Journal of Education and Practice
ISSN 2222-1735 (Paper) ISSN 2222-288X (Online)
Vol.14, No.1, 2023

The Degree of Constructivism in Teaching Arithmetic Operations for Kindergarten Students from the Point of View of Kindergarten Teachers in Karak Governorate

Aiah Muflih Hisham Abuoudeh
Jordanian Ministry of Education
Email ID: aya.mflh.98@gmail.com

Abstract
This study aimed to identify the degree of constructivism in teaching arithmetic operations among kindergarten students from the point of view of kindergarten teachers in Karak Governorate. From public schools affiliated to the Directorate of Education in Karak Governorate, the necessary data were collected using a questionnaire, and it was applied to the study sample. The results of the study revealed that the study sample evaluated the degree of constructivism in teaching arithmetic operations for kindergarten students from the point of view of stage teachers in Karak Governorate, from their point of view, it was average, and the researcher recommended holding training courses in constructivism in teaching arithmetic operations for kindergarten students , and the need to encourage female teachers to obtain advanced training courses in teaching constructivism in teaching arithmetic operations for kindergarten students in the Ministry of Education.
Keywords: constructivism, arithmetic operations, kindergarten teacher, kindergarten students.
DOI: 10.7176/JEP/14-1-05
Publication date: January 31st 2023

INTRODUCTION

The current era is characterized by scientific and technological progress that led to the huge flow of knowledge and the ease of obtaining it, and this made humanity face many challenges in absorbing the huge amount of knowledge and using it in most areas of life, which required reforms in the education system to keep pace with all developments and face all challenges in field of knowledge.

In order to develop the learners' abilities to absorb new knowledge and employ it in their lives, educational thought witnessed a shift in its view of the learning process, as it focused on the internal factors that affect the learner, especially what is going on in his mind, such as his previous knowledge, his mental capacity, the way he processes information, his motivation to learn, and his patterns of learning. His thinking, learning style, and cognitive style, after the focus was only on the external factors that affect the learner's learning, most notably the cognitive one, after the focus was only on the external factors that affect the learner's learning, most notably: the learner's variables (character, enthusiasm, reinforcement, etc.), the learning environment, the curriculum, learning outcomes and other factors (Zaytoun&Zaytoun, 2003).

But if it was by hearing and seeing, then this percentage increases to 70%, while the percentage increases in the case of students with what they learn through this east, and in it it required the use of teaching tools that help students build mathematical knowledge in a meaningful way, so that they can see the components and relationships about and systems Mathematics in a meaningful way, and benefiting from it in building new knowledge and facts, and moving students from the stage of mathematical achievement to the stage of organized mathematical thinking, and through the formation of conceptual systems linked by mathematical relations, through which students can develop and practice this thinking and address the challenges posed by the technological and information revolution (The Bedouins, 2018).

And that this transformation looks at the learner as the focus of this educational-learning process, and the role of the teacher has become a guide and facilitator of this process and is experienced and expert and has sufficient knowledge about educational theories and their applications and the extent of their employment in the various teaching methods, including the constructivist theory, which is one of the most popular and accepted educational theories among educators. (Al Zaanin, 2015).

Thus, the "Constructivism Theory" appeared, and to clarify the concept of this theory, there is an educational rule that says: "I hear and forget, and I see and remember, and work and then I understand." It expresses the constructivist theory, as the goal of teaching knowledge is understanding. The goal of learning is no longer to increase information in the mind of the student, but rather Providing the student with skills and competencies that raise his positivity to be able to build his knowledge of himself, and to be able to retain it and employ it in the various fields of life, thus creating an individual who is scientifically, mathematically and technologically oriented, and able to face the challenges of the times and its developments (Zaytoun, 2007).

Mathematics remains more than the sum of its branches." (Abu Zeina, 1997) Mathematics is also considered one of the academic subjects through which work is carried out to achieve the goals of the learning

and teaching process. And the interpretation of scientific phenomena, and exploiting them for his benefit through the scientific and practical application of this thinking, for which mathematics is a tool.

Especially since there is a growing interest in this approach, as is the case with many modern projects in the United States that are concerned with its application, which helped to improve learning by changing the practices of teachers, as this approach extended mathematics curricula and teaching strategies with modern directions based on occupying the mind of the learner and helping him to generate knowledge By himself, based on the fact that teaching mathematics is not just certain behaviors such as knowing laws, facts and definitions, and solving routine issues, but rather goes beyond teaching the student how to think and organize his thinking in a way that makes him active in his learning, creative in the knowledge generated. (Van de Wall, 1994, p).

An introduction to the constructivist theory: "The constructivist theory goes back to ancient historical roots dating back to the era of Socrates, but it crystallized in its current form in the light of the theories and ideas of many theorists such as: Ozel and adds both Onen, Erdem, and UzelGurdal (OnenErdem, Uzel&Gurdal 2011) Many studies have shown the positive practice of teachers of the ideas of constructivism in achieving the desired goals of the educational process, and therefore reaching the competition of developed countries requires me the Lebanese theory, due to its impact on developing the thinking skills necessary to discover and innovate knowledge among students, and deepen their thinking capabilities. Critical scientific, and the formation of current trends towards learning.

Many recent studies recommended the use of the principles of constructivist theory in teaching, including the study of Ryan (2011), which recommended training and urging mathematics teachers to employ the Lebanese approach in teaching, and emphasized primitive ideas and their educational applications in the constructivist education system in teaching, and emphasized constructivist ideas and their educational applications in teaching. Mathematics teaching and learning system, in teacher preparation programs, and the need for teachers to provide constructive classroom climates.

The study of Jan (2010), which recommended a study aimed at identifying the effectiveness of using the constructivist model in teaching the science course for lower grade students on developing metacognitive skills and academic achievement.

The mathematical issue is a major component of mathematical knowledge, as it is a situation facing an individual or a group of individuals for which there is no ready solution available at the time, and in order for this situation to be judged as a problem for the individual, several conditions must be met, including: the individual's endeavor and activity to search for means that help to Addressing this situation and finding a solution to it, the individual's acceptance of situations, interaction with them, and striving to achieve them (Abu Zeina, 2010).

STUDY PROBLEM:

The weakness that appears in mathematics has become a clear phenomenon, and it does not need proofs and evidence. Weakness and deterioration of arithmetic skills have been witnessed by tracking students in schools. It affects society, as it leads to a decline in the learners and society's conviction of the benefit of education, the absence of the utilitarian aspect of education, and the weakness of the economic aspect (Mohamed and Al-Hawry, 2016).

Badawi (2003) mentioned a question that always arises, why do we study mathematics? What is the goal that we seek to achieve from studying mathematics? Here we use the term problem solving as an objective that refers to the real justification for teaching mathematics, and it helps in solving many types of problems.

Based on the foregoing, the researcher finds that kindergarten teachers have the greatest impact on the impact, improvement and development of constructive skills in teaching arithmetic operations for kindergarten students in the educational process for kindergarten teachers in the educational field and strengthening constructive skills in teaching arithmetic operations for kindergarten students. children.

In the light of the foregoing, we noticed that teaching constructive skills in teaching arithmetic operations to kindergarten students seems to suffer from problems, and then the problem of this research was identified in three questions, which are as follows:

STUDY QUESTIONS:

1. **The first question:** What is the degree of constructivism in teaching arithmetic operations for kindergarten students from the point of view of kindergarten teachers in Karak Governorate?
2. **The second question:** Are there statistically significant differences at the significance level ($\alpha = 0.05$) between the averages of the response of the study sample about constructivism in teaching arithmetic operations to kindergarten students from the point of view of kindergarten teachers in Karak governorate due to the variable (years) experience, educational qualification)

STUDY IMPORTANCE

The importance of the study stems from the role that arithmetic operations are expected to play after their implementation, and this importance appears in the following points:

1. Providing those in charge of developing curricula and mathematics teachers with a procedural model that states how to use it and how to apply it.
2. Knowing the extent to which students benefit from using mathematical operations.
3. Providing teachers with plans on how to teach the skill of performing arithmetic operations on integer numbers and using them to solve life problems for kindergarten students.
4. The current study may be an incentive for researchers to conduct new studies using the tools of the current study.

PRACTICAL SIGNIFICANCE

Constructivist theoretical principles, and are they applying them properly in their classrooms, or not?
The results of this study may benefit male and female teachers by knowing how to measure the degree of their knowledge and application, in addition to the possibility of benefiting supervisors, educational leaders, and those concerned with educational reform movements by providing them with information on the degree of application of the principles of constructivist theory within schools, which helps them to make appropriate decisions that seek to improve the application of the principles of this theory that are in the interest of the student. It produces a positive learner.

THE LIMITS OF THE STUDY

This study is carried out within the following limits:
-Human limits: Kindergarten students in Karak Governorate.
-Spatial limitations: This study was limited to Al-Karak schools for the kindergarten stage of the Directorate of Education of Al-Karak Governorate.
-Temporal limits: This study was applied in the first semester (2021/2022).
-Objective limits: This study dealt with the degree of constructivism in teaching arithmetic operations among kindergarten students from the point of view of stage teachers in Karak Governorate, and they used a questionnaire characterized by honesty and a reliability coefficient.

TERMINOLOGY OF STUDY:

The study adopts the following definitions of its terms:
Structural Theory: A set of procedures, activities, methods, and methods used by the teacher that are based on the constructivist theory, and are measured by the teacher's estimates on the items of the tool prepared for the purposes of the study and related to the principles of the constructivist theory. Knowledge (Ayyash and Al-Absi, 2013).
Constructive Learning Model: Zaytoun (2007) defines the constructive learning model as: “a teaching model based on the principles of constructivist learning through which students are helped to build their knowledge through groups practicing a new activity related to that information in order to enrich that information, and use it in situations New".
Kindergarten stage: It is the educational stage that starts from (kg1) and extends to (kg2). (Affouneh, 2014)
Constructivist theory: A theory based on the consideration that learning does not take place through the automatic transfer of knowledge from the teacher to the learner, but rather through the learner building the meaning of what he learns himself based on his previous experiences and knowledge (Al-Wahar, 2002).
The researcher defines it procedurally as the first compulsory educational stage that the student passes, and its duration is two years, starting from the age of (4-6) years, and in which the student’s level is expressed.

THEORETICAL FRAMEWORK AND PREVIOUS STUDIES

The first field: constructivist theory, its concept and importance, the role of the teacher and the learner in teaching.
This chapter deals with the most prominent theorists of constructivism, what it is, principles and assumptions on which it is based, constructivism in teaching, the characteristics of the constructivist learning environment, the roles of the teacher and the constructivist learner, and some teaching strategies that stem from the thought of constructivism. It also deals with the concept of basic education and the educational system, in addition to previous studies that dealt with This topic.

THE TEACHER AND THE LEARNER IN A CONSTRUCTIVIST LEARNING ENVIRONMENT:

Many studies have reported an analysis of the characteristics of the constructivist learning environment, and these characteristics contribute to shifting from a focus on the teacher to a focus on the learner, which makes it

more motivational and more compatible with the diversity of learning environments, as well as supporting critical thinking and inquiry. Among the most prominent characteristics of the constructivist learning environment are what was mentioned by (Al-Otaibi, 2008):

The learner is active in linking the new knowledge with the knowledge in his possession, and he examines the multiple visions; Because this examination is necessary and of great value, as the learner collects these visions and integrates them into a complete vision, and the learner controls his learning process and its rate when negotiating with his colleagues in the classroom. Presenting real learning environments linked to real-world problems in which the learner applies what he learns and supports it. Cooperative learning, not competitive learning, and emphasizes the building of knowledge, that is, ideas are not placed in the hands of students, but they have to build their concepts themselves, and that knowledge is generated by them through their own thinking and activity (Wheatley, 1991).

The research conducted by Piaget in the cognitive growth and development of the individual is the basis for the constructivist philosophy. Piaget developed an integrated theory about the cognitive development of children, and this theory has two main interrelated parts. The first is called logical determinism. The second part is called constructivism, which is related to the issue of building knowledge. negatively from others (Dawood, 2003).
Arithmetic operations were characterized by several characteristics, including: (Al-Akah, 2014):

- It forms a style and way of thinking that leads to the rationality of proofs and the validity of hypotheses to some extent.
- the universality of its language; It is unified and accurate in its symbols and expressions in everything that leads to ease of intellectual communication.
- Sequential, sequential and accumulated in numbers, forms and ideas.

The constructivist theory also tended to focus on the internal factors that affect the learning process of students that occur inside their minds while facing educational situations such as: previous knowledge, abilities and motivation to learn. It also sees that the process of acquiring knowledge is an active process and it will pass, during which modifications occur in the knowledge structures of students through their self-regulation mechanisms of new knowledge in line with their previous knowledge (Al-Khalidi, 2007).

The International Dictionary of Education defines it as “a vision in the theory of learning that the child is active in building patterns of thinking, and the quality of education depends on the prevailing educational system with its inclusion and various methods, and achieving these goals with a set of foundations, including science that bears the greatest burden in transforming those goals into A tangible practical reality (Abu Odeh, 2006).

On this basis, it becomes clear that the progress of the name or its backwardness depends on the presence of a teacher who is competent in number, properly prepared, and who is able to carry out his responsibilities in solving a changing world. Therefore, developed and underdeveloped countries alike paid attention to crystalizing the teacher as the cornerstone of education reform, and our current era witnesses a great street in development in various fields. fields, including the field of knowledge in general, and education in particular, so he said that among the requirements of this rapid development and the successive changes in information and knowledge are complex developments in the fields of science and knowledge (Al-Kandari and Farah, 2001).

The importance of building individuals is a philosophical basis for a number of methods used in the educational process, and among these philosophies: The constructivist philosophy that emerged in the modern era, and formed a revolution in human and social studies and methods of dealing with knowledge, and its impact extended prominently to the field of education, which contributed to the emergence of the theory Constructive learning, which brought about a qualitative change in the educational literature, affected all aspects of the educational process and its forms. Students, teachers, curricula, and teaching strategies (The Camel and the Eid, 2009).

Between the research and educational reform efforts, the transformation of the teaching union, the constructivist theory in all its models goes back to the philosophy of constructivist thought, which centered around an intellectual approach that deals with the formation of information and integrates technology and technology. Education is considered one of the fields most affected by the constructivist philosophy with its cognitive and social currents, as it looks at the learner as an active person who builds his knowledge through his interaction with information and with the experiences of others (Al-Azzawi and Abdel Razek, 2015).

HISTORICAL ROOTS OF CONSTRUCTIVIST THEORY:

The constructivist theory has gained great popularity in recent years, as the trends towards the constructivist theory can be seen through the works of each of:

Jerome Bruner: Bruner was born in 1915. He is an evolutionary psychologist and worked in social psychology. He focused in his studies and writings on the process of representing experience, the structure of knowledge, and how teachers present experiences to students. Brunner was influenced by Piaget's ideas on epistemology; Where he tried to find out how the individual acquires scientific concepts, and the ideas of John Dewey and the Gestaltians who advocated the idea of learning by clairvoyance; That is, reorganizing the

elements of the educational situation, and discovering new relationships between these elements (Al-Khawaldeh, 2013).

Robert Gagner: Gagner came up with the idea of hierarchical learning, that knowledge is cumulative, and that learning a concept is a skill whose acquisition requires mastering a partial skill that is necessary in advance, and the teacher must specify the final goal that the student should master, and puts it at the top of the pyramid, and then defines sub-goals or skills necessary to achieve the main goal, so he starts with the basic skills until he reaches the final goal and achieves learning (Ibrahim, 2012).

Vygotsky: Vygotsky is a psychologist born in Belarus in 1896 AD. He presented a socio-cultural theory and the idea of marginal growth. He believes that the individual has two levels of development or growth, the lower individual level; It is the independent performance of the child that the child knows and works on his own, and the highest social level that the child can reach with help, and between these two levels there is the level of marginal growth, and that the success of the individual is seen as a reflection of the success of culture, and therefore Vygotsky stressed that development mainly applies to mental development such as thinking, language, and thought processes, and that these abilities develop through social interactions (Al-Dawahidi, 2006).

There are several teaching strategies stemming from the constructivist thought, and among these strategies:

Problem Centered Learning strategy.

1- Grayson Wheatly. He is one of the biggest advocates of modern constructivism, as it is based on the idea that the learner builds an understanding of what he learns by confronting a problem that he must reach a solution to, and this strategy consists of basic stages, which are tasks, collaborative groups, and participation Where the teacher presents a task or a problem in front of the class, and in the participation stage, each group presents the solutions it reached to the class, and it is possible that there may be a difference in the solutions in the solutions reached by each group, so the discussions take place between them until an agreement is reached between them (Al-Yaqoubi 2010).

2- The learning cycle :It was built by (Atkin & Karplus, 1962), and this strategy is based on the teaching process according to the constructivist theory, as it translates Piaget's ideas on this theory, and proceeds according to the three stages, which are: The exploration stage, which is based on the activities that are used to collect information related to the concept to be learned. the stage of conceptual broadening; It is based on applying the concept and generalizing it in new situations (Al-Najdi et al., 2005).

3- Posner's conceptual change strategy: Concepts is a strategy based on the idea of replacing the misconceptions in the mind of the learner with correct scientific concepts, based on a number of strategies; It is bringing about integration between the new and existing concepts of the learner through the teacher’s explanation, discussion, or other presentations to merge the new knowledge with the previous knowledge, i.e. linking the new concepts with previous experiences that have meaning for them and the ability to apply these concepts on the ground (Al-Bayari, 2012).

PREVIOUS STUDIES:

Rayan's (2011) study aimed to identify the extent to which mathematics teachers in the Hebron Education Directorate practiced constructive teaching and its relationship to their academic effectiveness beliefs. The study sample consisted of (206) male and female teachers. To achieve the purposes of the study, the researcher used two questionnaires, the first to measure the teachers’ practice of constructive teaching, and the second to measure their teaching effectiveness. Mathematics for constructivist teaching according to the different variables of the study (gender, experience, educational qualification, educational stage), and there was a positive relationship between the degree of mathematics teachers’ practice of constructive teaching and the beliefs of their teaching effectiveness.

As for the study of Al-Namrawi (2011), it aimed to reveal the effectiveness of teachers’ application of the approach of the social constructivist school perspective in teaching mathematics, and the role of this application in developing the mathematical communication skills of sixth grade students. The class, and ten teachers who teach the sixth grade participated in this program, where these teachers and their students were observed, before and during the teachers' employment of the school's social constructivist approaches in teaching mathematics. The results of the study showed a clear development in teachers’ application of the school’s social constructivist orientations, which was represented by facilitating the educational experience, scaffolding the learning process, and the emergence of a development in students’ use of mathematical communication skills represented in reading, writing and translation activities. Consistent with the orientations of the social constructivist school in teaching mathematics.

Fast &Hankes (2010, Fast &Hankes) also conducted an experimental study in the United States of America aimed at investigating the impact of an educational program based on integrating strategies for the theory of philanthropy by teaching mathematics content to student teachers enrolled at the University of Wisconsin Oshkosh. The study sample consisted of (63) Male and female students were divided into two groups, the first was a female officer who studied mathematics in the traditional way, and the second was an experimental one

which she studied according to the constructivist theory. A questionnaire and multiple test were used as tools for this study. The results of the study showed that there were statistically significant differences in favor of the experimental group in achieving the main course objectives, and developing their abilities to overcome misconceptions and negative experiences towards mathematics, where the experimental group showed positive attitudes towards mathematics and teaching methods based on Lebanese content.

Shivani (2009, Shirvani) conducted a study to reveal the compatibility of the classroom environment with the constructivist theory of learning, as (49) student teachers at the university level in the south of the United States were trained to apply lessons in mathematics for the basic stage according to the constructivist model, and the researcher used To achieve the purposes of the study, note cards. The results showed that there are positive practices among student teachers in providing a constructive learning environment, in four areas: global knowledge, speaking, expressing opinion, accepting scientific material, negotiation, and social communication. The results did not show significant differences in the two areas of control, learning how You learn, the importance of mathematics and awareness of its life applications.

While the aim of Al-Thaqafi (2008) was to reveal the reality of mathematics teachers' knowledge, acceptance and ability of the constructivist learning model, the study sample consisted of (110) mathematics teachers in the city of Taif, and the researcher used a questionnaire to achieve the purposes of the study. The results showed that the mathematics teachers' knowledge and acceptance of the constructivist learning model was great, while the results showed that there were no statistically significant differences in the degree of mathematics teachers' acceptance of the constructivist learning model due to the variables of educational qualification, specialization, number of years of experience, and the class taught.

The study (2008, Patchen& Cox) aimed to know the effect of constructivist theory compared to traditional science teaching methods in developing theoretical knowledge among learners. Constructivism, and others present the same knowledge through traditional methods. After the researchers watched and analyzed many educational situations, the results indicated that students who received scientific knowledge through constructivism were better at achieving than their peers who received the same knowledge by traditional methods.

STUDY APPROACH

The study relied on the descriptive survey method, as a questionnaire was prepared and developed as a main tool for collecting data and information from the study sample.

STUDY POPULATION

The study population consisted of all kindergarten teachers of the Directorate of Education, Karak Directorate, for the academic year (2021/2022), according to the statistics of Karak Governorate.

THE STUDY SAMPLE

The sample consisted of (100) female teachers who were chosen by the random stratified method, whereby the society is divided into classes in which it was taken into account that they represent the various variables of the study. The following tables show the study sample.

TABLE (1): THE STUDY SAMPLE ACCORDING TO THE STUDY VARIABLES

Variable	Category	Frequencies	Percentage
Experience	More than 10 years	38	38%
	From 5-10 years	41	41%
	Less than 5 years	21	21%
	Total	100	100%
Qualification	Bachelor	73	73%
	Postgraduate	27	27%
	Total	100	100%

STUDY TOOL:

The researcher used the questionnaire to identify the degree of constructivism in teaching arithmetic operations among kindergarten students from the point of view of kindergarten teachers in Karak Governorate.

VALIDITY OF THE TOOL:

The researcher used honesty for the validity of the tool, as the researcher will distribute the questionnaire in its initial form to arbitrators from the faculty members in various disciplines. With the aim of identifying the suitability of the paragraphs for the scale, the soundness of their wording, the clarity of their meanings from the linguistic point of view, and making any amendment and addition to the paragraphs that will receive a

percentage of (80%) of the arbitrators or more.

TABLE (2): CORRELATION COEFFICIENT OF THE ITEMS OF THE STUDY TOOL WITH THE TOTAL SCORE

no	The application of constructivism in teaching	Correlation coefficient	SIG
1	I use as a teacher the skills that allow the learner to express themselves	**83.0**	**0.000**
2	I accept and encourage the learner's self.	**74.0**	**0.000**
3	Start the lesson by posing a problem relevant to the learners	**94.0**	**0.000**
4	I invite the learners to formulate possible explanations for the problem.	**92.0**	**0.000**
5	Direct the learners to practice scientific inquiry to solve problems	**68.0**	**0.000**
6	Learning objectives are appropriate to the needs and interests of the learners.	**83.0**	**0.000**
7	The role of the teacher shrinks compared to the roles of the learners	**85.0**	**0.000**
8	A learner's prior knowledge is a prerequisite for building meaningful learning	**98.0**	**0.000**
9	Learning is concerned with the emotional side of the learner	**92.0**	**0.000**
10	The teacher represents one source of learning, not the only source.	**86.0**	**0.000**
11	I am keen on developing students' positive attitudes towards mathematics	**84.0**	**0.000**
12	I encourage the students to build their own knowledge based on linking their new experiences with the previous ones.	**84.0**	**0.000**
13	I accept students' mistakes and consider them a source of learning	**68.0**	**0.000**
14	Give the students enough time to think about the questions I am asking.	**77.0**	**0.000**
15	Benefit from students' questions and ideas in guiding the course of the class	**86.0**	**0.000**
16	Types of classroom activities according to the diversity of interests, abilities and needs of students.	**86.0**	**0.000**
17	Allow for multiple points of view on the issues raised in the lesson	**81.84**	**0.000**
18	I encourage the students to provide explanations and proofs for the mathematical problems they solve	**77.0**	**0.000**
19	Give students opportunities to present their ideas and suggestions	**86.0**	**0.000**
20	I give students opportunities for collaborative work and group learning.	**81.0**	**0.000**

Table No. (2) shows that the correlation values for the constructivist paragraphs in teaching ranged between (68.0-98.0), and it also shows that the teaching of arithmetic operations ranged between (68.0-86.0). These were statistically significant values, and this indicates that there is a degree of validity of internal consistency on paragraphs on the scale

TABLE (3): CORRELATION COEFFICIENTS MATRIX BETWEEN THE AXES AND THE TOTAL SCORE

Field	constructivism in teaching	Teaching arithmetic operations	scale as a whole
constructivism in teaching	**1**	**77.0**	**86.0**
Teaching arithmetic operations		**1**	**81.0**
scale as a whole			**1**

It is noted from Table (3) that there are high and statistically significant correlation coefficients at ($\alpha = 0.05$) between the two axes, with the total score of the scale ranging from (81.0-86.0), which indicates a degree of internal consistency between the two axes and the total score on the scale.

TOOL STABILITY

The internal stability of the resolution was measured by Cronbach Alpha, and the table below shows these coefficients.

TABLE (4): CRONBACH'S INTERNAL CONSISTENCY COEFFICIENT ALPHA

Dimension	internal consistency	Items NO.
constructivism in teaching	.864	10
Teaching arithmetic operations	.835	10
scale as a whole	.842	20

It is clear from the table that these values are suitable for the purposes of this study, as the Cronbach alpha coefficient is between (.835-.864).

PRESENTATION AND DISCUSSION OF STUDY RESULTS AND RECOMMENDATIONS

RESULTS RELATED TO THE FIRST QUESTION: WHAT IS THE DEGREE OF CONSTRUCTIVISM IN TEACHING ARITHMETIC OPERATIONS FOR KINDERGARTEN STUDENTS FROM THE POINT OF VIEW OF KINDERGARTEN TEACHERS IN KARAK GOVERNORATE?

To answer this question, the arithmetic means and standard deviations for constructivism were calculated in teaching arithmetic operations for kindergarten students from the point of view of kindergarten teachers in Karak Governorate.

FIRST: CONSTRUCTIVISM IN TEACHING

TABLE (5): ARITHMETIC MEANS AND STANDARD DEVIATIONS FOR CONSTRUCTIVISM IN TEACHING ARITHMETIC OPERATIONS ARRANGED IN DESCENDING ORDER ACCORDING TO THE ARITHMETIC MEANS

Rank	NO.	Item	Arithmetic Mean	Standard Deviation	Level
1	1	I use as a teacher the skills that allow the learner to express themselves	4.09	1.29	High
2	2	I accept and encourage the learner's self.	3.90	1.29	High
3	3	Start the lesson by posing a problem relevant to the learners	3.75	1.36	High
4	4	I invite the learners to formulate possible explanations for the problem.	3.52	1.37	Average
5	5	Direct the learners to practice scientific inquiry to solve problems	3.51	1.37	Average
6	6	Learning objectives are appropriate to the needs and interests of the learners.	3.41	1.29	Average
7	7	The role of the teacher shrinks compared to the roles of the learners	3.39	1.38	Average
8	8	A learner's prior knowledge is a prerequisite for building meaningful learning	3.36	1.25	Average
9	9	Learning is concerned with the emotional side of the learner	3.33	1.36	Average
10	10	The teacher represents one source of learning, not the only source.	3.31	1.36	Average
		constructivism in teaching as a whole	3.55	0.52	Average

Table (5) shows that the arithmetic averages ranged between (3.31-4.09), where paragraph No. (1) which states “I use as a teacher the skills that allow the learner to express himself” came in the first place with an arithmetic mean of (4.09), and the paragraph came No. (10), which states that "the teacher represents one of the sources of learning and not the only source" ranked last, with an average of (3.31), and the arithmetic mean of the constructive axis in teaching as a whole was (3.55).

SECOND: TEACHING ARITHMETIC OPERATIONS

TABLE (6): ARITHMETIC MEANS AND STANDARD DEVIATIONS FOR TEACHING ARITHMETIC OPERATIONS ARRANGED IN DESCENDING ORDER ACCORDING TO THE ARITHMETIC MEANS

Rank	NO.	Item	Arithmetic Mean	Standard Deviation	Level
1	11	I am keen on developing students' positive attitudes towards mathematics	3.88	1.32	High
2	12	I encourage the students to build their own knowledge based on linking their new experiences with the previous ones.	3.86	1.39	High
3	13	I accept students' mistakes and consider them a source of learning	3.85	1.45	High
4	14	Give the students enough time to think about the questions I am asking.	3.69	1.30	High
5	15	Benefit from students' questions and ideas in guiding the course of the class	3.54	1.59	Average
6	16	Types of classroom activities according to the diversity of interests, abilities and needs of students.	3.42	1.39	Average
7	17	Allow for multiple points of view on the issues	3.41	1.33	Average

Rank	NO.	Item	Arithmetic Mean	Standard Deviation	Level
		raised in the lesson			
8	18	I encourage the students to provide explanations and proofs for the mathematical problems they solve	3.22	1.33	Average
9	19	Give students opportunities to present their ideas and suggestions	3.20	1.40	Average
10	20	I give students opportunities for collaborative work and group learning.	3.18	1.29	Average
		Teaching arithmetic operations as a whole	3.51	0.51	Average

Table (6) shows that the arithmetic averages ranged between (3.18-3.88), where Paragraph No. (11), which states "I am keen on developing positive attitudes of students towards mathematics" came in the first place, with an arithmetic mean of (3.88), and Paragraph No. (11) came (20) which states, "I give students opportunities for collaborative work and learning in groups." In the last place, with an arithmetic mean of (3.18), and the arithmetic mean of the axis of teaching arithmetic operations as a whole was (3.51).

THE SECOND QUESTION: ARE THERE STATISTICALLY SIGNIFICANT DIFFERENCES AT THE SIGNIFICANCE LEVEL (A = 0.05) BETWEEN THE AVERAGE RESPONSES OF THE STUDY SAMPLE ABOUT CONSTRUCTIVISM IN TEACHING ARITHMETIC OPERATIONS TO KINDERGARTEN STUDENTS FROM THE POINT OF VIEW OF KINDERGARTEN TEACHERS IN KARAK GOVERNORATE DUE TO THE VARIABLE (YEARS OF EXPERIENCE, QUALIFICATION)?

To answer this question, the arithmetic means and standard deviations of the responses of the study sample were calculated on constructivism in teaching arithmetic operations for kindergarten students from the point of view of the primary stage teachers in KarakGovernorate, according to the variables (years of experience, educational qualification), and the tables below show that.

TABLE (7): ARITHMETIC MEANS AND STANDARD DEVIATIONS OF THE IMPACT OF (YEARS OF EXPERIENCE, EDUCATIONAL QUALIFICATION) ON CONSTRUCTIVISM IN TEACHING ARITHMETIC OPERATIONS

Variable	Categories	NO.	Arithmetic Mean	Standard Deviation
Experience	More than 10 years	38	3.52	0.44
	5-10	41	3.44	0.38
	Less than 5	21	3.47	0.54
	Total	100	3.51	0.42
Qualification	Bachelor	73	3.51	0.39
	Postgraduate	27	3.54	0.50
	Total	100	3.51	0.42

It is noted from table (7) that there are apparent differences between the averages of the study sample's responses to the total degree about constructivism in teaching arithmetic operations to kindergarten students from the point of view of kindergarten teachers in Karak Governorate, according to the variables (years of experience, academic qualification), In order to show the statistical differences between the arithmetic means, the two-way analysis of variance test (Way ANOVA-2) was used on the total score of the scale, and Table (8) shows the results of that.

TABLE (8): RESULTS OF TRIPLE VARIANCE ANALYSIS (WAY ANOVA-2) OF THE EFFECT OF (YEARS OF EXPERIENCE, ACADEMIC QUALIFICATION) ON CONSTRUCTIVISM IN TEACHING ARITHMETIC OPERATIONS FOR KINDERGARTEN STUDENTS.

Contrast Source	Squares sum	Squares Mean	Freedom Degree	F value	SIG
Experience	**.634**	**2**	**.302**	**1.629**	**.159**
Qualification	**.324**	**2**	**.421**	**.974**	**.357**
Error	**27.322**	**95**	**.173**		
Total	**27.902**	**99**			

* Statistically significant at the level (0.05 = α).

There are no statistically significant differences at the level of statistical significance (0.05) between the averages of the respondents' estimates on the total degree about constructivism in teaching arithmetic operations for kindergarten students from the point of view of kindergarten teachers in Karak Governorate, according to the variable of years of experience.

There are no statistically significant differences at the level of statistical significance (0.05) between the

averages of the sample's estimates on the total score on constructivism in teaching arithmetic operations for kindergarten students from the point of view of kindergarten teachers in Karak Governorate, according to the educational qualification variable.

RECOMMENDATIONS:

1. The need to prepare and provide periodic training courses for constructivist teachers in teaching arithmetic operations for kindergarten students from the point of view of the stage teachers.
2. Paying attention to training female teachers on teaching arithmetic skills, dealing with the institution's educational website before starting their learning through it, and before engaging in work to deal with its tools and interact with each other.
3. The need to link the job performance evaluation of female teachers to attending specialized training courses in teaching constructivism
4. Paying attention to training the primary stage teachers on the skills of teaching arithmetic operations before starting teaching.
5. Developing educational sites on the Internet to teach constructivism that can provide complete educational services remotely.

REFERENCES

Abu Ghali. (2010). **The effect of employing the think-pair-share strategy on the development of thinking skills**

Abu Odeh, Salim. (2006), The effect of using the constructivist model in teaching mathematics on the development and retention of systemic thinking skills among seventh grade students in Gaza, **unpublished master's thesis**, College of Education, Islamic University, Gaza 'Palestine.

Abu Zina, Farid Kamel. (2003). **School mathematics curricula and teaching**. 2nd Edition, Amman: Al-Falah Library, Jordan.

Affouneh, Saeeda (2014). The reality of education in Palestinian schools after the emergence of the Palestinian Authority, analysis and criticism, **An-Najah Research Journal** (Human Sciences), 28 (2), 266-292.

Al Zaanin, Jamal Abed Rabbo (2015). The degree of employing science teachers for constructive teaching in science classes in the governorates of Gaza and its relationship to some variables, **Al-Aqsa University Journal (Human Sciences Series)**, 19 (1), 154-184.

Al-Akah Ahmed Amin. (2014). The Effectiveness of Teaching the Five-Way Learning Course and the Six Hats in Developing the Engineering Problem-solving Skills of the Eighth Graders in Gaza (**Unpublished master's thesis**). The Islamic University. Gaza, Palestine.

Al-Azzawi, Farouk Khalaf and Abdul-Razzaq, Ihsan Adnan. (2015). **Constructivism and Learning**, a college magazine

Al-Dawahidi, Azmy Attia Ahmed. (2006). **The effectiveness of teaching according to Vygotsky's theory in acquiring some environmental concepts among female students** of Al-Aqsa University in Gaza, master's thesis, College of Education, Islamic University, Gaza.

Al-Kandari, Jassem Youssef and Farag, Hani Abdel Sattar. (2001). License to practice the teaching profession. ***Education Journal***, 15 (58), 54-13.

Al-Najdi, Ahmed and Abd al-Hadi, Mona and Rashid, Ali (2005). **Modern trends for science education in the light of international standards and the development of thinking and constructivist theory**, 1st edition, Cairo: Dar Al-Fikr Al-Arabi.

Al-Nimrawi, Ziyad. (2011). **The effectiveness of teachers' application of social constructivism in teaching mathematics and its role in developing the mathematical communication skill of sixth-grade students in Jordan**, Educational Science Studies, 38 (7): 2314-2327.

Al-Shibli, Abdullah Ali and Al-Khatibeh, Abdullah Muhammad and Al-Omari, Wisal Hani and Al-Hamrashidi, Arim (2011). **Science teachers' employment of constructive principles during their teaching of science courses in the Sultanate of Oman**, The Arabian Gulf Letter_Saudi Arabia, 32 (120), 15-52.

Al-Thaqafi, Abdel-Hadi. (2008). The reality of mathematics teachers' knowledge and acceptance of the constructive education model and the degree of their ability to apply it. **Unpublished master's thesis**, Umm Al-Qura University, Saudi Arabia.

Al-Wahr, Muhammad Taher. (2002). The degree of knowledge of teachers of constructivist theoretical sciences and the impact of their academic and educational qualification on it, **Journal of the Educational Research Center**, Qatar University, 22 (11), 93

Al-Yaqoubi, Abdel Hamid Salah. (2010). **A technical program that employs a strategy of learning centered around**

Ayyash, Amal Najati and Al-Absi, Muhammad Mustafa (2013). The level of knowledge and practice of constructivist theoretical science and mathematics teachers from their point of view**, Journal of**

Educational and Psychological Sciences, 14 (3),
Basic Education, Al-Mustansiriya University, 21 (87), 653-668.
Bedouins, Amal (2019). The importance of using e-learning to teach mathematics in the Lebanese model. ***International Journal of Research in Educational Sciences***, 2(1), 160-203.
Brahim, Hassan. (2012). The effect of using (Janet and Ozbel models) on the achievement of second year secondary school students in biology and earth science, **Damascus University Journal**, Al-Bayari
Dawood, Wadih Maximus. (2003). **Constructivism in the processes of teaching and learning mathematics, the third Arab conference on the systemic approach to teaching and learning**, Faculty of Education, Assiut University, 50-71
Fast,G.&Hankes,J.(2010**).International lntegration of Mathematics Mathematics Content lnstruction with Constructivist Pedagogyin Elementary Mathematics** Education,Dchool Science & Mathematics,110(7)330-340.
Islamic University, Gaza, Palestine.
Jan, Khadija Muhammad Saeed Abdullah. (2010). The impact of constructivist theory strategies in developing the cognitive aspects of biology among secondary school students. **The Future of Arabic Education Journal**.
Khalidi, Jamal. (2013). The Degree of Practicing Constructive Teaching by Islamic Education Teachers, ***Journal of the University of Babylon - Human Sciences***, 21 (1), 289-304.
Khawaldeh, Mohamed Mahmoud (2013). **Philosophies of Traditional and Modern Contemporary Education,** 1st edition, Amman, Dar Al Masirah for publication, distribution and printing.Logical Science in the eighth grade students, an unpublished thesis, College of Education
Onen, F., Erdem, A. Uzal, G. &Gurdal, A. (2011). Teacher's Views on the Applicability of the Constructivist Curriculum and the Efficiency of Related Books. ***Electronic Journal of Science and Mathematics Education***, 5(2), 115-137.
Patchen,T.;Constricting (2006). **cultural relevance in science:Acase study of Tow elementary teachers, science education**,92(6):994-1014.
Ryan, Adel. (2011). The extent to which mathematics teachers practice constructive teaching and its relationship to their teaching interaction beliefs, ***Al-Quds Open University Journal for Research and Studies,*** 1 (24), 85.
Shehdeh (2012). The effect of using Posner's strategy in modifying the misconceptions of mathematical concepts among fourth grade female students, **master's thesis**, College of Education, Islamic University, Gaza.
Shirvani,H.(2009).Does your elementary Mathematics methodology class correspond to constructivst epis-temology ? ***Journal of Instructional psychology***.36(3).245-258.
The Camel, Salah and Al-Eid, Ibrahim. (2009). The effectiveness of teaching based on the constructivist model strategy (learning cycle and concept map) on the achievement of ninth grade students in science. ***The Journal of Reading and Knowledge issued by the Egyptian Association for Reading and Knowledge*** / Faculty of Education, Ain Shams University, p. 95.
The problem to develop systemic thinking skills in science among ninth grade female students in Gaza, **master's thesis**, College of Education, Islamic University, Gaza.
Zaytoun, Ayesh Mahmoud (2007). **Structural Theory and Strategies for Teaching Science**, 1st edition, Amman Dar Al-Shorouk.
Zeitoun, Hassan Hussein and Zeitoun, Kamal Abdel-Hamid. (2003), **Learning and teaching from the perspective of constructivist theory**, 1st edition, Cairo: The World of Books.