



## **The effectiveness of the Kolb model in the achievement of fifth grade middle school students in the material of engineering decoration**

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### **Abstract:**

The current research aims to measure the effectiveness of the Kolb model in the achievement of fifth-grade middle school students in the subject of engineering decoration, and to study this, the researcher determined building instructional plans for the skills of drawing engineering decoration according to (Kolb model)

And two null hypotheses were formulated:

1. There are no statistically significant differences at the level of significance (0.05) between the grades of the grades of the two groups (experimental and control) in the skill performance test (before).
2. There are no statistically significant differences at the level of significance (0.05) between the grades of students of the two groups (experimental and control) in the skill performance test (dimensional).

The results of this research showed the following:

The effectiveness of instructional plans according to (Kolb model) in developing drawing skills for fifth grade middle school students - experimental group. Which had the positive effect to reach the desired results in the engineering drawing / decoration material.

## **Research problem:**

Education, in its broad sense, is an effective tool in building the student's personality in the first place and qualifying him to gain experiences that help him perform his functions in society. From conditions and situations in the society in which he lives.

Among the skills that art education has always pursued are the skills of fine arts, especially the arts of engineering decoration, and interest in it and harnessing energies to impart it to students in a way that reflects the aesthetic and mastery of engineering decoration.

The evaluation of students' performance in engineering decoration is an urgent necessity imposed by the scarcity of studies that dealt with this field and revealed the reality of the situation through an exploratory study carried out by the researcher, as the researcher recorded the following points:

- 1- There is a weakness in the performance of students in the field of (engineering decoration), and the researcher estimated the reason for this to the method of teaching, the requirements, or the student's ability and skills.
- 2- Not defining behavioral goals for the subject (engineering decoration).
- 3- Not taking into account the student's preferences in his training on (engineering decoration) during the lesson.

Based on that, the research problem becomes clear, and to answer the following questions:

- 1- What is the level of students' performance in the skill of drawing (engineering decoration)?
- 2- Where are the students' difficulties in drawing (geometric decoration)?

The answer to these questions reveals an urgent need to conduct the current study in an academic setting

## **Importance and need for research:**

The current research derives its importance from the importance of its problem as it deals with the detection of the effectiveness of one of the modern teaching methods, the Kolb model in developing the achievement ability of fifth grade middle school students in the subject of engineering decoration.

As for the need for research, it lies in the following:

1. The current research comes in response to the concerns of workers in the field of art education to meet the requirements of mastery and achievement of middle school students, especially the fifth grade.
2. The current research may meet the need of professionals in art education to develop their artistic and scientific performance.
3. The current research contributes to developing the curriculum of the engineering decoration subject in the Ministry of Education.
4. The current research can benefit the process of teaching engineering decoration in educational institutions related to the specialty.

## **Research goal:**

The current research aims to discover the effectiveness of the Kolb model in developing the achievement ability of fifth grade middle school students in the subject of engineering decoration.

To achieve the goal of the research, the researcher put the following two zero hypotheses:

Null hypothesis (1):

There are no statistically significant differences at the level of significance (0.05) between the grades of students of the two groups (experimental and control) in the skill performance test (before).

Null hypothesis (2):

There are no statistically significant differences at the level of significance (0.05) between the grades of students of the two groups (experimental and control) in the skill performance test (dimensional).

## **Search limits:**

The research is determined by the following:

- 1- Fifth year middle school students / Al-Intisar high school for boys - for the academic year (2020-2021).
- 2- Art Education subject (engineering decoration).

## **Defining terms:**

- 1- Effectiveness - the researcher defined it procedurally as:

The amount of development caused by the content of the teaching plans based on the Colt model in the achievement of fifth grade middle school students in the engineering decoration subject.

- 2- The Kolbs Model:

( Known by Kolb, 1984):

"The choices that the learner prefers in solving any problem he faces during educational situations and consists of a set of distinctive performances for the learner in receiving, perceiving and processing information that comes from the environment in order to adapt to it." (Kolb, 1984: 38-39)

And Shaheen knew him (2011):

"A continuum of procedures that the student goes through throughout the course of the lesson, and it is the most comfortable model for the learner because it depends on the combination of the way people perceive and the way they process information, and this model is the balanced form of the learning style."

(Shaheen, 2011: 93)

As for the researcher's procedural definition of the Kolb model:

The model of interaction between perception and processing of information, as perception of information starts from sensory experience and ends with abstract concepts. As for information processing, it begins with contemplative observation and ends with the use of effective experimentation, as it leads to the development of the engineering decoration drawing skills of students of the experimental group.

- 3- Achievement:

• Language: acquired knowledge: established, obtained. (The Whole Dictionary of Meanings, 2021, Net)

Sane luxury custom:

It is "acquisition, which is the acquisition of knowledge and skills," and it is "the set of cognitive experiences and skills that [the student] can assimilate, memorize, and remember them when necessary".

(Sane, 1971, p. 106)

As for the procedural definition:

Achievement is an educational achievement or academic achievement of the engineering decoration subject, and the attainment of a desired skill level of competence and skill in mastering the completion of the artistic work.

4- Geometric decoration:

Talo knew it (bt):

It is a group of points, lines, geometric shapes, drawings of animals and plants, and intertwined and harmonious words with each other, giving a beautiful shape and used to decorate buildings, utensils, clothes, mosques, churches, cemeteries, money, currencies, palaces and some country flags.

(Talo, Mohiuddin, B.T., p. 11).

## **Theoretical background:**

### **Kolb's model (1984):**

David Kolb presented his experimental educational theory in his 1984 book *Experiential Learning: Experience is the Source of Learning and Development*, as well as a model for its practical application to explain differences in learning preferences based on the assertion of John Dewey (1938), who sees the necessity to build learning on the basis of experience, and on *Work* by Curt Lewin (1950), which focuses on the importance of a person's activity during the learning process, and on Piaget's theory (1970), which asserts that intelligence is the result of the interaction between a person and the environment

( Kolb, 1984:21).

Kolb's model (1984) is one of the most famous models in experiential learning, as he presented his model on the image of his famous experiential learning cycle, or what is known as (the natural learning cycle).

1. Physical experience: immersion in a new experience.
2. Observation: Monitor your new experience.
3. Defining abstract concepts: reaching theories that explain the observations.
4. Practical experimentation: the use of theories in solving problems and making decisions.

Kolb's four-stage theory uses a two-dimensional model, as shown in Figure (1), it is a horizontal dimension and depends on (the task), it starts on the right from observing the task (the observation) and ends in the left with the task (action or performance), while The second dimension extends vertically, and depends on thinking and feeling, where the feeling is at the top of the axis (responsive feelings) and thinking at the bottom of the axis (feelings controlled).

These four cases, which depend on two dimensions, provide a description of a learning model or process with four stages. Note that if we use one dimension, we will obtain one of the four educational methods:

### **Stages of Kolb's learning cycle (1984):**

First: Concrete Experience:

This dimension represents a learning method based on the sensory experience or the sensory experience, that is, it depends on the judgments issued by the feeling, and that these learners learn better by immersing themselves in examples and working with the group, and they see that the theoretical methods are useless in learning, and they prefer to address all A case separately, and learners according to this dimension tend to discuss with their colleagues instead of the authority during the learning process and they can benefit from the feedback, and individuals are characterized by a positive social orientation towards others.

## Second: Reflective Observation:

These learners depend in their learning on observation, reflection, or careful observation in analyzing the learning situation, and their owners tend to play the role of objective observer, as they are introverted, and prefer educational methods that take the form of lectures, and they observe, observe and take information from the environment, and the teacher's role here lies in the observation And encouragement. (Shaheen, 2011: 92).

## Third: Abstract Conceptualization

It means the perception and processing of information depending on the analysis of the learning situation, abstract thinking and logical evaluation, and their orientation towards other people is weak, and the learner who relies on his learning on abstract concepts needs analysis, organization and classification to see the interrelationships between concepts and ideas.

## Fourth: Active Experimentation

It means the perception of information and its treatment by relying on the effective experimentation of the learning situation through the practical application of ideas. Individuals with this tendency do not tend to theoretical lectures, but they are characterized by a work orientation and are classified as practical, so the learner with an experimental practical and effective method needs practical education in solving problems, and the role of the teacher It is the coach who helps facilitate the solution process. And led, 2008: 55)

Kolb believes that the mechanism of combining the way learners perceive information and the way they process it is that which creates a balanced form of the learning style, which is the most comfortable method for learning. They prefer or adopt one style over the other.

(Shaheen, 2010: 93)

From another point of view, Kolb believes that in order for the learner to be effective, he must experience all these stages by fully, openly and without prejudice engaging in new sensory experiences (a sensory experience), and contemplating those experiences (a contemplative note), and then forming concepts through these Observations in logical theories (abstract concepts), and their use in making decisions and solving problems - Effective experiment.

(Al-Hammouri and Al-Kahlout, 2005: 135)

## **Kolb's learning cycle results in four learning styles:**

### 1. (Diverges Style)

And it includes two dimensions of experience or sensory experience and contemplative observation, as learners with this method receive information in an active manner based on experimentation and treat it in a contemplative manner, and that students with a divergent style of learning tend to see abstract cases from different perspectives, and that their approach to any state is a process. Observation is more concerned with practical application (verb) process. They have fun in situations that require a lot of ideas to be generated, such as brainstorming sessions. As the owners of this method are distinguished by their broad mental concerns and seeing situations from many angles, and they perform better in educational situations that require the production of new ideas and are characterized by active participation with others and interaction with the educational situation in a positive and effective manner. Also, these learners are interested in discovering the cause of the situation ((Way), that is, they prefer to take information in a detailed and structured way, as they need sufficient time to think about the topic, and their strengths lie in the ability to imagine (Shaheen, 2010: 96).

### 2. Assimilators Style:

Two dimensions include reflective observation and abstract concepts, and the owners of this method process information through abstract thinking, planning and analysis of information, in addition to taking different viewpoints into consideration before making any decision, as it receives information in an abstract way and processes it in a contemplative manner, and these people are distinguished by their love for risk-taking situations and experimenting with new situations. Flexibility and prudence during dealing with problems in any educational situation, and they are introverted.

(Kolb, A & Kolb, D, 2005: 4)

### 3. Converges Style:

This method includes two dimensions of abstract concepts and effective practical experimentation, as these learners receive information in an abstract manner and process it in an active manner based on practical experimentation. The owners of this method are distinguished by their ability to solve situations and problems that require one answer, and they prefer to deal with things when compared to others. These learners are interested in discovering how the situation occurs, they ask (How can I apply this in



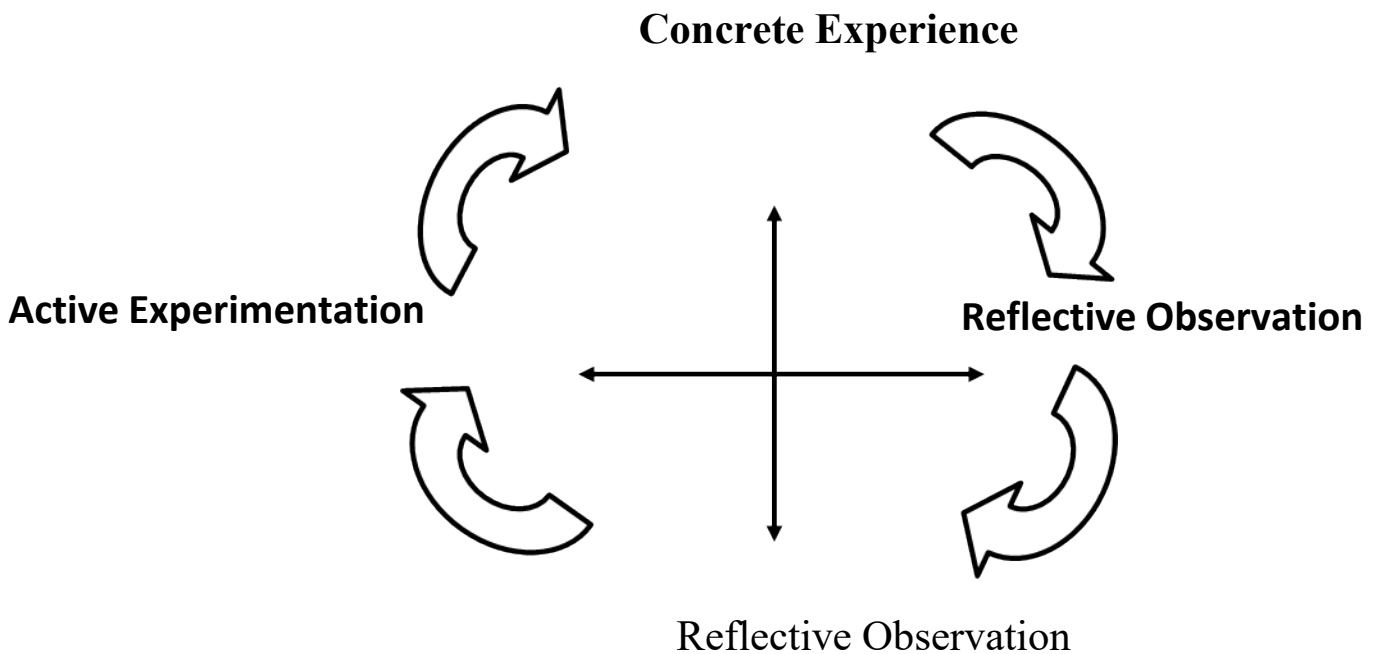
practice?), And the appropriate educational methods for them include interactive learning, learning using computers, and presenting a set of problems for students to discover (Shaheen, 2010: 96).

#### 4. The adaptive style: (Accommodators Style)

This method includes two dimensions of the sensory experience involved in working with people, and effective experimentation with the ability to accomplish the goal and bring about change through work, where the learner receives information in a sensory manner and processes it in an active manner based on practical experimentation. Individuals who tend to use this method of learning prefer to work with people more than things, and do not prefer collecting information themselves, but they have integration into new experiences and solve problems by trial and error, and they also tend to take risks and adapt to educational situations and are distinguished by being practical and active (led , 2008, 58-59).

Figure (1) illustrates the learning styles (Experiential Learning Course) of Kolb.

Figure (1): Kolb's Experiential Learning Course



(Shaheen, 2010)

## Research methodology and procedures:

Since the current research aims to uncover (the effectiveness of the Kolb model in developing the achievement ability of fifth-grade middle school students in the engineering decoration subject), and measuring the effectiveness of the plans prepared for teaching after applying them to fifth-grade middle school students. It is an experimental research, so it was necessary to choose one of the experimental designs that is appropriate for the objectives and procedures of the research and to achieve the desired results.

Experimental design:

The researcher chose the experimental design with fractional tuning that suits the research requirements.

### Planner (1)

#### Experimental design

<b>post test</b>	<b>independent variable</b>	<b>pretest</b>	<b>the group</b>
Skill Performance Test	Kolb's model	Skill Performance Test	Experimental
	The usual way		Control

### **research community:**

The research community is represented by high school students at the General Directorate of Diyala Education, for the academic year 2020-2021.

### **The research sample:**

A random sample was chosen from the fifth year of middle school students - Al-Intisar secondary school for boys. Their number was (45) students, (20) female students as an experimental group and (20) female students as a control group, as (5) students were excluded for having previous experiences, so the experimental design was used. The partial control adjusts one of them to the other with the post-test of two independent groups of equal number, one of which represents the experimental group and the other represents the control group, and Table (1) illustrates that:

Table (1)

Preparation of students of the experimental and control groups before and after exclusion

<b>Number of students after exclusion</b>	<b>The number of excluded students From the results of the experiment</b>	<b>The number of students before exclusion</b>	<b>the group</b>	<b>Division</b>
20	2	22	Control	A
20	3	23	Experimental	B
40	5	45	Total	

Search variables: The search variables have been determined as follows:

1- The independent variable: It is represented by the study plans according to the Kolb model in mastering the skill performance of fifth year middle school students in the subject of drawing the engineering decoration of the experimental group.

2- The dependent variable: It is the variable that can be observed and measured and represented by the skill performance of the fifth year middle school students.

3- Equality of the two research groups: The researcher was keen, before the start of the experiment, on the statistically parity of the students of the two research groups in a number of variables that he believed would affect the results of the experiment even though the students are from one residential area and study in one school, and these variables are: The chronological age of the students - Skillful performance test beforehand.

The researcher decided to set the skill test variable to determine the level of skill performance of fifth grade middle school students and the extent of their possession of these experiences and determine the extent of their needs for the components of the training program. As they were subjected to the pre-skill test, in the engineering decoration drawing subject, the mean and variance of each group were calculated, and the results appeared as in (Table No. 2)

Table (2) results of the pre-test

The arithmetic mean, variance, and the T-test value calculated at the level of (0.05) for the scores of the students of the experimental and control groups

Statistical significance	T-value		variance	SMA	The number of students	data
	Tabular	Calculated				the group
Not a function Statistically	2,042	0,852	8,89	54,48	20	Experimental
			9,18	53,67	20	Control

4- Teaching: The researcher taught both the control and experimental research groups at the same time

## **Stages of preparing educational plans:**

The researcher designed two study plans that include the skills of drawing engineering decoration according to the Kolb model, in addition to designing a skill test to be measured by the skill performance evaluation form prepared for this purpose, which works to reveal the extent of the sample's acquisition of the necessary skill.

## **Exploratory study:**

In order to identify the needs and requirements of students in the skills of drawing engineering decoration, the researcher directed a group of exploratory questions to (24) students who did not participate in the experiment in order to determine the extent of their possession of these skills, as the survey questionnaire included the following questions:

- 1- Have you ever carried out work in drawing engineering decoration?
- 2- What are the difficulties you face in mastering the skills of engineering decoration drawing?
- 3- What are your suggestions for developing the skills of drawing engineering decoration?

## **Article Organization:**

The researcher designed instructional plans for the skills of drawing engineering ornamentation intended for fifth grade students, based on academic scientific sources: (Abbou, 1982); (Rizk, 1982); (Sherzad, 1985); (Al-Bazzaz, 1990); (Al-Hadithi, 1997); (Hawass, 2001); (Abd al-Hadi, 2006); And from the researcher's own experience through reviewing the literature and studies.

Procedures for applying instructional plans for the skills of drawing an engineering decoration:

Defining educational goals and formulating them behaviorally:

### **Behavioral goals:**

The educational goals specified for each teaching plan were transformed into behavioral goals that can be observed, measured and evaluated for teaching results, as they reached (10) behavioral goals that were formulated according to the components of the behavioral goal and based on Bloom's three-level classification (application), the first teaching plan included (6) Behavioral goals, while the second teaching plan included (4) behavioral goals.

After that, the researcher presented these objectives to a group of experts (Appendix No. 2) who were approved by them in determining the validity of the current research tools to identify their clarity and accuracy in measuring what they were designed to measure.

### **Skill Performance Test:**

The researcher prepared a skill test according to the use of engineering decoration drawing skills in order to measure the ability of the sample members to implement the requirements of this method, in order to achieve the objectives of the current research. Prepare them for this.

Skill Test Question: The researcher asked the students the following:

Q: Do a work of art by following the steps of the drawing to form the artistic elements in the drawing of the geometric decoration?

### **Skill performance evaluation form**

For the purpose of measuring the skillful performance of the members of the target group in the field of using the skills of drawing engineering decoration, which the current research aims to develop the capabilities of fifth-grade middle school students in drawing the engineering decoration, a questionnaire was designed to evaluate the skill performance of the required skills, and a five-point scale was determined as a criterion for determining the degree obtained by the student. In presenting the artistic product, so that the total score obtained by students is equal to (45) degree.

## Validate the evaluation form:

The skill test and evaluation form were presented in their initial form to a group of (5) experts with specialization accredited in this research (Appendix No. 2), who were distributed among the specializations of Art Education, Design Arts, Measurement and Evaluation.

The researcher took the observations of the experts in terms of addition, deletion and modification, and thus the evaluation form became its final form for use in the prepared research.

## Stability of the form:

The researcher found the stability parameter for the evaluation form that it had determined to achieve the skill test requirements. The researcher sought help from observers (\*), who were trained on the components of the form and how to work with them for the purpose of their participation in evaluating the skill performance of the members of the target sample and assigning grades to each trainee. Therefore, the researcher used the Cooper's equation to extract the coefficient of agreement between the observers and the researcher, and as shown in Table (3)

Table (3)

The coefficient of the stability of the skill performance evaluation form

the average	researcher	Noticeable2	Noticeable1	T
		M2	M1	
0,86	0,84	0,86	0,88	(1)
0,85	0,84	0,85	0,86	(2)
0,84	0,83	0,85	0,84	(3)
0,85		General Average		

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(\* )The two notes that the researcher sought help from: Prof. Rajaa Hamid Rasheed; M.D. Omar

Anzi Salman

Through the results of Table (3), it appears that the coefficient of stability for the skills of drawing engineering decoration is equal to (0.85). This result gives a good indication of the validity of the form and thus becomes ready for application.

### Statistical means:

The researcher adopted the statistical bag (SPSS) to show the research results.

- 1- The T-Test: to calculate the difference between the experimental and control groups for the skillful performance in drawing the engineering decoration.
- 2- Cooper's equation: to calculate the stability of the analysis form between the observers and the researcher.

### Presentation and interpretation of research results:

To verify the validity of the hypothesis, the researcher used the T-test, the type of the two correlated samples, to identify the significant differences between them related to the skill performance of the experimental research sample in representing the skill test requirements (handwork skills) after studying the content of the typical teaching plans, and Table (4) illustrates this:

Table (4)

The arithmetic mean, variance, and the T-test value calculated at the level of (0.05) for the scores of the students of the experimental and control groups

Statistical significance	T-value		Degree of freedom	variance	SMA	The number of students	data
	Tabular	Calculated					the group
Nota function Statistically	2,42	15,05	38	8,11	80,11	20	Experimental
				15,50	64,35	20	Control



Table (4) shows that there is a clear effect of using the Kolb model in mastering the skillful performance of students of the experimental group towards the subject of drawing engineering decoration compared to students of the control group. Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted that states that there are statistically significant differences at the level of significance (0, 05) For the benefit of the experimental group, this indicates the effectiveness of the Kolb model in mastering the skillful performance of the material for drawing the geometric decoration.

### **Conclusions:**

- 1- The Kolb model is one of the good teaching methods that have been proven to be used in developing the skills of drawing engineering decoration, as it allows students to debate, discuss and implement according to the steps of reaching and reaching the desired results.
- 2- The adoption of the Kolb model in teaching engineering decoration skills to fifth-year middle school students had a positive effect on mastering their skill performance in the subject matter of drawing.
- 3- Evidence of the effectiveness of teaching plans according to the Kolb model in the current research in mastering the skillful performance of students of the experimental group in drawing skills of engineering decoration.

### **Recommendations:**

In light of the research findings, the following recommendations can be formulated:

- 1- The necessity to emphasize the use of the Kolb model in the teaching of engineering decoration, as this has a positive effect on mastering students' skills.
- 2- The necessity of engaging art education teachers in developmental courses on how to prepare and present lessons according to the Kolb model and their uses in the skills aspect.
- 3- Reliance on the teaching content designed in the current research in the relevant educational institutions (Faculties and Institutes of Fine Arts and Faculties of Education) in which the subject (Art Education - Engineering Decoration) is taught to prove the effect of the method in developing students' skills.

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