PalArch's Journal of Archaeology of Egypt / Egyptology

THE EFFECTIVENESS OF ZAHORIK MODEL IN THE ACHIEVEMENT OF FOURTH-GRADE LITERARY STUDENTS IN GEOGRAPHY

Mohammed Mahdi Hussein

University of Kufa/ College of Basic Sciences

mohammedm.hussein@uokufa.edu.iq

Mohammed Mahdi Hussein, Effectiveness of Zahorik Model in the Achievement of Fourth-Grade Literary Students in Geography-Palarch's Journal Of Archaeology Of Egypt/Egyptology 17 (10), 4353-4380. ISSN 1567-214x. Published October 2020.

Keywords: Constructivist Theory, **Zahorik's Assumptions**.

ABSTRACT

The purpose of this study is to determine the efficacy of the Zahorik model in the topic of Geography among fourth grade pupils in the literary branch of the subject. In order to achieve the aims of the study The researcher put the following null hypothesis: In the achievement test, there is no statistically significant difference between the average marks of the experimental group students who study the same subject according to the Zahorik model and the average marks of the control group students who study the same subject according to the regular method at the (0.05) level of statistical significance. The researcher followed the experimental design with partial control and the experimental and control groups, the researcher chosen the secondary and the preparatory morning schools that belong to the General Directorate of Education in Annajaf Province and in the random method Alkindi Preparatory school for boys has been selected to apply the experiment in it, two sections from the fourth grade literary branch have been randomly chosen from four sections, in the same method the section (A) is determined to represent the experimental group, and (D) section to represent the control group, the number of the students in the sample reached (63) students, equivalence had been made between the two groups of the study in the variables of (the chronic age calculated in months, Intelligence test, the Educational Qualification of the Parents) And the researcher has formulated (154) objectives and prepared the study plans that reached (21) plan per group in the light of the requirements of the study, later the researcher has made a test of (60) testing items in form of multiple choice in accordance with the nature of the study, the test was applied after the end of the experiment that lasted for one full academic semester commencing from Tuesday 22-2-2019 to the end of Sunday 10-4-2019, and after the statistical treatments the following results were attained: There is statistical significance between the two groups of the study in the achievement test, and as a result, the null hypothesis

is rejected, and the substitutional null hypothesis is accepted, which demonstrated the superiority of the experimental group over the control group, as a result of the positive effect of using the Zahorik model in geography teaching and its effect on achievement in the study. In addition the researcher has recommended using the Zahorik model in teaching the Geography subject for the fourth years students in the literary branch of preparatory schools. Moreover suggested to conduct similar studies of the current study in other subject studies as well as proceeding in similar study to identify the effectiveness of the model Zahorik in other variables like the creative and organizational thinking.

INTRODUCTION

The Problem statement

The Geography works on building the personal, social and mental aspects of those who study it, and in building and awaking the students about the properties of the surface of the earth, places and the organization of the phenomena and their relationships, and all that requires skills and scientific methods in teaching, and it is one of these aims that the educational process strive to achieve because the learner uses his mental competences to understand, interpret ,analyses, correlate, conclude, predict and generalize, as it is among the most social sciences therefore, it is to be taught in all different educational stages, t strive to become a righteous citizen that lives a dignified life in a harmonized society and that is termed as Everyday Geography.(Alsammarrai,2000:p.98)

In view of this importance, it became clear to the researcher through teaching and through his participation as a lecturer in the training courses held by the Directorate of Education in the province and the discussions between teachers of geography: That the common method is the lecture and the position of student is a receiver, the researcher, by distributing two open questions to the participants of the courses from high school (20) female and male teachers of Geography in Najaf governorate including what teaching methods are used in your teaching of geography? The answer of 93.3% was the lecture presentation.

The teachers of Geography posited the students' weakness in Geography because of the students' reliance on memorization and inculcation in studying the subject, and the lack of interest of Geography teachers in learning about modern educational methods, approaches and models, and they also their weak knowledge of them, which derives them to continue using traditional methods. (Al-Shammari (A)), 2002: p. 8)

Based on what the researcher has seen in form of the common traditional methods in teaching Geography, which raises the need in him to conduct a study that cares for the modern models of teaching that those in charge of teaching Geography has strived for to cope with the huge scientific advancement in the Geographical information in one hand and the modern developments in the other hand, hence, the researcher has chosen one of the constructional theory models in order to

participate in transferring the process of learning of the students from the process of memorizing and inculcation to the activity in which the learner practices a fundamental role and based on what has been mentioned the researcher has formulated his problem as follows:

Does the Sample of Zahorik have effectiveness in the Achievements of the Fourth grade Students of Literary **b**ranch in Geography subject?

The Significance of the Study and its Need

The era in which we live is characterized by the scientific revolution and technology, which carries with it many changes in all aspects of life, perhaps the most prominent of which are: relying on the human mind more than before, and as a result of these changes it was necessary to respond to them through the development of the institutions of the society. Education in any society is the first tasked with attention and development to keep pace with the nature of the times and respond to transformations that include various areas of life. (Al-Hashimi and Attia, 2011: 17)

Therefore, the purpose that educational institutions and systems seek has changed. It is no longer simple and acceptable educational outcomes and outputs, but positive outcomes that indicate comprehensive and integrated growth in various aspects, cognitive, mental, psychological and social for the student. (Al-Ja'fara, 2011: 20-21)Specialists in the field of curricula and teaching methods focused in their research in the current century on different teaching methods and their benefits in educational outcomes desirable for students at different educational levels. (Al-Kharb and Abdel-Rahman, 2003: 22)Geography is one of the study subjects through which one can address human thought. For thousands of years, geographical knowledge has coincided with the appearance of man on the surface of the earth. Man has translated this knowledge into an independent science with the purpose of understanding and clarifying the image of the land on which he lives and the astronomy that surrounds it with the aim of harnessing this in the service of human life and the development of livelihoods, so can students' thinking about learning be stimulated through teaching Geography? (Al-Ahdal, 2009: 194).The purpose of teaching geography is not only to provide students with as much information and facts as possible about their homeland and the outside world, but the most important purpose lies in explaining the human relationship with his natural surroundings and showing the impact of natural factors on human life on the one hand and the extent of their impact on his environment by exploiting natural phenomena and harnessing it to serve man and advance societies (Jamil, 2001: 19)

The importance of geography and its teaching stems from the feedback it provides to students in the educational field. Geography provides students with a lot of information that is necessary for them in their daily and future lives. Therefore, it is worthwhile to pay attention to teaching strategies, in order to organize and

process information, in which the student is the focus of the process. Educational Teaching facts and information through action and direct experience, the results of learning are more effective and lasting than learning (Khawaldeh, 2003: 302)In recent years, several modern philosophies have emerged that are the basis for a number of methods used in teaching, and among these philosophies the constructivist philosophy, from which several diverse methods are derived, and upon which are based several diverse educational models concerned with the pattern of building knowledge and the steps of its acquisition, and constructivist thought appeared as a very strong model in building knowledge in the learners, and the constructive thought depends on the self-evaluation, and knowledge seeking is considered as an everlasting learning, the constructivist thought also contributes to building the scattered knowledge of the individual in a coherent cognitive template, that researchers need a coherent and clear thought, as the constructivist thought is not a set of abstract ideas about knowledge and human existence, but rather a realistic thought in good educational practices. (2009: 39 Gordon,) The constructivist approach has an important theory in the learning process, as it works to guide and develop new teaching methods, especially in science education. Building students' scientific concepts and knowledge is the goal of constructivism, which focuses on the learner and his or her activity during the learning process. It emphasizes meaningful learning based on understanding, through the active role and active participation of students in the activities they support (Baviskaret al, 2009: 541)

Thus, constructivist teaching models and methods vary according to the change in the perception of the nature of the learning and teaching process on the one hand, and the shift to the constructivist school that emphasizes the student’s building of his knowledge, understanding, and use on the other hand, and from models in constructivist theory in teaching the Zahorik model. (Afaneh and Al-Khaznadar, 2007: 239)Thus, the researcher can summarize the importance of the research from the theoretical point of view through the following:-

1. This research comes in response to global and local trends that call for the necessity of paying attention to teaching methods and models based on the constructivist theory.

2. This will present a proposed conception based on the application of modern teaching models that take care of the student that can be applied and generalized in other academic stages.

3. The research can be considered - within the limits of the researcher's knowledge - as one of the first studies that dealt with Zahorik's model of achievement in Geography in the preparatory stage, which highlights the importance of this research and the need to benefit from its results in improving the teaching of Geography teachers and transferring experience to their students.

4. The research may address a problem that most teachers of Geography face, which is to know the potential and impact of different ways of presenting knowledge, so that the student can acquire it and apply it in other situations.

5. The findings of this study may draw the attention of instructors in general, and geographers in particular, to the need of varying teaching methods and giving special emphasis to teaching students how to think, as well as how to reflect on their thinking.

6. This study provides a modern model based on the constructivist theory that may benefit from its discussion and use in teaching through training courses held by the general directorates in the governorates.

The Objective of the Study:

The present study target to identify the effectiveness of the Zahorik model in the achievement of the Geography subject among the student of the fourth grade literary branch**.**

THE HYPOTHESIS OF THE STUDY

To achieve the objective of the study the researcher has put the following hypothesis:

1- There is no statistically significant difference between the average of the marks of achievement of the students in the experimental group who study with the Zahorik model and the average of the marks of achievement of the students in the control group who study with the regular method at the 0.05 level between the two groups of students.

The Limits of the Study

The present study is confined to:

An academic year's fourth grade literary branch pupils in the preparatory and secondary morning schools that are part of the general directorate of education in Annajaf Province will be evaluated (2018-2019).

Topics from the geography textbook that will be taught to students in the fourth literary grade in Iraq during the academic year 2018-2019 are listed below.
The first academic term.

Determining of the Terms

The Effectiveness:-

Zeitoon (2001) as "the extent of the equivalence of the outcomes of the systems and its objectives"(Zeitoon,2001:25)

Kojak (2006) as " the degree or the extent of equivalence between the actual outcomes of the systems and the desired outcomes in a sense of comparing the results to the objectives"(Kojak,2006:230)

Alkhlefat (2010) as " the ability to achieve the goal and arriving at the results that were already determined"

He defined it procedurally as: the amount of effectiveness caused by the John Zahorik model in the achievement of Geography for fourth-grade literary students, and that effectiveness can be measured through the average marks of the two research groups (control and experimental) in the achievement test in Geography.

The Model:-

Qatami et al.,2000
It is "means, tools and teaching schemes that represent the theory in the form of steps and classroom practices" (Qatami et al., 2000, p. 17).
Al-Adwan et al., 2011
It is "a schematic representation in which events, processes, and procedures are housed in a logical, understandable and interpretable manner" (Al-Adwan et al., 2011, p. 163).
The researcher defined it procedurally as a set of classroom steps and practices, which includes a set of tools and schemes that the researcher uses to achieve the objectives of his research.

The Zahorik model: It was defined by:

Yassin and Zainab, (2012) as "a teaching model based on the constructivist theory that consists of five stages and (activating previous information, acquiring information, understanding information, using information and thinking about skills" (Yasin and Zainab, 2012).Al-Ajrash (2013) described it as "one of the models of the constructivist theory. This model consists of five stages, which are, in order, (activating information, acquiring information, understanding information, using information, thinking about information)."Zayer et al. (2001) defined it as "a structural model that sees that knowledge is not a set of facts, concepts or laws that are waiting to be discovered, but rather is a process of building and creating knowledge, that is, it is an attempt by learners to provide meaning to their experiences" (Zayer et al., 2014: 423)

He defended it as procedurally: a structural model used by the researcher in teaching the vocabulary of the geography book, the last three chapters, for the fourth literary grade students.

(experimental group), and it includes five first steps, namely (1- activating information, 2- acquiring information, 3- understanding information, 4- using

information, 5- thinking about information) and according to the teaching plans prepared by the researcher, according to this purpose.

Achievment defined by the following:

(Nasrallah, 2004): A level of achievement, competence, or performance in education and school work that the student reaches during the educational process in which a group of students and the teacher participate, and it is assessed by teachers orally or through the use of various tests designated for that (Nasrallah, 2004: p. 401).(Alderman, 2007): Proving the ability to accomplish what has been gained from the educational experiences that were developed for it (Alderman, 2007: p101).(Hussain, 2011): The knowledge that the student obtains through a program or curriculum for a course in order to adapt it to the educational milieu. As well as preparing it to adapt to the study environment in general (Hussain, 2011: pg. 176).

Procedural Definition of Achievement*:*

the amount of what the fourth literary student achieves and obtains from the total grades during the study of a unit of study in the subject of geography in the dimensional test, and it is measured by the test prepared by the researcher.

Procedural definition of Geography*:*

a set of information, facts and skills included in the geography book prepared by the Ministry of Education for the fourth literary grade and includes chapters.

Theoretical framework and Literature Review

A Theoretical Framework:

Constructivist theory:

At the end of the last century, interest in education increased, as they are a complex phenomenon of factors and interactions of mutual impact and influence in the process of the educational process. Education is not a one-dimensional behavior, but rather an activity that includes many variables that affect the student's behavior. And then it is reflected on the lives of human societies, and we are in an era of competitive globalization, unprecedented human and material mobility and technology that has invaded the minds of our children and open horizons for communication. It has become necessary to work on finding what is best for educating the children of the current generation in line with the requirements of the times. Therefore, educators began to move towards meaningful learning, which is concerned with the student's prior knowledge, his motivation to learn, his thinking patterns, how to develop them, the methods of acquiring scientific concepts, analyzing his ability to pay attention and his ability to remember,

measuring the speed of forgetting and addressing the dispersal of information. In view of the growing interest in the educational process, many learning theories emerged that were concerned with explaining the learning mechanism and the cognitive construction of students. Perhaps the most important of these theories is the constructivist theory that has its roots in the depths of history., which is related to Socrates' ideas about education and building knowledge, but it crystallized in its current form after a number of thinkers and scholars reformatted and reconstructed it in a new formula, such as Vico, John Dewey and Jean Piaget (Zeitoon and Zeitoon, 15-17: 1995)

The constructivist theory occupies a distinct position among other learning theories that have provided a clear conception of the learning process and appropriate teaching methods in the field of teaching. -107)...

1- Teaching for the sake of understanding, and adopting the student as a focus of the educational process, that is, the student is an active learner, and the teacher is a coach and a leader of the learning process.

2- Learning is a continuous, active and purposeful construction process, in which meanings are formed in the student by an active psychological process that requires mental effort, as the student builds his knowledge by himself.

3- Using the mind to form new experiences, and work on modifying previous experiences and adding new information by reorganizing.

4- Learning becomes meaningful when the knowledge of the students' activity is built up through the integration of information.
5- Never neglect the performance behavior, and paying attention to the alternative evaluation represented in evaluating performance, works and achievements. (Qatami, 2013, 52).

The Teacher's Job from a Constructivist Perspective:

1. Presentation: The one explains and presents the activities to the group of students in order to encourage direct experiences for them.

2. Monitoring a person who works to identify students' ideas and interacts with them appropriately. Question-and-problem asker: poses questions and raises educational problems in order to form ideas and build concepts.

3. Organizing: organizes the environment according to the students' opinions, allowing them to freely explore.

4. Coordination of Public Relations: Encourages cooperation and develops public relations within the classroom.

5. Learning Documenter: he documents students' learning and measures the development of their skills. (Al-Huwaidi, 2005, 305-306)

The role of the student in the constructivist perspective:

1- An active initiator, vigilant, responsible, negotiator and hypothesis-maker.
1- He controls his learning, and exercises his own organization.
2- Puts his experiences in contexts and expresses his attitude towards any experience or knowledge.
3- Develops active processes of understanding knowledge and is a constructive, collaborative experience.
4- He learns the initial concepts to build a comprehensive picture between the parts of the subject.
5- He integrates with the educational task and is not separate from it and adopts it.
6- He trains on autonomy in building new experience.
7- Interactive, self-disciplined, relying on his mental processes (Qatami, 2013, 52).

Examples of constructivist theory

Many teaching models have emerged from the constructivist theory, and these are some of the most important models:

1-The conceptual change model, which is the Posner model (1982)
2-Driver's Model (1986).
3-Cognitive Discipleship Model (1989)
4- The problem-centric Wetley model (1991)
5- The obstetric model (1997)
6- The Deut model (1991).
7- Zahorik model. (Al-Qatrawy, 2010, 22).

The researcher chose the Zahorik model, as a result of its distinctive features and properties.
Zahorik model:

Perhaps John Zahorek is a constructivist theorist, a professor of curricula and teaching methods at the University of Wisconsin-Milwaukee in the United States of America, founded in 1885 AD. Knowledge is a process of building and forming of facts. Concepts, laws and principles presented by students as descriptions of their experiences (Yassin and Raji, 2012: 112).

Zahorik's Assumptions about Knowledge:

1- Knowledge is not independent in its existence from the student.
2 -The student relies on his previous experience in building information.

3 -Everything we want to know we make an effort to reach it.
4 -Knowledge is not fixed. Information is always built and new experiences are acquired through the student's pursuit of learning.
5 - Knowledge grows during its presentation.
6 -By discussion, understanding develops and becomes more profound (Al-Najdi et al., 417: 2005).

The Steps of the Zahorik Model are:

1- Activation of information: Students' prior knowledge is taken into account when starting to learn a new topic, because it is a starting point for new information, and the teacher must consult the students' previous experiences before providing new knowledge.
2- Acquisition of information: knowledge is given as a whole and then the parts. For example, the general rule is given and then its components.
3- Understanding information: discovers the nuances of new concepts in a comprehensive way, and the teacher helps students by introducing activities and managing discussions among them.
4- Use of information: it refines information and structural cognitive structures, and provides sufficient opportunity for students to apply their knowledge in educational situations, classroom dialogue, or educational activity.
5- Thinking about information: Employing cognitive information through students' thinking in writing a small research project or conducting a class discussion seminar, or any other cognitive activity, classroom or non-classroom, in order to apply what they learned in fixed knowledge (Zayer et al.: 2014:424).

LITERATURE REVIEW

Studies dealing with the Zahorik model:

Al-Baydani Study 2015:

The purpose of the study was to determine the impact of the models of Zahorik and Daniel on the accomplishment of third-grade students in middle school physics as well as their cognitive motivation in the classroom. The study was conducted in Iraq, and the sample of the research amounted to (81) students distributed into three groups: the first experimental (26) and the second experimental (28) students and control (27) students. It took the researcher many hours to construct a dimensional exam with (50) questions of the multiple-choice variety. He employed a number of statistical procedures, including one-way analysis of variance, Pearson correlation coefficient, Spearmanen-Braden equation, and the alpha treatment equation. Kardinach and the Kewder-Richardson equation 20, It also concluded that there are no statistically significant differences between the first and second experimental group, and the existence of a statistically significant difference between the first experimental group and the control group in favor of the first, and the existence of a statistically significant

difference between the second and control group in favor of the second (Al-Baydani, 97-1:2015).

Study of Wassas and Al-Abed, 2016

According to the study's objectives, it was determined if the Zahorek model was successful in developing listening and speaking abilities when seen in the context of motivation to learn Arabic. The research was carried out in Jordan. The sample of the study reached to (52) students distribute on two groups, one is an experimental and other is control. The researcher has built a criterion to know the motivation for learning and acquisition of Listening and conversation skills consists of (30) test items. The researcher used many statistical methods, including the analysis of the accompanying binary variance and used the ETA square. Following the analysis, it was discovered that there were statistically significant differences between the experimental and control groups in the acquisition of listening and speaking abilities in the Arabic language.

Kataa Study, 2016

The study aimed to identify the effect of the Zahwak model in developing the inferential thinking skills of second-grade students in middle school in the subject of history, the study was conducted in Iraq, The research sample amounted to (61) students, distributed into two groups, experimental and control. The researcher prepared a test consisting of (24) items of the type of multiple test. And he used the statistical package for the social sciences, spss 10, both in conducting his research and analyzing the results. (Kataa, 2016, X-Z)

Indications and Connotations derived from previous studies:

In light of what has been presented from previous studies, the similarities and differences between them and the current study can be revealed in terms of:

OBJECTIVES:
Al-Baydani's study aimed to know the effect of the Zahorik model in the achievement of physics, and the study of Wassas and Al-Abed aimed at knowing the effect of the Zahorik model in acquiring the skills of listening and speaking in the Arabic language. To know the effect of the Zahorik model in the collection of Geography.

Study Year:

The years in which previous studies were conducted ranged between (2015-2016), the Al-Baydani study was conducted in (2015), the study of Al-Wasas and Al-Abed was conducted in (2016), the Kataa study was conducted in (2016), and the current study was conducted in (2019).

Place of the Study:

The previous studies varied in terms of where the study was conducted. The study of Kati' and Al-Baydani was conducted in Iraq, while the study of Al-Wasas and Al-Abed was conducted in Jordan. As for the current study, it was conducted in Iraq.

Sample Size:

Previous studies differed in the size of the sample, as the sample size was in the Al-Kataa study (61), in the Al-Baydani study (81), in the Al-Wasas and Al-Abed study (52), while the size of the current study was (60).

Statistical Means:

Previous studies ranged in the use of statistical methods, some of them used one-to-one or two-way analysis of variance, some used the following choice test for the two independent samples, some used the Coddrichardson equation and Schiff's method for dimensional comparisons, and some used chi-square as well as using the previous means, the Spearman-Brown equation and the alpha-Cronbach equation, the study of Al-Wasas and Al-Abed used the associated binary variance analysis and used the Eta square, and the statistical package was used in the spss social blaming study, which is thus consistent with the current study that was used by the statistical package spss as well.

RESULTS:

The results showed the effect of the Zahorik model in developing deductive thinking in Katie's study and its effect on achievement in the study of Al-Baydani and its effect on acquiring the skill of listening and conversation in the study of Al-Wasas and Al-Abed, and thus Al-Baydani's study agrees with the current study and raises the level of achievement as well.

Research Methodology and Its Procedures

There is a description of the methods followed by the researcher in order to attain the research's aim in this chapter, and the following is an explanation of the procedures:

RESEARCH METHODOLOGY:

The experimental technique was chosen by the researcher since it is the most suited method for the current study processes.

Second: Experimental Design

Experimental design is intended to develop an experimental plan through which research hypotheses are achieved or rejected, and the extent of the change that

occurs to one of the factors because of a change in the intensity and extent of an influence, while stabilizing other variables or factors. (Abd al-Rahman and Zankaneh, 2007: 477)Therefore, the researcher adopted an experimental design with partial control. It has two experimental and control groups, the Dimensional-test, and it is appropriate to the conditions of the current research and as shown in Figure (1).

Group	**Independent Variable**	**The Dimensional Test**	**The Dependent Variable**
Experimental	**Zahorick Model**	**The achievement Test**	**achievement**
Control	_____		

Figure (1) the Experimental Design for Research

The Community and Sample of the Study

Determining the Community:

In this context, it refers to all individuals or things that exhibit certain observable characteristics, and the only test for membership in a society is the presence of a common characteristic among its members, and the observable characteristics of society are referred to as "the features of society" (Abu Haweij, 2002:44).The present research community is represented by students of preparatory day schools in the General Directorate of Education in Annajaffor the academic year (2018-2019).By random selection, Al-Kindi Secondary School for Boys became a field for research.

Selection of the sample

The research sample means a partial group of the community on which the study is being conducted, chosen by the researcher to conduct his study according to special rules and be representative of that community. (Abu Allam and Sharif, 1989: 82-83) The researcher visited the concerned school, which consists of two sections for the fourth literary grade, and by random drawing method, the group (B) was chosen as the experimental group that will be taught using the Zahorik model and the number of its students reached (33) students, and the group (A) is the control group that will study in the traditional way and the number of its students was (31) students. Failing students were excluded so that the research sample consisted of (63) students, table (1).

Table (1): Preparing the students of the experimental and control groups before and after exclusion

Group	Section	Number of the Students before Exclusion	Number of the Filed students	Number of the Students after the Exclusion
Control	**B**	**33**	**1**	**32**
Experimental	**A**	**31**	**0**	**31**
Total		**64**	**1**	**63**

The Equivalence Between the Two Groups of the Study

A thorough attempt has been made before conducting the experiment to achieve parity between members of the two research groups in several characteristics that may have an impact on the outcome of the study, namely: age, gender, and marital status:

a - The chronological age of the students is calculated in months.
b- Intelligence test.
d - the educational attainment of the parents.

The data of those variables were obtained directly from the students, and by reference to the school cards.

Students' chronological Age in Months

The ages of the research sample students were calculated up to (4/10/2018), which is the day of the experiment, and for the purpose of verifying the equivalence of the two research groups in the chronological age of the students in months, the t-test for two independent samples was statistically used, at the level of significance (0.05). And the degree of freedom (61) and the arithmetic mean of ages was extracted, where the arithmetic mean of the experimental group reached (200.5) and the arithmetic mean of the control group (199.9), and Table (2) shows that.

Table No. (2) The results of the T-test for the chronological age of the students of the two research groups, calculated in months

Groups	Number of the Sample	Arithmetic	variance	degree of freedom	Calculated T-value	Tabular T-value	Sig. at 0.05. level
Experimental	32	200,5	93,66	61	0,22	2	No Significance
Control	31	199,9	143,5				

Given that the calculated t-value (0.22) is less than the tabular t-value (2), it is clear that there is no statistically significant difference in chronological age calculated by month between the two groups in this variable. This is due to the fact that the calculated t-value (0.22) is less than the tabular t-value (2), which means that both groups are equivalent in this variable.

IQ Test for Students:

The researcher applied the Raven test for successive matrices on the students of the two research groups because of its suitability to the students the research sample. The average score of the students in the experimental group was (22.75), and the average score of the students in the control group was (23.7). And when using the t-test for two independent samples to find out the significance of the statistical differences, as in Table (3) It turns out that the difference is not statistically significant at the level (0.05), as the calculated t-value (0.59) was smaller than the tabular t-value (2), and with a degree of freedom (61) and this indicates that the experimental and control groups are statistically equivalent in IQ test.

Table (3) the results of the T-test scores of the students of the two research groups in the intelligence test

Groups	Number of the Sample	Arithmetic	variance	degree of freedom	Calculated T-value	Tabular T-value	Sig.at 0.05. level
Experimental	32	22,75	72,93	61	0,59	2	No Significance
Control	31	23,7	83,5				

The Educational Achievements of the Parents

Table (4) shows that the experimental and control groups are statistically equivalent in the frequencies of the father's school level, as the results of the data using chi-square showed that the calculated (Ca2) value (0.34) is smaller than the tabular value (5.991) at the level of significance (0.05).), with a degree of freedom (2) and after the cells (illiterate, primary), (intermediate and middle), and (institute and college) were merged because the expected was less than (5).

Adjustment Procedures

The researcher was keen to control what would affect the dependent variable, which is the achievement, and thus affect the credibility of the research results. Therefore, before starting the experiment, the researcher took the following steps:

Internal Validation of the Experimental Design

Although the researcher made equivalencies between the two research groups, the researcher also tried to control or neutralize the extraneous factors that could affect the results of the experiment. The following is a presentation of these variables:

- Adjusting the conditions of the experiment and preventing the associated accidents, controlling the processes related to maturity, controlling the measurement tools, determining the leavers during the experiment (experimental extinction), the impact of experimental procedures, the study subject: the time period taught: experimental waste, measuring tools, the distribution of teaching classes, physical conditions.

Table (4) Frequencies of the academic level of the parents of the students of the two research groups

Groups	Size of the sample	Illiterate	Primary	Intermediate	Preparatory	Diploma	Bachelor	Degree of Freedom	CA Value		Sig(0.05)
									Calculated	Tabular	
Experimental	32	1	13	7	4	4	3				No Sig.
control	31	1	11	9	4	3	3	2	0,34	5,991	

Table (5) Frequencies of the academic level of the mothers of the students of the two research groups

Groups	Size of the sample	Illiterate	Primary	Intermediate	Preparatory	Diploma	Bachelor	Degree of Freedom	CA Value		Sig(0.05)
									Calculated	Tabular	
Experimental	32	3	12	8	3	4	2				No Sig.
Control	31	4	10	6	5	3	3	2	0,14	5,991	

***Academic Level of Mothers**:*

It appears from Table (5) that the experimental and control groups are statistically equivalent in the frequencies of the academic level of the mother, as the results of the data using the chi-square showed that the calculated (Ca2) value (0.14) is smaller than the tabular value (Ca2) (5.991) at the level of significance (0.05), and with a degree of freedom (2) after the cells (illiterate, primary), (intermediate and middle) and (institute and college) were combined because the expected was less than (5).

Preparing Research Requirements

Selecting the scientific material:

The scientific material for the current research was determined, which included the first three chapters of the Geography textbook for the fourth literary grade of the academic year (2018-2019).

Determining and Formulating Cognitive Behavioral Objectives

Behavioral purpose is defined as "a sentence, phrase, or formula that describes the change that is required to be made in the student's behavior as a result of the educational experience, and it can be observed, measured and evaluated (Zeitoon, 2005: 51).In light of the general objectives of teaching geography in the preparatory stage, (154) behavioral objectives were formulated, which were classified according to the three levels of Bloom's classification in the cognitive domain, which are (remembering, understanding, and applying). It was presented to a group of experts specialized in the field of curricula, teaching methods, measurement and evaluation to express their views on its clarity and accuracy of formulation and the extent to which it includes the content of the scientific material and to determine the level measured by each paragraph as agreed upon by all experts with the addition of amendments to the wording for some behavioral purposes and adjusting the level that It is measured and all the observations of the distinguished experts have been taken into account, noting that the observations did not require deletion, so it became in its final form consisting of (154) behavioral objectives distributed according to the educational content and Bloom's levels of knowledge.

Preparing Daily Teaching Plans

The teaching plans provide the opportunity for the teacher to analyze the study material and derive the general principles and foundations for it, and enable him to extract the instructions, skills and directions included in the study material. It also helps the teacher to develop an integrated preconception of the educational situation in its various dimensions in terms of the students' situation, their achievement levels and their previous experiences. (Al-Shammari, 2004: 10) Therefore, the researcher prepared (21) teaching plans for each group of the control and experimental research groups, i.e. a total of (42) plans for the two groups that include the subject to be taught (classes: first / second / third) from the geography book for the fourth grade of middle school according to the specific behavioral objectives in the light of teaching material. Two models of the teaching plans of the two research groups, one with the Zahorik model and the other by the traditional method, were presented to a group of experts specializing in curricula and teaching methods to explore their opinions on the suitability of these plans to the content of the course material and its behavioral purposes.

Setting the Search Tools

First: Achievement Test:

Achievement tests are considered one of the most important tools for collecting information required for the educational evaluation process (Al-Ghareeb, 1985: 81). Therefore, the researcher built a test to measure the "Academic achievement" of the fourth-grade literary students in the subject of Geography, and the following are the steps of building and preparing the test:

Preparation of the Table of Descriptions (Optional map)

Preparing the table of descriptions is one of the main procedures in preparing achievement tests to be characterized by objectivity and comprehensiveness. The specification table takes into account both the academic content and the behavioral objectives that were identified and formulated in advance, and this enables us to distribute the test items to the study topics for all the items of the academic content and according to the behavioral objectives. (Dembo, 1971: 290)
Therefore, the researcher prepared a descriptions table - a test map - that included the topics studied in this experiment, in light of the behavioral objectives of the three levels in the cognitive domain of Bloom's classification and in light of the test map.

Determining the Type of the Items in the Achievement Test:

To determine the type of test items, the researcher considered the type of multiple choice, because this type of tests is one of the best types of objective tests at all, because it is characterized by flexibility in measuring different levels of goals according to Bloom’s classification, and this type of choices is characterized by credibility, stability and comprehensiveness of the study material, as well The answer to it is specific and short and does not require a long time, as it is quick to answer. (Al-Dulaimi, and Al-Mahdawi, 2005: 62)Therefore, the researcher prepared an achievement test consisting of (60) multiple-choice items distributed according to (test map) and to ensure the integrity of the formulation of the test items, it was presented to a number of experts and specialists in the field of measurement, evaluation and teaching methods Attachment (2), and in light of These opinions and observations have been modified, changed and reformulated some of the alternatives, thus making the test in its final form.

The Validity of the Test

It means examining the content of the test, a careful and systematic examination to determine if it includes a representative sample of the field of behavior that it measures (Abu Hatab, et al., 1987: 134). To verify the validity of the test, the following procedures were followed.

Apparent Validity:

The means of verifying the apparent validity is to inform the specialists of the extent of the representation of the items to be measured (Ebel, 1972:55). In light of the procedures, where the researcher presented the test with its paragraphs to a group of experts and specialists in curricula, teaching methods and measurement to judge the validity of the paragraphs, their suitability for the objectives and the soundness of their formulation. According to their views, some paragraphs and some alternatives were amended and paragraphs were deleted because they did not obtain the required approval.

The Validity of the Content

It means the design of the test so that it covers all parts of the subject that the students studied in a particular class, and also covers the objectives of teaching the subject that the students should achieve. (Al-dhahir et al., 1999: 134) The researcher has prepared a table of descriptions and in light of the previous procedures, the achievement test is ready for application.

Applying the Achievement Test to the Second Survey Sample

To ensure the psychometric properties of the test, the researcher applied it to a second survey sample consisting of (100) students at Nebuchadnezzar High School for Boys. After correcting the answers, the researcher arranged the scores in descending order from the highest to the lowest score.

• Statistical Analysis of the Achievement Test Items

Item Difficulty Factor

The coefficient of difficulty means the ratio of students who answered wrongly item to the total number of students (Oudah, 1985: 289) The difficulty of the objective items ranged between (0.39-0.61)- so the items are considered acceptable in light of the difficulty criterion specified in the measurement and evaluation literature, especially in achievement tests, which is between (0.20-0.80 (this shows, but the paragraphs The degree of its difficulty was (0.56 -0.57) and it is considered acceptable within the difficulty criterion.

Item Discrimination Coefficient

As for Eble, he specified a ratio of (0.30) or more to make the item discrimination strength good (Eble, 1972: p.406), and the discrimination coefficients for the achievement test for the objective test ranged between (0.37-0.80).

The Effectiveness of the Wrong Alternatives

Using a mathematical formula to calculate the effectiveness of each incorrect alternative choice, the researcher discovered that the coefficients of effectiveness of all incorrect alternatives choices are negative, indicating that these alternatives attracted more responses from students in the lower group than responses from students in the higher group. As a result, it was determined that all of the alternate items would be retained.

Test stability

Calculating the stability of the test, so Pearson's correlation coefficient was extracted and found to be equal to (0.73), corrected by the Spearman-Brown equation and found to be equal to (0.84). (Al Nabhan, 2004, 240)

Application of the Experiment:

1. The experiment was implemented at the beginning of the first semester of the academic year (2018-2019) on 4/10/2019 and ended on 22/12/2019 according to the weekly class schedule.
2. After completing the teaching of all the subjects, the achievement test was applied to the two research groups (experimental and control), on Wednesday, 21/12/2019, and the students were informed of its date one week before the scheduled date. The researcher supervised the process of applying the test with the help of geography teachers in the school, and the students were asked to read the instructions carefully before answering the test items. Then the students' answers to the test were corrected according to the model answers.

Statistical Means

The researcher used in his research procedures and analysis of his results:

T-test for two independent samples: used to verify:

A- Equivalence of the experimental and control groups in a number of variables (the chronological age of the students, previous knowledge test scores, IQ. test scores, pre-cognitive thinking skills test, and the discriminatory power of the scale items)

1. In order to determine the significance of statistical discrepancies between the two study groups in the statistical equivalence and analysis of their data, the t-test for two independent samples was used.

2. Pearson Correlation Coefficient: It was used to find the stability of the correction for the essay items, and it was also used to calculate the correlation coefficient between the degree of the item and the total degree of the thinking

skills scale, and the correlation of the item with the domain to which it belongs, and the correlation of the domain with the total score of the scale. It was used to find the stability (external consistency) of the scale.

The Factor of difficulty of the Item:

3. The difficulty coefficient of the objective item: The equation for calculating the coefficient of difficulty of the objective items was used, whose answers are (0,1) in the achievement test.

4. B- Difficulty factor of the essay item: The formula for calculating the difficulty factor of paragraphs was used in the achievement test.

5. The Formula of Items Discrimination

6. The discrimination equation for the objective items: It was used in calculating the discriminatory power of the objective items whose answers give (0,1) in the achievement test.

7. The alternatives effectiveness equation: It was used to calculate the effectiveness of the alternatives for the objective items of the multiple-choice type in the achievement test.

8. Chi-square test (Ca 2): It was used to match the two research groups in the level of academic achievement of the father and mother.

9. Spearman-Brown equation: it was used to correct the stability coefficient after extracting it with the Pearson correlation coefficient.

RESEARCH RESULTS:

After the end of the experiment of this research according to the procedures presented in the third chapter, the researcher presents in this chapter the results that resulted from the research according to his goal and hypotheses, and then interpreting those results, as follows:

Displaying The Results

The research hypothesis states that:

(There are no statistically significant differences between the average scores of the experimental group students and the average scores of the control group students who study Geography using the Zahorik model).

To verify the hypothesis of the research, the researcher extracted the arithmetic mean and variance of the scores of the students in the experimental group, and the arithmetic mean and variance of the scores of the students in the control group in the achievement test. The average scores of the students of the control group who

studied in the traditional way amounted to (53,70) with a variation of (75,27), and using the t-test for two independent samples (t-test) for the purpose of knowing the significance of the difference between the two averages, it appeared that the difference was statistically significant, as the calculated t-value was (10.90), which is greater than the T-table value of (2) at the significance level (05, 0) and the degree of freedom (61), and thus the first hypothesis is rejected.

Interpretation and Discussion of Results

In light of the previously mentioned results, it is clear that there is a statistically significant difference at the level of significance (0.05) in favor of the experimental group, as the students of the experimental group who studied with the Zahorik model outperformed the students of the control group who study according to the traditional method in academic achievement.

This superiority is attributed to several reasons, including*:*

1- The Zahorik model transfers students from the role of the recipient to an active role, which is the clarified, summarized, argumentative, and predictor, and these roles help students in meeting their educational needs and demonstrating their abilities.

2- The Zahorik model is more effective than the traditional method because it leads the students to a set of precise and organized steps, which resulted in achieving high levels of knowledge.

3- The Zahorek model increases self-confidence by assuming responsibility in teaching each other students, and this in turn increases the effectiveness of learning. It gives students the opportunity to build their knowledge through positive interaction with the subject's school, which may interest students and advance their level of achievement of the subject to the maximum of their abilities, capabilities and ability.

Table (14) The arithmetic mean, variance and T-value (calculated and tabular) for the scores of the students of the two research groups in the achievement test

Groups	**Number of the Sample**	**Arithmetic**	**variance**	**degree of freedom**	**Calculated T-value**	**Tabular T-value**	**Sig.at 0.05. level**
Experimental	**32**	**76,03**	**56,99**	**61**	**10,90**	**2**	**Statistical Significance at (0,0.5)**
Control	**31**	**53,70**	**75,27**				

4. The Zahorik model works to increase learning for students in a better and deeper way through its sequential and successive steps, as it places the subject in several areas first in the field of questioning, then clarification, summarization and prediction.

5. Zahorik transferred the teacher's model from the role of the prompter to the role of the supervisor and the waver, which encouraged the students to feel that they are the source of information and supervision, which led to an increase in the students' self-confidence through active participation in the classroom by asking questions, clarifying, predicting and summarizing.

6. Zahorik's model increases students' metacognitive thinking skills by training them to know knowledge, organize knowledge and process knowledge, and here it is easier for students to understand information easier and faster.

CONCLUSIONS:

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

The effectiveness of the generative learning Zahorik model in raising the level of academic achievement compared to the traditional method.

1- The degree of the effect size is high for the Zahorik model in raising the level of academic achievement in the subject of Geography for the fifth literary grade.

2- The effect of each of the Zahorik model in raising the level of academic achievement is equal.

3- Zahorik's model may lead to students sensing the importance of the study subjects and their relevance to their lives that helped them overcome the difficulty and dryness of the material, and their enjoyment of studying the subject, and their continuous benefit with their awareness of the importance and value of Geography.

4- The Zahorik model may contribute to raising the spirit of cooperation, teamwork, competition, order, speed of performance, and avoiding negative behaviors among students.

5- Zahorik's model works on students' independence during the learning process, their self-reliance in acquiring knowledge, and interacting with them directly through conscious learning and reading activities, which provided an appropriate atmosphere to reach meaningful learning based on understanding.

6- Teaching the Zahorik model helped students obtain the same information from several scientific sources in addition to the teacher and the textbook, which may lead to an increase in students' demand and motivation to learn geography more and turn them into young scientists seeking knowledge.

RECOMMENDATIONS

1. Work on the training of Geography teachers by the training directorates in the governorates to use the modern Zahorik model in teaching based on the ideas of constructivist theory, including the Zahorik model.

2. Adopting each of the Zahorik model when preparing curricula or a guide for teachers of geography.

3. Qualifying students of faculties of education (specializing in geography) the Zahorik model and including their preparation programs to allow the student to identify their style and train him on how to design, build and teach units according to the Zahorik model.

4. The necessity of organizing workshops for the supervisors and teachers of Geography under the supervision of qualified trainers from university teaching, and training them on the preparation, use and model of Zahorik.

SUGGESTIONS

In light of the objectives of this study and the results it reached, and to complement it, the researcher suggests conducting more research and studies in the following areas:

Investigating the impact of each of the Zahorik model in teaching Geography on the development of thinking, such as critical thinking, innovative thinking, and problem-solving skills.

The effectiveness of the Zahorik model in the achievement of Geography in other academic subjects and the development of their attitudes towards the subject.

The effectiveness of the Zahorik model in the achievement of Geography and the development of geographical thinking and social skills among middle school students.

The effectiveness of the Zahorik model in teaching Geography in developing thinking and the level of achievement and comparing it with other metacognitive strategies.

REFERENCES

Ababneh, Dirar, (2006) Modern Contemporary Standards of Geography", first edition, Amman, Jordan, International Book House.

Abdul Rahman, Anwar Hussein, Zangana, Adnan Haqqi Shihab (2007), Methodological Patterns and their Applications in the Humanities and Applied Sciences, 1st Edition, Al Wefaq Press, Baghdad.

Abu Jader, Saleh Muhammad, 2007, Teaching Thinking, Concepts and Classification, Dar Al Masirah for Publishing and Distribution, Amman, Jordan.

Abu Hatab, Fouad Abdel-Latif, and Osman, Sayed Ahmed (1977), Thinking Psychological Studies, 2nd Edition, Anglo-Egyptian Library, Cairo.

Abu Hawij, Marwan (2002): Contemporary Educational Research, 1st Edition, Dar Al Yazouri Scientific for Publishing and Distribution, Amman.

Abu Allam, Raja and Sharif, Nadia (1989). Direct Differences and their Educational Applications, Kuwait University: Dar Al-Qalam.

Afana, Ismail Ezzo and Al-Khaznadar, Naila Najib, 2007, Classroom Teaching with Multiple Intelligences, 1st Edition, Dar Al-Masirah, Amman.

Attia, Mohsen Ali (2008). Modern Strategies in Effective Teaching, 1st Edition, Dar Safaa for Publishing and Distribution, Amman, Jordan.

Al-Abadi, Raed Khalil, (2006) School Tests, 1st Edition, Arab Society Library, Amman, Jordan.

Al-Adwan, Zaid Salim, and Muhammad Fouad Al-Hawamdeh, (2001). Teaching Design Between Theory and Classification, 1st Floor, Dar Al-Masirahs for Publishing and Distribution, Amman, Jordan.

Al-Ajanish, Haider Hatem Faleh, (2013) Contemporary Strategies and Methods in Teaching History, 1st Edition, Dar Al-Radwan for Publishing and Distribution, Amman, Jordan.

Al-Baydani, Walid Khaled Abd (2015). Exemplary Effect of Zahorik and Daniel on

the Achievement of the Third Intermediate Grade Students in Physics and Their Cognitive Motivation, (PhD thesis) unpublished, College of Education for Pure Sciences - Ibn Al-Haytham, University of Baghdad.

Alderman, M. Kay, (2007), Motivation for Achievement: Possibilities for Teaching

and Learning, second Edition.

Al-dhahir, Zakaria Muhammad and others (1999), Principles of Measurement and Evaluation in Education, Amman, Jordan, Library of Culture, Publishing and Distribution.

Al-Dulaimi, Ihsan Aliwi and Al-Mahdawi, Adnan Mahmoud (2005), Measurement and Evaluation in the Educational Process, 2nd Edition, House of Books and Documents, Baghdad.

Al-Dulaimi, Ihsan Aliwi and Adnan Mahmoud Al-Mahdawi (2005): Measurement and Evaluation in the Educational Process, 2nd Edition, Ahmed Al-Dabbagh Library for Printing, Baghdad, Iraq.

Al-Dulaimi, Khalaf, (2007), Modern Trends in Geographical Scientific Research, 1st Edition, Dar Safaa Publishing, Amman, Jordan.

Al-Jami Journal, Center for Development, Teaching Methods and University Training, No. 1, University of Baghdad.

Alkhelifat, IssamAtallah Hussein, 2010, Determining Teaching Needs to Ensure Effectiveness of Applied Programs, Dar Al-Safa Publishing and Distribution, Amman, Jordan.

Al-Khawalda, Salem Abdel-Aziz (2003 AD), The Effectiveness of the Constructive Learning Model in the Academic Achievement of First Year Secondary Students in Biology and Students' Attitudes towards it, an unpublished PhD thesis, College of Graduate Studies, Jordan: Amman Arab University for Graduate Studies.

Alghareeb, Ramzia (1985). Psychological and Educational Assessment and Measurement, Anglo-Egyptian Library, Egypt Qatami, Youssef (2013). Cognitive Learning and Teaching Strategies, 1st Floor, Dar Al Masirah, Amman.

Al-Najdi, Ahmed and others (2005). The Directions of his Spearheading Science Education in the Light of International Standards and the Development of Thinking and Constructivist Theory, 1st edition, Dar Al-Fikr Al-Arabi, Cairo.

Al-Saadi, Abbas Fadel, (2002), The Basics of Human Geography, Al-Warraq Publishing and Distribution Corporation, Amman, Jordan.

Al-Shammari, Hana Khudair (2004), The Basic Elements of Successful Teaching,

Baviskar, Sandhya N.; Hartle, R. Todd; Whitney, Tiffany (2009), Essential Criteria to Characterize Constructivist Teaching: Derived from a Review of the Literature and Applied to Five Constructivist" International Journal of Science Education, v31 n4 p541-550 Mar 2009.

Dembo, M. H., (1971**):** Teaching for Learning, Cood Year Publication Company. California.

Hussein, Abdel Moneim Khairy, (2011), Measurement and Evaluation, Academic Book Center, 1st floor, Amman, Jordan.

Kojak, Kawthar Hussein, 2006, Modern Trends in Curricula and Teaching Methods, 3rd Edition, World of Books for Publishing and Distribution, Cairo.

Mahmoud, Salah El-Din Arafa, 2005, Teaching and learning geography in the information age, "Objectives, content, methods, evaluation, 1st Floor, World of Books, Cairo, Egypt.

Nasrallah, Omar Abdel Rahim, 2004, Low level of Academic Achievement and Achievement, Its Causes and Treatment, 1st Floor, Dar Wael, Amman, Jordan.

Oudah, Ahmed Suleiman (1985), Measurement and Evaluation in the Teaching Process, 1st Edition, National Press, Jordan.

Wasas Amal Ali and Adnan Salim Al-Abed, (2016): The Effectiveness of the Zahorik Model in Acquiring Listening and Speaking Skills in light of the Motivation Towards Learning Arabic Among Seventh Grade Students in Jordan, Journal of Educational Studies, Volume 11, Number 2, Sultan Qaboos University.

Yassin, Wathiq Abdul Karim, and Raji, Zainab Hamza (2012). The Constructive Approach, Models and Strategies in Teaching Scientific Concepts, 1st Floor, Nour Al-Hassan Library, Baghdad.

Yassin, Wathiq Abdul Karim and Zainab Hamza Raji, (2012). The Constructive Approach, Models and Strategies for Teaching Scientific Objectives, 1st Edition, Nour Al-Hassan Library, Iraq, Baghdad.

Zayer, Saad, Ali et al. (2014); Contemporary Educational Encyclopedia, 2nd Edition, Dar Al-Murtada, Baghdad.

Zeitoun, Hassan Hussein, Zeitoon Kamal Abdel Hamid (1995). Constructivism: an epistemological and educational perspective, 1st floor, Alexandria.

Zeitoon, Hassan Hussein, (2001), Teaching Design, a Systematic Vision, The World of Books for Publishing and Distribution, Cairo.

Zeitoon, Ayesh Mahmoud (2005), The Basics of Teaching Science, 1st Edition, Dar Al-Shorouk, Amman.