government day preparatory schools for girls affiliated with the General Directorate of Babylon Education.

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

- Human Limits: -Fourth-grade scientific students in Al-Manazira Preparatory School for Girls.

2. The process of change must cause a discrepancy in knowledge of the primary concepts of female students and provide a new mental group 3. The process of conceptual change must challenge the students' ontological and cognitive beliefs in the concept .R,Faziatul.F,Saeed.A;2020 :100). AuhammadA.K.,Sri Lanka)

The stages of the learning model based on the dual situation: The lesson progress according to the learning model based on the dual situation in light of six consecutive interrelated stages are

The first stage: Examining the characteristics of the scientific concept:This stage provides information about the necessary mental conditions that need to build the scientific view of the concept

The second stage: Detecting misperceptions among students about the scientific concept to be learned:

This stage aims to ensure that students misunderstand the basic concepts they have previously learned or misconceptions about the new concepts to be learned .

The third stage: Analyzing these mental topics in which students have a shortage: This stage requires determining the exact number of mental buildings in which students have a shortage, not usually building a more scientific view towards the scientific concept

Phase 4 : Design based on dual situations:This design for the occurrence of learning based on dual situations is based on the results of step 3, which refers to the mental topics that students have a lack of, if there are two mental topics that need to help students build a more scientific view of the concept , this may be necessary to design at least two events for learning based on dual situations

Stage 5 : Teaching with the Events of Dual Attitude-Based Learning:This focuses on giving students opportunities to make expectations, provide clarifications and explanations, address dissonance, and build a more scientific view of the concept

The sixth stage: Teaching with the events of learning based on contradictory attitudes:This provides opportunities for students to apply the mental topics acquired by students in new situations to ensure that

– **Foundations of structural theory:**

The structural theory is based on a set of foundations:

- 1- Knowledge is not innate or negative in the student, but it was built by the learner
- 2- Learning is a processe Active
- 3- Learning is a self-organizing process (Kagan ,S&Kagan, 2009 :1-2)
- 4- It builds on learning rather than education and encourages and accepts the independence and initiative of learners as it makes learners as creators and encourages their research and investigation (Al-Dulaimi , 2014 : 38-39).

Second/Double Situational Learning Model (DSLML)

The scientific learning of female students in a meaningful way is one of the objectives of teaching science. Therefore, many studies have been interested in searching for methods, methods and models derived from some of the learning theories that adopt the relevant learning. One of the most important of these theories, which was advocated by educators, is the structural theory that was established by the Swiss scientist "Bhaiyaja", which has proven its effectiveness in teaching science, and for this reason many educational models have been derived from it. One of them is the learning model based on dual attitudes, which is one of the models of structural philosophy that emphasizes the importance of loss of balance for the occurrence of the learning process, and in which the process of satisfaction plays a fundamental role in conceptual change. This model also emphasizes the process of contradiction among students, but the contradiction is sufficient to destabilize and balance their previous knowledge, which leads them to search for cognitive balance, so conceptual change occurs. (Guirguis , 2016 : 12) . The DSLML approach considers this model to have the advantages of combining three perspectives in conceptual change and includes cognitive, ontological and motivational perspectives. The learning model also contains four pairs as a principle for formulating SDLM learning:

1. Conceptual change must be based on the characteristics of the concept and the student's beliefs about the concept

(50) students. The researcher prepared to test the science processes and used the following statistical means: (arithmetic average, Spearman and Brown equation, statistical summit spss). The results showed the superiority of the students of the experimental group who studied science according to the dual-site learning model DSLM over the students of the control group in the same way as usual in testing the science processes (Guirguis, 2016)

2- Akpinar's (2007) study “The Effect of the Dual Site Learning Model DSLM in Teaching the Concepts of Photostructure and Respiration”

This study was conducted in Turkey , and it aimed to know (the effect of the two-site learning model DSLM In teaching the concepts of photosynthesis and breathing) , the research sample consisted of (61) students. The researcher prepared to test the concepts of photosynthesis and breathing and used the following statistical methods: (t-test) The results showed the superiority of the students of the experimental group who studied the concepts of photosynthesis and breathing according to the two-site learning model DSLM On the students of the control group for the same material in the usual way in testing the concepts of photosynthesis(, Akpinar 2007)

Chapter Three: Research Methodology andProcedures

1- Experimental Design: Since the current research includes one independent variable, which is the Double Situational Learning Model (DSLML) and a dependent variable Eand (Achievement), the researcher adopted the experimental design with partial adjustment for the two experimental and control groups with post-test as shown in the diagram (1)

successful conceptual change has taken place (Rabat, 2015 : 284).

– Characteristics of a Dual Situational Learning Model

1- The learning model based on dual situations requires clarifying the defect in the students' previous knowledge or the existence of a contradiction, which raises the curiosity and interest of the students and challenges their beliefs about scientific concepts. Once they are pushed to participate in predicting the event and foresight what is actually happening, the likelihood of rebuilding their beliefs about the concepts increases.

2. The model emphasizes the need to identify misperceptions among students about the concepts presented and acquired by students from several sources

3.Providing students with opportunities to challenge to see if they can actually apply the mental buildings they have modified to other situations, which contributes to the success of conceptual change. The design of learning events based on challenging situations needs to think about all private mental buildings that decrease students before doing any type of intervention (She, 2004,146).

Previous studies

Studies on Dual Situational Learning Model (DSLML)

1- Guirguis Study (2016) "The Effectiveness of the Dual Attitude Learning Model in Science in the Development of Some Skills of Science Processes in Students in the Fifth Primary Grade"

This study was conducted in Saudi Arabia , and it aimed to know (the effectiveness of the dual situated learning model in science in developing some of the skills of the science processes of the fifth grade primary students). The research sample consisted of

group	Équivalence	Independent variable	Dependent variable
Experimental group	- Knowledge Check Prefix	DUALSITUATED LEARNING MODEL (DSLML)	- Collection
Control group	- previous collection - IQ	The usual way.	

Scheme (1) Experimental Design

- The **researchcommunity:**The fourth grade scientific students are represented in the day preparatory schools

2- Research community and itsnominations

respectively, and the researcher chose a division(A) The experimental group that will study biology according to the model of learning based on dual situations (DSL) , and a division (D) The control group, and the sample of students consisted of 70 students for the experimental group and(36) students for the control group that will study the same subject in the usual way, as shown in Table(1)

Table (1) Distribution of students in the two research groups

group	Total number of female students	Final Sample
Experimental group	34	34
Control group	36	36
Total	70	70

prepared a test for "advance information" and adopted in drafting its paragraphs on the subject of biology for the fourth scientific grade. Therefore, the test includes (25) paragraphs of the type (multiple test), as it was applied to the students of the two research groups in the first week of the academic year on Sunday (7/11/2021). After correcting the answers and obtaining their scores for the experimental group and the control group, the arithmetic mean and variation of the two research groups was calculated, as the arithmetic mean of the scores of the experimental group reached (11.735), with a variance of (13.593), while the students of the control group reached the arithmetic mean of their scores (12.583) and with a variation of capacity (12.306). To verify the equivalence of the two research groups in the test of advance information, I used the T-test for two independent samples, Table (3) shows this .

Table (3) Indicates the differences between the two research groups in the advance information variable

group	Number of individuals Sample	Mean arithmetic	Variance	Degree al-Hurriya	T value		Significance level 0.05
					Calculated	tabular	
Experimental group	34	11.735	13.593	68	0.989	2 000	indifferent He'll be statistic!
Control group	36	12.583	12.306				

obtained the final degrees in the subject of science for the second grade of the first course (the content of the chemical and biology), which coincides on Wednesday (10/11/2021), and it was relied on to

for girls in Babylon Governorate for the academic year (2021-2022AD)and there search sample: The researcher selected the preparatory girls in the intended way according to the book issued by the General Directorate of Education in Babylon Governorate, the Department of Preparation and Training, and its number of students is (170) students, five divisions (A-B-C-D-E), and it includes (32,32,34, 36, 36)students

3- Equivalence of the two research groups

The experimental group and the control group can be completely equivalent, meaning that all the variables are similar except for the independent variable whose effect will be studied, which is called group equivalence (generosity, 2011: 108-110). Before starting the experiment, the researcher made sure to equate the students of the two research groups statistically in some of the variables that she believes affect the results of the experiment, as follows:

First: The internal integrity of the experimental design: The researcher has tried to control and identify the extraneous factors that can affect the results of the research :

1. Adjust test conditions in the trial personnel

أ- Advance information for biology, fourth grade scientific . The researcher

ب- The previous achievement in the subject of science: In order to verify the equivalence of the students of the experimental and control groups in the previous achievement, the researcher

groups was calculated, as the arithmetic average of the scores of the experimental group was (62.676), and with a variance of (184.769), while the students of the control group reached the arithmetic average of their grades (61.472) and with a variance of the ability of (118.243). To verify the equivalence of the two research groups in the previous achievement, I used the test (t-two) independent (4). This table shows that .

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Table (4) The significance of the differences between the two research groups in the previous achievement variable

group	No. of Female students	Mean arithmetic	Variance	Degree al-Hurriya	T value		Level of significance 0.05
					Calculated	tabular	
Experimental group	34	62.676	184.769	68	0.410	2,000	indifferent He'll be statistic!
Control group	36	61.472	118.243				

includes (60) test paragraphs distributed among five groups (A, B, C, D , E) at a rate of (12) paragraphs in each group and allocated (6) alternatives available for each paragraph of the totals (A , B) and (8) alternatives for each paragraph of the totals (C , D , E) (Tanner et al., 1983 :1-60), and the results showed as in Table (5)

complete the course, and the biology material for the third grade was not relied upon for the reason of not completing the course, as well as the biology material was deleted from the final exam by the Ministry of Education (2019-2020). The researcher obtained the grades of the students from the school's score records for the experimental group of the control group. The arithmetic average and variance for the two research

ت- **Intelligence test:** The researcher adopted the intelligence test on Monday (8/11/2021) Raven's matrix test for the successive matrices to compare the degree of intelligence of the two research groups, because it suits the Iraqi environment and is suitable for the age group of the research sample and is characterized by a degree of honesty and stability. The test

Table (5) The significance of the differences between the two research groups in the IQ test variable

N o.	group	No. of Female students	Mean arithmetic	Variance	Degree al-Hurriya	T value		Statistical significance at the level of (0.05)
						Calculated	tabular	
1	Experimental group	34	37.441	98.664	68	1.097	2 000	Statistically insignificant
2	Control group	36	34.972	78.570				

3- Adjustment of measuring tools: The researcher used the test tool to measure the dependent variable (achievement) for the students of the experimental and control groups. To confirm this variable, the researcher adopted an achievement test consisting of (40). The test was applied at the end of the experiment to know the independent variable on this dependent variable for the achievement test (for the two research groups (experimental and control)

2- Adjusting the conditions of the experiment and the accompanying accidents: These are all the incidents to which the sample members are exposed during the duration of the experiment that may hinder the progress of the experiment , and the sample members were not exposed to any accident that affects the dependent variable in addition to the effect resulting from the effect of the experimental variable.

ensure the safety of the experience from the students being affected by the differences resulting from the methods and methods of teaching teachers and personality characteristics

4- Confidentiality of the experiment: The researcher was keen on the confidentiality of the research in agreement with the school administration and the teachers of the subject not to tell the students the nature of the research and its purpose and to tell them that the researcher is a new school in the school in order to ensure the confidentiality of the research and so that the students do not change their activity or deal with the experiment, which affects the integrity of the experiment and the accuracy of its results .

5- Physical conditions: The researcher applied the experiment in one building and in the laboratory itself, so the physical characteristics such as lighting, ventilation, space and benches were similar.

6- Weekly classes: The number of classes scheduled for biology is three lessons per week, so the researcher worked in cooperation with the school administration to organize the weekly schedule for the purpose of taking into account the time allocated between the two research groups on Mondays, Tuesday and Thursday and by three lessons per week for each group (6 sessions for both groups)

Fourth : Identifying the research requirements:

1- Defining the subject: Before the start of the application of the experiment, the scientific subject was determined, which included the (five) chapters that are taught within the annual plan for the content of biology for the fourth scientific grade.

2- Behavioral goals for this purpose were formulated according to the Bloom classification. Therefore, the researcher formulated behavioral goals based on the content of the biology material for the fourth scientific grade, which was included in the experiment, and reached (151) behavioral goals according to Bloom's knowledge classification distributed among the six levels (memory , understanding , application , analysis , composition , and evaluation).

3- Preparation of study plans: The researcher prepared teaching plans for

4- Adjusting the maturity factor: The experience was unified between the two research groups, where the research tools were applied in a unified period of time and similar conditions, so both contributed to reducing the effect of this factor .

5- Experimental extinction (interruption of the experiment): From the first day, the researcher applied the experiment by following up the absence of the students of the two research groups and recording them in the absence book. There was no interruption of any student, leaving or transferring the length of the first semester of the academic year 2021/2022. As for the individual absence, it was fairly close in two groups (experimental and control)

Second : The external safety of the experimental design (adjusting the extraneous variables)

All variables that are not included in the research design but affect its results directly or indirectly are called exogenous variables, and the process of adjusting them is one of the important procedures in experimental research to provide an acceptable degree of internal validity (Melhem , 2010: 73), in addition to the above procedures of statistical equivalence between the individuals of the research sample and then adjusting some of the exogenous variables that the researcher believes may affect the integrity of the experiment and what follows is a presentation of some of these variables and how to adjust them:

1- Subject: The two research groups studied the same subject for the experimental and control group, which are the first five semesters (classification of living organisms , ecology and ecology, food chain, factors affecting the environment , and animal compatibility with the environment)

2- Duration: To avoid the effect of this procedure, the researcher made sure that the duration of the application of the experiment is equal to the application of the experiment to the students of the two research groups in the first semester of the academic year (2021/2022) ,as the experiment began on Thursday, 11/11/2021 and ended on Monday(10/1/2022).

3- Teaching: The two research groups were taught by the researcher herself to

the test paragraphs, in the sense of making a judgment on their validity or not to achieve the objectives of the test and their efficiency, the test was applied to a sample of (100) students in the fourth scientific grade in Toledo Girls' Middle School on Saturday (15/1/2022) with the help of the school of matter, 100 students were randomly selected for the purpose of analyzing the achievement test paragraphs statistically represented by the difficulty of the paragraph , the paragraph distinguishes the effectiveness of the wrong alternatives

Sixth: Procedures for applying the experiment:The procedures were followed and the following steps were followed:

1- The actual application of the experiment began on Thursday 11/11/2021 from the first semester of 2021/2022, which lasted for(8) weeks until Monday 10/1/2022

2- The researcher studied the experimental group according to the dual situated learning model for the entire first course, while the control group studied in the usual way

Seventh : Statistical means: T-test for two independent groups - Coefficient of excellence - Difficulty coefficient - Effectiveness of wrong alternatives - Pearson coefficient and size of effect

Chapter Four: Presentation and Interpretation of Results

In order to ensure the achievement of the first research goal, the validity of the following zero hypothesis will be chosen (there is no statistically significant difference at the level of significance (0.05) between the average scores of the experimental group students who are studying according to the dual situated learning model (DSLML) and the average scores of the control group students who are studying according to the normal method in the achievement test in biology).After monitoring the scores of the experimental groups in academic achievement and control, the arithmetic mean and variance of the two research groups were calculated, which confirms that this difference is statistically significant in Table(15) shows this :

the topics to be taught during the trial period (48) plan for all research groups (experimental and control).

Fifth: Edor Research

1- **Achievement test:** The researcher formulated the test according to the test map and included the test of(40) objective paragraphs of the type of multiple selection, with four alternatives, one of which represents the correct answer.

2- **Test Validity:** The researcher presented the test paragraphs and behavioral purposes to a group of specialists and arbitrators to express their views on the paragraphs and their suitability for a test. The number of (40) paragraphs of each paragraph measures the purpose of the behavioral , 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 students .

3- exploratory application of the achievement test:The

goal of this procedure is to verify the clarity of the paragraphs, instructions and time keeping at the student takes to answer the paragraphs and the questions they raise about the paragraphs of the achievement test. Therefore, the researcher applied the test to a first exploratory sample of the fourth scientific student at the Hawra Preparatory School for Girls affiliated with the General Directorate of Babylon Education, consisting of (30) students. After agreeing with the school administration and the school of the subject to conduct the test, the time of applying the test was calculated by calculating an average time from the first student who answered the test to the last student who answered the test. The average time was calculated and the time taken by 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 statistical analysis and extract the psychometric properties of the achievement test paragraphs by finding the values of the difficulty and discrimination coefficient and the effectiveness of the wrong alternatives to

Table (15) The arithmetic mean, variance and T-value (calculated and tabular) of the scores of the two research groups in the achievement test

group	No. of Individual Samples	Mean arithmetic	Variance	Degree of Freedom	Variance		Significance level 0.05
					Calculated	tabular	
Experimental group	34	26.176	36.385	68	3.226	2,000	Statistically D
Control group	36	21.861	26.460				

model (DSLML) has had a positive effect in raising the achievement of female students of the experimental group who studied according to the dual situated learning model (DSLML) compared to the achievement of female students of the control group who studied according to the usual method.

- Recommendations: In light of the findings of this research, the researcher recommends the following:

1-Using the dual situated learning model (DSLML) when teaching biology in the preparatory stages.

2- The need to inform those concerned with teaching the Ministry of Education about the methods, methods and models in teaching, especially (DSLML) through the holding of educational courses or seminars and special bulletins.

- Suggestions: Complementing this research, the researcher proposes to conduct the following research:

1-Conducting a study similar to the current study in other subjects (physics - chemistry)

2- Conducting similar studies on other samples such as preparatory students other than the fourth scientific stage

- References:

1- Guirguis , Rasha Ramsey (2016) : The Effectiveness of the Dual Attitude Learning Model in Science in the Development of Some Loans of Science Operations for Grade 5 Primary School

It is noted from the previous table that there is a statistically significant difference between the mean scores of the two research groups in the achievement test and for the benefit of the experimental group. This result indicates the superiority of the experimental group students who studied according to the dual situation learning model (DSLML) over the students of the control group who studied according to the usual method in the achievement test. Thus, it rejects the first zero hypothesis and accepts the alternative hypothesis, which states that: (There is a statistically significant difference at the level of significance (0.05) between the average scores of the experimental group students who studied the dual situated learning model (DSLML) and the average scores of the control group students who studied in the usual way in the achievement test in biology).

- Interpretation of results: The result indicated that there is a statistically significant difference between the average scores of the experimental group students who studied biology in the dual situated learning model (DSLML) and the average scores of the control group students who studied the same subject in the usual way in the achievement variable for the benefit of the experimental group students

- Conclusions: In the light of the results of the research, the following conclusions were reached:

1-Teaching fourth-grade female students according to the dual situated learning

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