

**The effectiveness of mixed learning in the acquisition of physical concepts and the development of knowledge motivation among students in the fifth grade scientific / biological**

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**Summary of the research**

The aim of the research is to find out the effectiveness of mixed learning in the acquisition of physical concepts and the development of cognitive motivation among students in the fifth grade of science / bio, through the following two zero hypotheses:

1-There were no statistically significant differences at the level of significance (0.05) between the average scores of the experimental group students who studied the blended education and the control group studied in the usual way in the test of the acquisition of physical concepts .

2-There was no statistically significant difference at the level of significance (0.05) between the average scores of the experimental group students who studied the blending education and the control group studied in the standard method of cognitive motivation .

The current research was determining to the fifth grade scientific / biological students in the day schools of the Directorate of Education Dhi Qar for the academic year 2018/2017.

The experiment was applied in the second semester. The sample consisted of (90) students divided into two divisions randomly divided into two groups (44) and (b) to be the control group and the number of its members (46) students, the two groups were rewarded in the age of the month of months and intelligence, the physics degree of the fourth grade scientific and the previous information test and the measure of cognitive motivation .

The researcher prepared the requirements of the experiment by identifying the scientific material and formulating the behavioral purposes and preparing the teaching plans .

The experimental group studied the use of mixed learning and studied the control group in the usual way for a period of one semester, and then applied the test of acquisition of physical concepts and the measure of cognitive motivation.

To obtain the results, the data was statistically treated using the TEST for two independent samples. The results showed that the experimental group was superior to the control group in the test of the acquisition of physical concepts and the measure of cognitive motivation. In light of this, the researcher made a number of recommendations and suggestions related to the results of the research.

**Keywords:** Mixed learning, physical concepts, knowledge motivation, fifth grade.

## **Chapter I**

### **Definition of research**

#### **First: Research problem**

Physics is one of the basic pillars of natural science, which has had a great impact on scientific progress, which has been reflected in industrial and technological education in all fields. Therefore, there is a need to pay attention to this science and methods of teaching and attention to its concepts and to increase the level of acquisition and reduce the difficulty of its complexity .

The researcher felt that there is a difficulty in learning to acquire physical concepts and apply them in new situations through his teaching experience, as well as the researcher's knowledge of researches and studies that dealt with the field of education and teaching physics. He found that students have difficulties in teaching physical concepts well, Supervisors and subject matter teachers .

The results of educational research also indicate that there is a decline in the success rates of physics, because students do not learn concepts and meanings as much as one, but vary from student to student according to individual differences in terms of maturity and experience .

So it became necessary to use modern teaching methods aimed at teaching students to acquire concepts away from the old methods that

emphasize the conservation and indoctrination only, and the researcher chose the strategy of learning blending to help clarify some aspects of the problem and overcome the difficulties referred to .

In light of this, the research problem was formulated by the following questions :

1-Is there an impact on the use of mixed learning in acquiring physical concepts among fifth grade students?

2-Is there an impact on the use of mixed learning in the development of knowledge motivation among fifth grade students?

**Second: The importance of research**

The importance of physics comes from the importance of its role in the change and scientific development, as physics has received the attention of educators and teachers and demanded the hand of educational renewal in terms of content and teaching methods and thus increased interest and teaching physics and improve the various aspects of the teaching process . As teaching science and art and to be in line with this science with modern technology and future development so teachers must develop the methods of teaching so that the student acquires knowledge and scientific skills to suit the requirements of society (Alrbiaay, 2006: 138)

The importance of modern teaching methods in making the student the first axis among the elements of the educational process and to be students able to create innovative economy of the country. Therefore, teachers use modern teaching methods using modern techniques that stimulate the student to learn without boredom and to have the element of interaction and thrill, To engage the student positively in the learning process .

The use of blended learning is one of the most modern and important methods. It provides a good way to attract the attention of the student, as well as the possibility of presenting information in an interesting manner close to reality, beyond indoctrination .

The teaching of students according to modern teaching strategies make the role of the teacher different from the traditional role in teaching, which is limited to the transfer of new experiences, not the acquisition of blood, and the advantage of his ability to design areas of teaching and employ the available educational techniques in order to provide students

with a variety of experiences to help them meet the requirements of the age . (Mehdi, 1990: 21)

The importance of the strategies of teaching physical concepts in the development of the cognitive and mental aspects of students through the development of knowledge structures and to increase their interaction with educational attitudes that provide them with the basic pillars to develop their thinking methods and strategies by providing an attractive learning environment that likes them, help them to stimulate their thinking and encourage them to Research and Conclusion. (Higher Education, 201: 2002)

The importance of research can be summarized as follows :

- 1- Help students achieve educational goals easily.
- 2- Taking into account individual differences between students .
- 3- Provide an appropriate teaching environment for students.
- 4- Focus on the student as the main axis in the educational process – learning.
- 5- Provide the teachers of physics with modern teaching strategies can be employed in the teaching of physics.

**Third: the research objective**

: The current research aims at knowing

- 1- The effectiveness of learning blending in the acquisition of physical concepts among students in the fifth grade scientific / biological.
- 2- The effectiveness of learning blending in the development of knowledge motivation among students in the fifth grade of scientific / biological.

**Fourthly: The research hypotheses**

In order to achieve the objective of the research, the following two hypotheses were formulated :

- 1- There were no statistically significant differences at the level of significance (0.05) between the average score of the students of the experimental group which studied the mixed learning strategy and the average scores of the students of the control group studied in the usual way in the test of the acquisition of physical concepts .
- 2- There were no statistically significant differences at the level of significance (0.05) between the average scores of the experimental group

students who studied the mixed learning strategy and the average scores of the control group students studied in the standard method of cognitive motivation.

**Fifth: Research limits**

Your current search is limited to:

1-Students of the fifth grade scientific/ biological in the preparatory schools belonging to the Directorate General of the Dhi Qar/ Nasiriyah (Center) for the academic year 2018/2017.

2- The last three chapters of the book of physics scheduled for the fifth grade of biomedical science, I 7, 2017.

. 3- The second semester of the academic year 2018 \ 2017

**Sixth: Definition of terms**

1- Blending education is defined by both.

(Zeitoun , 2005): as

"One of the modes of learning in which e-learning is integrated into traditional learning within a single framework, employing e-learning tools, both computer-based and online, in lessons."

(Zeitoun, 2005: 168)

(Sherman, 2015): that

"Learning that combines the best in direct summer learning and online learning." (Sherman, 2015: 29)

The procedural definition :

A type of learning based on a combination of e-learning and traditional learning is offered to students in the fifth grade of science / biology (research sample) .

2- Acquire concepts: defined by both .

(Qatami, 1998): That

"The amount of stimuli that a learner can acquire by observing and reclaiming it in the same way it has acquired."

(Qatami, 1998: 106)

(Bakri and Afaf, 2002) as

"Mental abstraction of the traits common to a group of experiences or phenomena"

(Bakri and Afaf, 2002: 109)

The procedural definition :

The ability of the fifth grade students to learn about the physical concepts This is determined by the test prepared for this purpose .

3- Cognitive impulse: defined by both .

(Shehata and Zainab, 2003): that

"An internal activity of the learner that makes him ready to respond to a man or his desire for scientific knowledge." (Shehata and Zainab, 2003: 169)

(Al-Kubaisi and Saleh, 2002): as being

"The learner wants knowledge, curiosity and curiosity to explore."

(Kubaisi and Saleh, 2000: 64)

The procedural definition is :

The desire of students of the fifth grade scientific / biological (research sample) to investigate and acquire scientific knowledge and measured by the grades obtained by students through their response to the measure of cognitive motivation.

## **Chapter II**

### **Background theory and previous studies**

#### **Background Theory**

##### **First: Blending Education**

Blending education is the way to integrate two types of education traditional education and e-learning. It involves a mixture of face-to-face learning activities and learning activities on the Internet. (Graff, 2003: 23)

Blending education is one of the alternatives to education in which one or more courses are taught and taught through the usual classroom learning methods and teaching one or more courses with e-learning tools. Students are also assessed for their lessons and whether they are taught in classroom or electronic learning methods. (Zetoun, 2005: 137 )

The blending education consists of a set of complementary media, as well as a mix of activities that include learning in regular classrooms where the teacher meets students directly face-to-face. (Anizi, 2011: 97 )

Blending education blends the traditional way of learning face-to-face with e-learning to help students through each stage of learning as one of the modern methods based on the use of educational technology in new learning situations. (Al-Faqi, 2011: 15 )

1-The benefits of blending education

Blended education is characterized by :

- Increase interaction between student and teacher and students with each other and between students and content .
- Provide sufficient flexibility for the individual needs of students and their learning patterns in various stages of study and reconstruction.
- Reduce learning expenses significantly compared to e-learning alone .

(Salama, 2005: 115)

- Moving from mere presentation of information in a lecture or discussion to active learning by activating the student's role in reaching the best types of learning .

- Work out of the educational process of stereotypes and boredom .

- One of the solutions proposed to solve many problems during teaching scientific subjects difficult to be taught electronically in full. (Al-Faqi, 2011: 24)

- Provide the least benefit to gain the most results.

- Students are allowed to learn if they can not attend the lesson.

-Easy communication with students through a continuous interactive learning environment.

-Making the student a direct contact with scientific knowledge and sources .

- Helps to provide an appropriate academic environment in which opportunities for cooperation between students and develop positive attitudes towards each other.

- Helps enable students to express their ideas for participation in the classroom.

(Yamani, 2009 : 293 – 295 )

2- Success factors in blending education .

There are a number of factors that can help the success of a blended education :

- Encourage students to self-education and education among groups, if multimedia and classroom interactions encourage creativity.

- Work in this type of learning requires interaction between the participants and must work in the form of a team.

- Communicate between the student and the teacher, so that the teacher acts as a guide to guide the students towards the steps and programs followed by the students for education and achievement.

(Amasha, 2008: 5)

- It should include many flexible options at the same time enabling students to find their way.

.Provide support by educational supervisors, school principals, teachers and parents-

- The vision should be clear about educational and educational goals and the aim of introducing techniques in the educational process .

(Sherman, 2015: 53)

3- The role of the teacher in blending education .

There are qualities for the teacher who is doing the blended education

-Has the ability to combine traditional teaching and its application by computer .

-Has the ability to design tests himself and deal with multimedia .

-He has a desire to move from the traditional education stage to the e-learning stage .

- Has the ability to search for everything that is new via the Internet and renew its information .

- Has the ability to create the spirit of participation and interaction within the lesson.

(Awad and Ayad, 2012: 98)

-Has the spirit of initiative, experimentation and innovation .

- He can accomplish his social and educational tasks .

- Actively works and looks for opportunities to grow professionally.

(Yamani, 2009: 299)

4- The benefits of blending education .

Blending education has many benefits :

- Helps to find solutions to many issues and issues facing both traditional education and e-learning .

. Increase the possibility of self-learning, leading to increased student achievement-

- Increases interaction between teachers and students and students themselves.



(Hashemi and others, 2010: 386)

- Provides students with difficulty in concentrating the required material in different ways to take advantage of the material in an easy and good way .

- Provides an atmosphere in which the principle of cooperation between students and the development of positive attitudes are available .

- Enabling students to express their opinions and suggestions and provide adequate time for participation in the classroom .

(Yamani, 2009: 295)

5- Interdisciplinary learning procedure .

For the purpose of successful blending education, the planning, preparation and design of lessons should be done according to the following

-Identifying the types of learning methods, types and methods of education.

-Identify the type of learning program that needs to be done.

-Identify the educational goals and outputs to be achieved in the blended education.

- Encourage students to self-learn and learn in groups .

- Identify the students' experiences and previous information related to educational content and educational objectives .

(Sherman, 2015: 52)

6-Mixed learning difficulties .

Blending education faces a number of difficulties, the most important of which are:

- Difficulty accessing information or communicating with checks for the purpose of research.

-The difficulty of changing from traditional learning to modern learning .

-Difficulty dealing with faults and abrupt discontinuation of techniques .

-Some teachers lack the skills necessary to deal with modern technologies .

- The difficulty of providing a sufficient number of devices and techniques within educational institutions and design and production Software .

(Yamani, 2009: 296)

## **Second: Acquire concepts**

The concepts connect the facts and the many details that illustrate the relationship between them, and the study of the ability of students to use the functions of science, which is the interpretation and control and prediction as it is studying the use of information that helps students to understand a lot of things and interpretation that raise their interest and increase their ability To use information in problem-solving situations.

(Alimat and Sobhi, 2001: 11)

And that the teaching of concepts is related to the subject of disclosure of semantics and attributes associated with the concept, so it is the ability to generalize, or the ability to systems of these signs or grouped under the name or position accident, the ability of students to develop characteristics, features or examples in a class or category.

(Khawaldeh, 2007: 209 )

The educational process, which includes learning concepts, includes three steps :

-Acquire new information, often replacing previously learned information .

- Organize new knowledge and information to suit new situations.

-Check how information is used and how it is handled .

(Joyce, 1980: 27)

Learning concepts leads to understanding and understanding and distances the student from useless learning. If understanding and comprehension occurs, this understanding can be applied in new situations, so learning becomes meaningful, so students accept learning with motivation and self-interest. (Morsi, 1997: 46 )

The composition of the concept goes through the following stages:

-Sensory perception of the properties of sensory perceptions .

-Balancing and distinguishing characteristics .

-Dispersion of sensory perceptions of lateral characteristics .

-Focus on basic properties .

-Circular ie the formation of a common concept of sensory perceptions .

(Khalili et al., 1995: 96)

The concepts have many functions, including :

-Concepts represent a regular structure of what students learn .

- Concepts help to organize our experiences in a way that is easy to call .
- Simplify the real world for adequate communication and understanding

(Abdel Fattah, 1997: 10)

The teacher can use many methods and means to measure the concept or evidenced by the validity of the composition and construction of the concept, and the process of acquiring concepts include three stages :

- Stage of discrimination .
- Circular stage .
- Measurement phase. (Abdul Razzaq , 1986: 22)

### **Third: cognitive motivation**

Cognitive motivation is one of the most important motivations associated with learning, as it is part of the needs of understanding, knowledge, desire for discovery, knowledge and curiosity, as can be predicted through the way students deal with tasks and information. (Aljlabi, 2016: 443)

The concept of cognitive motivation has been developed by educators. The learner's needs, value, hopes and ambitions play an important role in solving the problems. The psychological motivations resulting from a particular need for the learner change the cognitive organization of the learner. (Aljzaar, 2012: 155)

Cognitive motivation is related to the state of the learner, such as the need for knowledge, the need to understand, the need to solve problems, and the cognitive impulse arises from the process of mutual interaction between the learner and the work.

(Al-Sharqawi, 2012: 141)

Identifying the level of cognitive motivation for students is of educational value and contributing to its development and encouragement helps to improve achievement

Recognizing the level of cognitive motivation for students is of educational value and contributing to its development and encouragement helps to improve learning achievement, learning and creativity. In order for the school to carry out its basic tasks, it is necessary to pay attention to the students' motivation, develop and build their cognitive abilities and

improve the educational process By teachers and teachers. (Mahmoud, 2004: 28)

### **previous studies**

#### **1- The study (Althiaabat,2012)**

The study was conducted in Jordan. The study aimed to know the effectiveness of programmed education based on the use of the combined learning methods and the traditional way of achieving the students of Tafileh Technical University in the teaching methods of the first grades and their attitudes towards it .

The study sample consisted of (58) students randomly selected (30) students for the experimental group and (28) students for the control group. The researcher prepared a selective selection consisting of (45) multiple choice types. (0.86). The researcher also used a measure to measure students' attitudes towards integrated learning. The results showed that there were statistically significant differences in favor of the experimental group in the achievement test Integrated learning. (ALthiaabat,2012 : 191 – 181)

#### **2-The study (Abu-Alraish, 2013 )**

The study was conducted in Palestine and aimed to know the effectiveness of a program based on the integrated education in the achievement of the tenth grade students in grammar and the direction towards it in Gaza .

The sample consisted of (40) students divided into two groups (20) students in the experimental group and (20) students in the control group. The researcher prepared a collection test consisting of (50) The results showed that there were statistically significant differences in favor of the experimental group in the achievement test and in the direction of grammar. In light of the results of the research, the researcher recommended the need to adopt the integrated education in teaching the content of the different subjects in the public education institutions and the dissemination of technical awareness among the students.

(Abu-Raish, 2013: H-O)

#### **3- The Study (Masoudi, 2018)**

The study was conducted in Iraq and aims to know the effect of learning mixture blending in the acquisition of geographical concepts and the trend towards the material among students in the fifth grade literary .

The sample consisted of (69) students (34) students in the experimental group and (35) students in the control group. The researcher prepared a test to measure the acquisition of geographical concepts and the number of paragraphs (60) Differences of statistical significance in the test of acquisition of geographical concepts and in the direction of the article .

In the light of the results of the research, the researcher recommended the need to employ mixed mixture education in the provision of courses in all educational institutions.

(Masoudi, 2018: K-M)

Aspects of previous studies :

:Research from the previous studies revealed several things including

- 1- Identify and formulate the research problem .
- 2-Learn how to apply the steps of learning blending .
- 3-See a number of sources that can be consulted .
- 4- Identification of statistical means used and benefit from them.
- 5-Presenting and interpreting the results and making recommendations and proposals .
- 6- Comparison of the findings of the current research with previous studies .

### **Chapter III**

#### **Search procedures**

##### **First: experimental design**

The empirical design is a mapping of the conditions and factors surrounding the trait to be studied in a particular way and then a note of what happens. The experimental design has been adopted with partial adjustment and post-test. The empirical design of the research can be illustrated as shown in Figure( 1).

Planner (1)

Experimental Design for Research

|              |                          |                    |
|--------------|--------------------------|--------------------|
| Group        | The variable Independent | variable Dependent |
| Experimental | Learning Mixing          | Acquires Physical  |

|         |                |  |
|---------|----------------|--|
| Control | The normal way | Concepts and Development of Cognitive Motivation |
|---------|----------------|--|

**Second: The research community and its a sample**

Al-Salam School for Boys in Al-Nasiriya / Center was chosen deliberately. The school administration showed its cooperation in the research procedures. It also contains (3) people for the fifth grade/bio .We have selected(A) to be the Experimental group and the number of its (44) students, and (b) to be the control group with (46) students .

**Third: the equality of groups**

1-The chronology of months :

The age of the students of the two research groups was calculated in months up to 2018/9/30 of the school records. Using the t-test for two independent samples, there were no statistically significant differences at the significance level (0.05). Table (1) shows this.

Table (1)

The final test of the variable of the chronological age of the two groups for the research

| Group        | Number | Arithmetic mean | Standard deviation | T- Calculated | T table | The degree of freedom | Statistical significance |
|--------------|--------|-----------------|--------------------|---------------|---------|-----------------------|--------------------------|
| Experimental | 44     | 205.2           | 14.8               | 0.839         | 2       | 88                    | Non-D                    |
| Control      | 46     | 206.5           | 12.4               |               |         |                       |                          |

2-Intelligence :

The Raven test was used to measure the degree of intelligence to measure the degree of intelligence for the students of the research sample because it is characterized by a high degree of honesty and stability as well as being accredited in the Iraqi environment and can be applied to large numbers of the same time. (Dabbagh, 1983: 32-33)

The test was applied to the two sets of research. After that, the mean and the standard deviation of each group were extracted. Using t-test, there were no statistically significant differences at the significance level (0.05). Table (2) shows this.

Table (2)

T-test of scores of two groups in the IQ test

| Group        | Number | Arithmetic mean | Standard deviation | T- Calculated | T table | The degree of freedom | Statistical significance |
|--------------|--------|-----------------|--------------------|---------------|---------|-----------------------|--------------------------|
| Experimental | 44     | 38.5            | 5.8                | 1.012         | 2       | 88                    | Non-D                    |
| Control      | 46     | 39.8            | 6.5                |               |         |                       |                          |

3- Physics degree for the fourth scientific grade :

The results of the two groups of research were obtained in the fourth grade scientific grade (2) of the school records. Using the t-test, there were no statistically significant differences at (0.05) and table (3) show this .

Table (3)

T-test of the scores of the two groups of research in achievement in physics for the fourth grade scientific

| Group        | Number | Arithmetic mean | Standard deviation | T- Calculated | T table | The degree of freedom | Statistical significance |
|--------------|--------|-----------------|--------------------|---------------|---------|-----------------------|--------------------------|
| Experimental | 44     | 68.7            | 13.3               | 0.949         | 2       | 88                    | Non-D                    |
| Control      | 46     | 71.2            | 11.8               |               |         |                       |                          |

4- Test the previous information :

The researcher prepared a test for the previous information, which was based on what the students studied in the fourth grade, in order to determine the students' previous knowledge about physics .

The test consisted of (25) paragraphs of multi-test type and to ensure the validity of the test before its application was presented to a group of experts in physics and teaching methods, and using the t-test t-test did not show differences with statistical significance at the level of significance (0.05) and table (4) Explains this .

Table (4)

T-test of the scores of the two groups in the previous information test

| Group | Number | Arithmetic mean | Standard deviation | T- Calculated | T table | The degree of freedom | Statistical significance |
|-------|--------|-----------------|--------------------|---------------|---------|-----------------------|--------------------------|
|       |        |                 |                    |               |         |                       |                          |

|              |    |      |      |       |   |    |       |
|--------------|----|------|------|-------|---|----|-------|
| Experimental | 44 | 35.4 | 11.1 | 0.485 | 2 | 88 | Non-D |
| Control      | 46 | 36.5 | 10.5 |       |   |    |       |

- 5-The former test of the cognitive impulse scale :

The researcher applied the measure of former cognitive motivation to the students of the two research groups. Using the t-test there were no statistically significant differences at the significance level (0.05 ) Table (5) shows this .

Table (5)

T-test of the scores of the two groups of research in the former cognitive-motivational scale

| Group        | Number | Arithmetic mean | Standard deviation | T-Calculated | T table | The degree of freedom | Statistical significance |
|--------------|--------|-----------------|--------------------|--------------|---------|-----------------------|--------------------------|
| Experimental | 44     | 62.6            | 8.4                | 1.515        | 2       | 88                    | Non-D                    |
| Control      | 46     | 59.2            | 12.5               |              |         |                       |                          |

#### Fourth: the search requirements .

1- Determination of scientific material :

The scientific material was determined in the last three chapters of the book of physics for the fifth scientific / biological grade:

- Chapter 5: Work, capacity, energy and momentum .
- Chapter 6: circular and circular motion .
- Chapter 7: Vibratory, positive and sound movement .

2- Identification of behavioral purposes .

Behavioral purposes were determined (95) as a behavioral purpose according to Bloom's classification, and were presented to a group of experts in the field of physics, education, methods and teaching .

3- Preparation of teaching plans .

In accordance with the content of the article for research purposes,( 22) study plans for the two research groups were prepared according to both the blended education and the usual method, and were presented to a group of experts in the fields of education, physics and teaching methods.



### **Fifth: Research Tools**

Testing the acquisition of physical conceptsp .

The researcher built the test of acquiring physical concepts according to the following paragraphs :

-Prepare a table of specifications :

A table of specifications was prepared in which the topics of the experiment were represented by the representative in the last three semesters of the book to be taught to the fifth grade students of the scientific / biological and behavioral purposes of the six levels of knowledge of the Bloom classification .

-Formulation of test paragraphs :

The paragraphs of the test were formulated according to the specifications that were previously discussed and in the paragraphs of objective construction because they provide an accepted degree of honesty and objectivity. The number of test paragraphs reached (30) test paragraphs of the type of multiple choice, prepared to measure (30) physical concepts taking into consideration the technical and linguistic aspects As well as the comprehensiveness of the subject matter and relevance to the levels of students .

### **Experts**

1-Prof. Jalal Shantah Jabr / T. Physics / College of Education for Pure Sciences / Dhi Qar University .

2-Prof. Anam Kassim Light / Educational Psychology / Faculty of Education for Humanity University of Dhi Qar .

Prof. Muwafaq Abdulaziz Al-Hasnawi / T. Physics / Technical Institute in Nasiriyah. 3-

Dr. Ali Abdul-Bakht / Faculty of Education for Human Sciences / Dhi Qar University. 4-

Dr. Hussein Khudair Ajil / Physics / Faculty of Computing / Sadiq University 5-

-Validation of the test :

The honesty was achieved by matching the estimates of the experts with whom the test was presented in preliminary form with the concepts

and behavioral purposes of the content of the last three chapters of the planned book to express their opinion on the extent of their coverage of the content and the target levels of goals and their measurement of cognitive levels.

-Application of the test to the survey sample :

To determine the validity of the content for the test, and in order to ascertain the cytometric properties of the test. In order to calculate the coefficient of difficulty, the strength of discrimination, the effectiveness of the alternatives, the stability coefficient and the estimation of the time taken in the response. Randomly selected from the fifth grade scientific / biological students (50) students.

-Statistical analysis of the test paragraphs of acquisition of physical concepts:

1- coefficient of difficulty of the paragraph:

The coefficient of difficulty of the paragraphs of the test was found to be located between (0.75 - 0.35) and this value is acceptable .

2-The discriminatory power of paragraphs :

The distinguishing value of the test paragraphs was calculated ranging from( 0.64) to( 0.28), and those with a discriminating force of( 0.20) and above were good

3-The effectiveness of the wrong alternatives:

The effectiveness of each wrong alternative and each test paragraph was calculated, and it emerged that the alternatives attracted more members of the lower group compared to the members of the upper group, and accordingly it was decided to keep the wrong alternatives as they are.

4-Test stability :

The calculation of the test stability coefficient was calculated at (82.0) and this value is acceptable for this test .

### **Cognitive motivation scale:**

The researcher built the cognitive impulse scale according to the following steps :

1-paragraphs of the scale:

The three-dimensional Lycert scale, which consists of (3) alternatives, was selected to answer its paragraphs, which are (quite agreeable, somewhat agreeable, disagreeable). The vertebrates were determined by (3.2.1) respectively, The scale of (30) so that the maximum degree of the scale was (90) and the minimum degree was (30).

2-Ratified the scale:

To verify the validity of the scale, the researcher adopted two types of honesty:

-Virtual honesty :

To verify the veracity of the virtual scale and then presented paragraphs on the group of experts in the field of education, physics, psychology and teaching methods, and was approved by an agreement of more than 85%.

-Construction certified :

This honesty has been verified from two indicators:

The discriminatory force of the scale paragraphs.

Internal consistency of scale sections .

-The pilot application of the cognitive motivation scale :

The scale was applied to a random sample of students in the fifth grade of science / bio. Consisting of (100) students, to reveal the clarity of the instructions and paragraphs of the scale and the diagnosis of the paragraphs to be redrafted as well as know the time required to answer, which ranged from (35 - 25) minutes..

- Statistical analysis of the scale paragraphs :

1-the discriminatory power of the scale paragraphs:

The differential force of the scales was calculated and found to be between ( 8.65 - 2.35), which is higher than the numerical value of (2). This indicates that the value of calculated values is higher than the tabular values, that is, all the paragraphs of the scale are statistically significant.

2- Stability of the scale :

The correlation coefficient was calculated using the Pearson correlation coefficient (0.76)The correlation coefficient was corrected using the Spearman-Brown equation. The stability factor after correction (0.87) was a good stability coefficient.

**Sixth: Application of the experiment**

1-The experiment began at the beginning of the second semester of the academic year 2018-2017

2-The IQ test was performed on Sunday, 2018/2/18 .

3- Applied the previous information test on Tuesday, 2018/2/20 .

4- Applied the scale of cognitive knowledge motivation on Thursday, 2018/2/22 .

5-Effective teaching began on Sunday, 2018/2/25 .

6-Applied the test of the acquisition of physical concepts on Sunday, 2018/5/13.

7- Applied the measure of cognitive motivation dimension on Tuesday, 2018/5/15.

### **Seventh: Statistical Methods**

1-T-test :

Use for equivalence between the two research groups and to compare the average scores of the students of the two research groups in the test of the acquisition of physical concepts and the measure of cognitive motivation. (Kubaisi, 2010: 118)

2- Equation difficulty paragraph :

Used to calculate the coefficient of difficulty of test paragraphs acquisition of physical concepts. (Allam, 2011: 251)

3- Equation of paragraph discrimination :

Used to learn the discriminatory power of the test paragraphs of acquiring physical concepts. (Al-Jalali, 2011: 44)

4-The equation of the effectiveness of alternatives :

Used to calculate the effectiveness of substitutes for the acquisition test of physical concepts. (Al-Azzawi, 2008: 83)

5-Pearson correlation coefficient:

To find the stability of the test of the acquisition of physical concepts and stability of the scale of cognitive motivation. (Abdul Jawad, 2013: 173)

6-Spearman-Brown equation :

To correct the coefficient of stability. (Dulaimi and Adnan, 2005: 136)

7-Equation of impact size :

To know the amount of effect of the independent variable. (Abu Hatab and Amal, 1996: 438)

## The fourth chapter

### View and interpret results

#### First: Display the results

In order to verify the research hypotheses, t-test was applied to process the data and to know the differences in the average grade of students in the test of acquisition of physical concepts between the two research groups, as shown in Table (6)

Table (6)

The results of the t-test to show the significance of differences in the test of acquisition of physical concepts between the two research groups

| Group        | Number | Arithmetic mean | Standard deviation | T- Calculated | T table | The degree of freedom | Statistical significance |
|--------------|--------|-----------------|--------------------|---------------|---------|-----------------------|--------------------------|
| Experimental | 44     | 54.5            | 8.45               | 5.471         | 2       | 88                    | D                        |
| Control      | 46     | 45.8            | 6.56               |               |         |                       |                          |

Table (6) shows that the calculated values of ( 5,471) are higher than the table value of (2). This means that there are statistically significant differences between the two research groups and for the experimental group.

To calculate the magnitude of the effect ES, the effect size equation was used (0.25) and was high.

The t-test was also applied to data processing and to know the differences in the average grade of students in the post-cognitive motivation scale between the two research groups, as shown in Table (7).

Table (7)

The results of the t-test of the significance of differences in the dimension of later cognitive motivation between the two research groups

| Group        | Number | Arithmetic mean | Standard deviation | T- Calculated | T table | The degree of freedom | Statistical significance |
|--------------|--------|-----------------|--------------------|---------------|---------|-----------------------|--------------------------|
| Experimental | 44     | 75.2            | 9.25               | 5.597         | 2       | 88                    | D                        |

|         |    |      |       |  |  |  |  |
|---------|----|------|-------|--|--|--|--|
| Control | 46 | 63.4 | 10.58 |  |  |  |  |
|---------|----|------|-------|--|--|--|--|

Table (7) shows that the calculated value of (5.597) is higher than the table value of (2). This means that there are statistically significant differences between the two research groups and for the experimental group.

In order to know the magnitude of the effect ES, the effect size was treated (0.26) and is high.

The t-test was also applied for data processing and the differences in the mean scores of the experimental group students in the cognitive and post-cognitive motivation scale, as shown in Table (8).

Table (8)

The results of the t-test of the significance of the differences in the former cognitive and later cognitive motivation scale of the experimental group

| Group  | Arithmetic mean | Standard deviation | T- Calculated | T table | The degree of freedom | Statistical significance |
|--------|-----------------|--------------------|---------------|---------|-----------------------|--------------------------|
| Former | 62.6            | 8.40               | 6.691         | 2       | 86                    | D                        |
| Later  | 75.2            | 9.25               |               |         |                       |                          |

Table (8) shows that the calculated values of (6.691) are higher than the table value of (2). This means that there are statistically significant differences between the scores of the former and later applications of the cognitive motivation scale in the experimental group that Indicates to development cognitive motivation to them.

**Second: interpretation of the results.**

Results showed that:

1-There are differences of statistical significance between the experimental and control groups in the test of acquisition of physical concepts and for the benefit of the experimental group.

This can be attributed to a number of reasons, including:

- The mixed learning strategy has had an impact on the development of the acquisition of physical concepts among students.

- The mixed learning strategy has made students the focus of the learning-learning process, contributing to the transfer of the learning process from traditional conservation-based to a mental-based pattern.
- The active and active role of the student motivated him to further research and learning.
- This strategy has an interesting character for teaching, which has raised the interest of students in scientific material.
- Teaching according to this strategy was an educational experience gained by the students added to their knowledge building.

2-There are differences of statistical significance between the experimental and control groups in the dimension of cognitive motivation and for the benefit of the experimental group.

This can be attributed to a number of reasons, including:

- The mixed learning strategy has contributed to the development of students' cognitive motivation.
- Positive interaction between the student and the material on the one hand and between the student and his peers on the other hand.
- Teaching in accordance with this strategy helped students to search for what is new, which increased their desire to curiosity and knowledge.
- The interaction of students during the lesson led to an increase in their desire to search for the mysterious facts led to the development of their cognitive motivation.
- . This strategy has helped to search for information, which led to the love of exploration-

### **Third: Conclusions.**

The search results showed the following:

- 1- The mixed education strategy led to increased acquisition of physical concepts among students.
- 2- Teaching in accordance with this strategy led to the development of cognitive motivation of students.
- 3- Teaching shares in accordance with this strategy to increase interaction between students and increase their desire to learn.
- 4- This strategy has made students the focus of the educational process - learning and this is what modern education seeks.

5- This strategy helped to raise the enthusiasm of students on the question and freedom of opinion, which increased their suspense for the lesson.

#### **Fourth: Research Recommendations.**

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

- 1- Adoption of the strategy of education blending in the teaching of physics because of its influence in the acquisition of physical concepts and the development of cognitive motivation.
- 2- Training of teachers and teachers of physics to use the strategy of learning blending.
- 3- Inclusion of the book of the guide of physics in the preparatory stage on the strategy of education blending.
- 4- The need to benefit from modern teaching strategies in support of the teaching process and in delivering the subjects to the minds of students.
- 5- Organizing seminars and workshops to train teachers and teachers of physics to employ electronic learning media.

#### **Fifth: Proposals**

To complete the current research, the researcher proposes the following studies:

- 1- Conduct a similar study to the current study on female students according to gender variable.
- 2- Conduct a similar study to the current study on other variables such as the thinking of the critic, scientific curiosity, scientific enlightenment, creative thinking.
- 3- Conduct a comparative study between the strategy of blending education and other teaching strategies.
- 4- Conduct a similar study for the current study of other study materials .
- 5- Conducting a study of the effect of learning blending in the achievement of students and the development of some types of intelligences.

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