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The Impact of Using Smart board in Teaching Mathematics on the Achievement of Eighth Grade Primary Students in Gulf of Aqaba in Jordan

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Abstract: The study aimed to find out the effect of employing smart board while teaching mathematics for the eighth grade in the students' achievement in the Directorate of Aqaba Education. To this end, the researcher used the semi-experimental method, and the study tools in the achievement test. The sample of the study consisted of 52 students from the eighth grade in the King Abdullah II School of Excellence, Gulf of Aqaba in Jordan, distributed equally over two groups: a control group and an experimental group. The results showed that there was a statistically significant effect at the level of significance (α = 05, 0) for using the smart board in the achievement of the eighth grade students in mathematics. The differences were in favor of the experimental group that taught the educational material using the smart board, compared to the control group, which taught the educational material in the traditional way. The study recommended working on the generalization of the use of the Smart board and its activation in all schools, for all levels of study, and in all subjects, especially mathematics.

Keywords: smart board, academic achievement, mathematics, eighth grade.

أثر استخدام السبورة الذكية في تدريس الرياضيات على تحصيل طلبة الصف الثامن الابتدائي في خليج العقبة في الأردن

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الملخص: هدفت الدراسة إلى الكشف عن أثر استخدام السبورة الذكية أثناء تدريس الرياضيات للصف الثامن في تحصيل الطلاب في مديرية تعليم العقبة. ولتحقيق أهداف الدراسة، استخدمت الباحثة المنهج شبه التجريبي، واستخدمت الباحثة أدوات الدراسة في اختبار التحصيل. وتكونت عينة الدراسة من 52 طالبًا من الصف الثامن، موزعة بالتساوي على مجموعتين: مجموعة ضابطة ومجموعة تجريبية. أظهرت النتائج أن هناك تأثير ذو دلالة إحصائية عند مستوى الأهمية (α=0.05) لاستخدام السبورة الذكية في تحصيل طلاب الصف الثامن في الرياضيات. كانت الاختلافات لصالح المجموعة التجريبية التي قامت بتدريس المواد التعليمية باستخدام السبورة الذكية، مقارنةً بالمجموعة الضابطة، التي قامت بتدريس المادة التعليمية بالطريقة التقليدية. وفي ضوء النتائج أوصت الدراسة بالعمل على تعميم استخدام السبورة الذكية وتفعيلها في جميع المدارس، لجميع مستويات الدراسة، وفي جميع المواد، وخاصة الرياضيات.

الكلمات المفتاحية: السبورة الذكية ، التحصيل الدراسي ، الرياضيات ، الصف الثامن.

Introduction

In the past, the teacher used the old traditional ways of communicating information to students. In the 1970s, so-called educational techniques emerged that contributed significantly to the development of the educational process. The discoveries rolled over until the emergence of modern technological

means that have a significant impact on the transformation of the process of learning and transferring it from the teacher as a sender of information to the student who is the focus of the educational process, which leads to the development of many skills of students, and the accumulation of the vast amount of knowledge and information, in addition to increasing their academic achievement in the subjects (Kandil, 2006).

Therefore, educational systems throughout the world have been keen to provide the learner with integrated opportunities within his capabilities and abilities, taking into account the requirements of the times. In line with the age of knowledge and technological explosion, there has been a dramatic acceleration in the use of modern educational technologies in education. In line with the challenges facing educational systems around the world, educational technologies have become an important part of the educational process and an integral part of the educational system (Saraya, 2006).

The importance of the use of modern techniques in education appears in the achievement of educational goals, and the demand of individuals to education, in addition to the need of the community to prepare specialized and productive qualities in the field of modern technology, finding modern solutions to educational problems, increasing students' motivation for learning, and finally shifting from traditional planning to systemic technological planning, transforming the role from indoctrination process into guidance.

This is why the so-called smart board has emerged. The different types of smart boards have been used worldwide. Salem (2010) noted that the use of the Smart board has emerged as a result of the continuous development of technology. The design of the Smart Panel began in 1987 by David Martin and Nancy Nolten in one of the major IT companies in Canada and the United States of America. There have been many experiments and many researches to find an alternative where the traditional blackboards are eliminated, the actual production of this idea was in 1991. And that this board is a special type of boards and sensitive and smart whiteboards (and are used by touch either by hand or by pen or other pointing devices, and linked to a computer and a projector, and what is on the computer is displayed in a variety of applications.

The smart board is an electronic device connected to the computer, where pictures and videos from the computer are displayed on the board. This board is used interactively, and notes and highlighting points of interest can be added, with the ability to control the programs as desired by the user. And also print these notes, drawings and others from the computer or save for them for future reference. There is also a clear interest in the smart board, as one of the most important technological innovations in teaching. The studies dealt with the effectiveness of proposed programs in the development of smart board skills, development of learning achievement, knowledge of their impact on the development of mental and practical skills, and varied in their objectives and samples.

The names of the smart boards were varied through the labels launched by the distributing companies, including electronic white board, interactive whiteboard, smart board demirli, touch-screen interactive and digital board (Dahlan, 2014). Through this presentation we conclude that the smart board is: one of the devices classified in the electronic display devices, and the educational material is presented clearly to the students, It works by connecting it to a personal computer and the DataShow, and can be written on it with special pens attached to it, and can be used by students.

This study may help to use the smart board for students, teachers and decision makers in addition to the scientific training programs in light of what the results of this study will reach, and provide a vision of the most important benefits of the smart board of skills and advantages that help the teacher and student, and add the black to the educational programs offered to teachers. This study can be used as a way to conduct further studies on modern educational techniques in general and the smart board in particular.

We recommend that the Ministry of Education adopt, plan and implement mechanisms for the use of smart boards that support the application of e-learning and traditional learning, in addition to supporting and encouraging the process of employing modern technologies, especially the smart board in education through the design and implementation of training programs for teachers of general education in their respective environment for the use and employment of modern technologies, In addition to providing financial and technical support to governmental and private educational institutions to include smart board programs within their educational programs. This study aimed at the effect of using the smart board during the teaching of mathematics for the eighth grade. The tribal and remote measures were used for the research sample composed of 8th grade students at the King Abdullah II School of Excellence, Gulf of Aqaba Branch.

Problem Statement:

Mathematics is one of the subjects that require the use of many educational aids and the creation of an appropriate classroom environment that encourages and increases students' interest in the educational process. The smart board is a modern and effective tool in the educational process as it works to increase the motivation of students towards the educational process. In the absence of students' reluctance to mathematics, which requires high skills for understanding and assimilation, the use of the best ways and means of education is required to facilitate their understanding, especially in light of the scientific learning methods of modern technology.

The idea of this study came through the experience of the researcher as a teacher of the eighth grade in the public schools affiliated to the Jordanian Ministry of Education, where the researcher felt that there is weakness in the students in the collection of mathematics, perhaps due to the traditional methods used in teaching. Therefore, the current study was conducted to reveal the effect of employing Smart

Board during the teaching of mathematics for the eighth grade in the students' achievement in the Aqaba Directorate of Education.

Specifically, the problem of the study lies in answering the following question:

- What is the Impact of Using Smart board in Teaching Mathematics on the Achievement of Eighth Grade Primary Students in Aqaba Directorate of Education.

The hypothesis of the study:

There were statistically significant differences at the level of significance (a = 0.05) between the average scores of students in the experimental group who study mathematics through using smart board، and average grades of students in the control group who study mathematics in the usual way?

This study is concerned with the detection of the impact of using the smart board during the teaching of mathematics for the eighth grade in Aqaba Directorate of Education - King Abdullah II School of Excellence. This study is the first - according to the researcher - in her study of the final three grades of the primary stage, which deals with the impact of the use of smart board while teaching mathematics for the eighth grade in the students' achievement in the Aqaba Directorate of Education. It is hoped that this study will be a reference for researchers and teachers, in terms of information about the Smart board, its use in the educational process, and its impact on educational attainment

Terms Definitions:

The smart ball which is defined as a term: It is a large white screen connected to a computer that is handled by touch or by writing on it with special pens. It can also be used as a display screen for educational material in a large and clear way for all students (Campbell2010).

Academic Achievement (conventionally): A specific level of achievement or proficiency in the academic work which is measured by the teachers or by the prescribed tests. The scale to be used for knowing the academic achievement is the sum of the student's grades at the end of the course. (Essawi, 2006)

Theoretical framework and previous studies

The smart board is one of the modern technological innovations that represent a revolution in presentation methods, especially in the field of teaching, through which the materials can be presented in an attractive and interactive way, and all its skills and tools are employed to develop the practical and performance skills of students, in addition to the various features that can be implemented by this board, such as registration, documentation, application, and direct drawing on the board and computer, as well as the ease of preparing lessons across the board, save and print and arrange the contents of the board, and save time and effort, and direct communication, both within the classroom or through the World Wide Web and e-mail (Afifi, 2007: p. 191).

The Smart board achieves interaction with all learners through its presentation of various activities, because it offers the opportunity for some learners to participate in the use of educational media. This results in a significant learning impact, which necessarily improves the quality of learning and increases teacher and learner performance.

Smart board components:

The use of the smart board includes some of the most important tools and equipment: electronic pens that are used for writing on the board, various information opening and display programs, hard spot and fingerprints cleaner, Erase Boards Cleaner For, Eraser, Wireless Mouse, USB Cable, and shortcut strip.

Many studies and web sites discussed the manual of using the smart board. The skills that must be available in the teacher to be able to use the smart board in the classroom can be summarized as follows: Installing the Smart board, and fixing its running program, knowing the use of the toolbar, resource library, and smart board attachments, Using computer applications, handling tools and accessories, and recording and displaying recorded lessons (Remode, 2009: p. 238).

The basic platform of the Smart board consists of two main components:

Physical components: This part consists of several tools: the surface of the screen and equipped with touch sensors, the four pens, electronic eraser, the help button, the right mouse button, the location of the USB cable connection.

Software components: Various computer programs can be run, in addition to producing interactive tutorials by connecting the screen to a computer, and a camera can be installed on the smart board (Khamis, 2006)

In some countries, mathematics has received a great deal of attention in terms of development and modernization in line with the changes and developments that have taken place in all fields, especially the electronic revolution witnessed by the world in recent years.Mathematics has entered the daily life of individuals through electronic computers through the world of industry and commerce, and has become living with the individual to help him organize his life and transactions better and faster. So it was necessary to keep pace with these developments by modernizing, and rebuilding the mathematics curriculum so that these developments come in line with the modern outlook of the curriculum and make the individual ready to face modern life. This interest was accompanied by the employment of modern teaching techniques in mathematics, including the smart board, through which to increase the academic achievement in mathematics (Abu Zeina, 2010).

Attention to academic achievement is an indication of the extent to which it advances towards educational goals. The achievement measures the educational outcomes that educational institutions seek to achieve, in addition to the fact that the educational achievement indicates the adequacy of the educational institutions and their ability to achieve the desired goals. "(Abu al-Haija, 1997).

Education in developed countries is based on the use of teaching aids as a bridge between abstract and concrete materials. The results of the previous studies indicated that there are positive trends towards the role of teaching aids in the teaching of mathematics, as these methods present scientific and cognitive concepts in a visual, audible and interesting manner (Al-Bakkur, 2016).

The National Council of Teachers of Mathematics in the United States recommended that students be given the opportunity to use teaching aids that embody mathematical concepts and help move them from abstract to concrete (Al-Bakkur, 2016, p. 8).

While in the Hashemite Kingdom of Jordan, there was wide interest in the field of e-learning through its introduction and dissemination to all schools in the Kingdom, both governmental and private. Teachers have been urged to use electronic teaching aids in teaching out of believing in the impact it will have on the level of achievement of students in all subjects, where the ministry provided e-learning tools from computers, display devices and electronic boards.

The King Abdullah II Schools for Excellence in all its branches in the Kingdom introduced the smart board in their schools, and the Ministry of Education provided technical, material and moral support to teachers and despite these services, some of these schools still did not use this board in the best way so this study was conducted to reveal the effect of using Smart board in the achievement of students in mathematics.

Previous studies:

This section includes a presentation of the studies related to the subject of the study, which the researcher was able to reach in the light of her reading of educational literature and scientific studies. These studies were reviewed according to their chronology from oldest to newest

Elizabeth (2014) conducted a study on teaching and learning using the Smart board in middle school. The aim of this study was to discover the challenges and obstacles faced by teachers during the use of the Smart board. The study identified the challenges related to the application of smart board usage during the course. The study included appropriate samples from eight teachers. The data were collected by means of questionnaires and interviews. The analysis of the interviews included coding and auditing of the members. Three main axes emerged: technical difficulties, lack of effective self-development, and the presence of sources for the interactive board. The analysis of the questionnaires required a descriptive census. The integration of the results of the questionnaire and the analysis of the interviews showed that teachers had difficulties in applying interactive board technology and needed self-development of this technology in order to obtain effective education. The study led to the conclusion of a comprehensive plan designed to help teachers acquire the skills and knowledge required to use the interactive board.

Al-Rasheed (2014) conducted a study on the effect of using the interactive whiteboard on the achievement and trends of 11th grade students in biology as an educational tool in Kuwait. The

experimental method was used, and the questionnaire and an achievement test were used as tools for the study. The study consisted of 60 students from the 11th grade. They were divided into two groups: experimental, where they studied using interactive whiteboards, and a control group, where they studied the material in the usual way. The most significant results were that teaching students using interactive whiteboards was better than the usual way of teaching. The study recommended urging teachers to use the interactive whiteboard to teach biology and to provide all classrooms with interactive boards.

Salmiya and Saidi (2015) conducted a study on the effectiveness of teaching using the interactive whiteboard in the achievement of science and the development of cognitive thinking skills among tenth grade primary students. . The aim of the study was to investigate the effectiveness of interactive whiteboards in teaching science in achievement and to develop the cognitive thinking skills of the students of the tenth grade. The study sample consisted of (62) students divided into two groups: experimental and control. The students studied the module (flow of energy in technical devices). The study used the experimental terminology. The study tool consisted of an achievement test and a test to measure the cognitive thinking skills of the students.

The study showed the following results: There are statistically significant differences in favor of the experimental group in the post-achievement test and in the post-cognitive thinking skills test. The study recommended the formation of a team of all disciplines interested in preparing lessons using the interactive whiteboard and the formation of an electronic library that the teacher can refer to and benefit from.

Tanaboylu and Dimir (2016) conducted a study entitled "The Impact of Reinforced Learning with the Interactive board on the Achievement of Secondary School Students in Mathematics". The aim of the study was to investigate the effect of using the interactive board in the achievement of eighth grade students in mathematics. The

study used experimental research. The study was applied to 58 students from the seventh grade. The achievement test was used as a tool for study. The results showed that the use of the interactive board had a positive effect on students' achievement in mathematics.

Young, Hamilton, and Cason (2017) conducted a study entitled "Interactive Board in Math Spaces and Technology Integration Studies in Arban Middle School. The aim of the study was to investigate the effect of using the interactive board in mathematics and the study of technology integration in the middle schools of Arban. The study used the semi-experimental method on a sample of sixth, seventh, and eighth grade students. The results showed that there was an effect of interactive board on students' achievement in mathematics. It recommended using the interactive board and making it an introduction to basic solutions in mathematics teaching

Hussein and Al-Hilaa (2017) conducted a study entitled "The impact of the use of the personal school computer and the interactive board for teaching science on the creative thinking of the second

grade students in private schools". The aim of the study was to investigate the effect of using the personal school computer and the interactive board on the creative thinking of second graders in science compared to using the usual method. The semi-empirical approach was used. An intentional sample was selected that was limited to (56) second grade students divided into three divisions: one division used the personal school computer, another division used the interactive board, and the third division used the traditional method. The Torrance test was used as a tool for study.

The study showed the following results:

The students who studied in the usual way were more proficient than the students who studied using the interactive board on the dimension of the skills of originality, fluency, flexibility and total degree. Students who studied on the personal computer were more proficient than the students who studied using the interactive board on the dimension of the skills of originality, flexibility, fluency and overall degree, and the absence of a difference of statistical significance on the dimensions of the originality, fluency, flexibility and details between the two groups which studied using the personal computer and the usual way. And there were no statistically significant differences between the three groups on the dimension of details. The study recommended further studies on the use of computer and interactive board in the classrooms and study phases of other studies and on other samples such as critical thinking and trends and motivation.

Onal (2017) conducted a study entitled "Using interactive whiteboards in mathematics and students' perceptions of technology acceptance in their work". The study aimed to reveal the perceptions of students regarding the use of interactive board in mathematics and acceptance of technology in the framework of their work, and the study the descriptive approach. The study was applied to 58 students in the fifth, sixth, seventh and eighth grades. Semi-structured interviews were used to collect data. The results showed that the interactive board and technology in general enable students to understand the material better and they maintain their concentration and integration of the material more, in addition to the fact that it is useful and easy to use.

Comment on Previous Studies:

The study showed that there is a clear interest in the smart board, as it is one of the most modern technological methods in education which positively affect students and their achievement. It has dealt with the effectiveness of proposed programs in developing skills of using Smart board, and development of academic achievement, and knowing their impact on the development of mental and practical skills and academic achievement. This study varied in its objectives and samples.

So the current study of the theoretical rooting of previous studies in the construction of the theoretical framework and the design of the study tool. There was no study within the limits of the

researcher's knowledge that has examined effect of the use of Smart board in the Arabic language, which may represent a qualitative addition to studies related to the current field of study

Methodology of the study

This chapter includes a description of the study population and sample, as well as the method of selection of the sample. This chapter also includes the study tool used, the methods of extracting the indicators of honesty and consistency, and the statistical treatments used to derive the results.

In this study, the researcher used the semi-experimental method to identify the effect of employing the smart board during the teaching of mathematics for the eighth grade in the students ' achievement at Aqaba Directorate of Education. This chapter describes the study methodology, society and sample, the way in which the sample was selected and the statistical methods used. In her study, the researcher used the design of an achievement test in mathematics to reveal the impact of employing smart board in the achievement of eighth grade students. Two groups were selected; the first one as a control group and the second as an experimental group. The control group was taught in the traditional way, while the experimental group was taught by the smart board.

Study population:

The study population consisted of all the eighth grade students in the King Abdullah II School of Excellence, Gulf of Aqaba Branch, affiliated to the Aqaba Directorate of Education in the southern region in the Gulf of Aqaba, and the number of (52) students, for the academic year (2018 - 2019) the second semester.

Sample

The study members were selected by an intentional selection of two sections from the eighth grade of the Abdullah II School of Excellence, Gulf of Aqaba Branch, affiliated to the Aqaba Directorate of Education, where the section that uses the smart board (the experimental group) was composed of (26) male students, while the section which was taught in the traditional way (the control group) was composed of (26) female students. This choice was made after the researcher made a meeting with the school principal, and the eighth grade teachers.

Determinants of the Study:

The limits of the current study are represented by the following:

- Human Limits: This study was limited to the eighth grade students
- Spatial Limits: This study was limited to the schools of Khalil Rahman Academy
- Time Limits: The study was conducted during the first semester of the academic year 2017/2018.

The results of this study are determined by its community, the degree of response of its sample members, and the nature of its tools and variables. The results of the study can be generalized to societies similar to its own in the light of the credibility of the tools and the factors of their stability, and the objectivity of the respondents.

Instruments of the Study:

The researcher used the following tools:

a. Teaching material related to the usual way of teaching.

The teaching material was selected from the eighth grade mathematics book for the second semester 2018-2019, represented in the third module (triangles) and was composed of the following:

(Properties of the triangle (1), properties of the triangle (2), the outward angle of the triangle, Pythagoras)

Which are the same educational material received by students through the traditional method, and the educational material was prepared by the researcher in collaboration with a specialist in the smart board, through programming the course material through the smart board system.

The achievement test was used to measure the level of achievement, and the learning effect of the sample members remained in the content of the selected lessons in the eighth grade course.

The objective of the achievement test is to measure the extent of the achievement of the eighth grade students in mathematics and to measure the remaining impact of learning after the use of the smart board in presenting educational content during teaching.

This will be done by analyzing the study content of the module, and determining the relative weights of lessons and behavioral goals.

In order to verify the indicators of the validity of the test content, the test was presented to a group of (8) university professors, in order to ascertain the validity of the scientific vocabulary formulation, accuracy of the measurement levels and the relevance of the vocabulary in terms of the level of eighth grade students. The proposed amendments were considered and, accordingly, a final test of (25) questions, as shown in Appendix (1). The arbitrators referred to the testing event to reveal the level of students' achievement in the Triangles Module.

In order to verify the indicators of the stability of the test, the test-retest method was used by applying it to a survey sample from outside the study sample, consisting of (20) students. It was reapplied after a period of two weeks from the first application on the same sample. The stability coefficient value was calculated using a correlation coefficient (Koder Richardson) (0.90). The values of the difficulty and discrimination coefficients were also extracted for the test questions through the results of the application on the survey sample. The difficulty coefficients ranged from 0.20 to 0.80, all of which were between the

acceptable grade (0.20-0.80). For the discrimination coefficients, all were statistically significant and ranged from 0.40 to 0.75.

The final achievement test consisted of (25) questions, One score was assigned to each question, and thus the maximum score was 25, To answer the questions, the student puts a signal (√) against the correct answer for each of the test questions on the corresponding answer sheet

The study procedures have been implemented according to the following steps and procedures:

1. The researcher conducted an analytical study of the references and studies related to the subject of the research, by preparing the theoretical framework for the research and designing the research tools for the purposes of application after verifying the indicators of its validity and stability by presenting it to a group of specialized arbitrators, in addition to applying the test on an exploration sample from outside the sample of the study to extract the values of the coefficients of stability and internal consistency.
2. Determining the number of members of the total study population by reference to the official records in the Aqaba Department of Education and by reference to the eighth grade teachers at the King Abdullah II School for Excellence Aqaba Branch, also, the study sample was randomly selected from the total study population.
3. Obtaining a letter to facilitate the task of the researcher in applying the test, as shown in Annex (4). Also, a task facilitation letter was obtained from Aqaba Education Directorate to the King Abdullah II School of Excellence, Aqaba Branch, as shown in Annex (5)
4. Application of the achievement test in mathematics (pre-test) to the control and experimental groups to verify the equivalence of the two groups.
5. Teaching (Triangle Module) to the control group in the traditional way by the teacher, and teaching the experimental group using the smart board by the researcher, where the duration of teaching was two semesters.
6. The achievement test in mathematics (post-test) was applied to the control and experimental groups.
7. After confirming the information and answering the questions, and preparing them for the purposes of statistical analysis.
8. The data was entered to the computer, and then the use of the appropriate statistical treatments, to answer the question of the study that was put forward, and come up with the appropriate recommendations based on the results reached

Study Variables

The study included variables, the most important ones are:

First: the independent variable

Teaching Method (Traditional, Smart board)

Second: the dependent variable

Achievement after post-test

Statistical Processing:

In order to answer the question of the study, the arithmetical averages and standard deviations were obtained for the achievement of the students in mathematics. A T-test was used to detect statistical differences in the arithmetical averages.

Study Results

The chapter included a presentation of the results of the study aimed at detecting the impact of using Smart Board during the teaching of mathematics for the eighth grade in the students' achievement in Aqaba Directorate of Education.

Group equivalence: the Pre- Achievement of Students:

To verify the equivalence of groups, the arithmetical averages and standard deviations of the primary achievement of the eighth grade students in mathematics were extracted according to the group variable (experimental, control), and to illustrate the statistical differences between the arithmetic averages, the T test was used, and Table (1) illustrates this.

Table (1) The Arithmetical Averages, Standard Deviations and T Test according to Group Variability on Pre- Achievement of Grade 8 Students in Mathematics

	Group	No.	Arithmetical Average	Standard Deviation	(T) Value	Degrees of Freedom	Statistical significance
Pre-	Experimental	26	16.23	6.452	-.074	50	.941
	Control	26	16.35	4.647			

The table above shows that there are no statistically significant differences (α= 0.05) in the arithmetic averages according to the group variable (experimental, control), this result refers to the equivalence of the groups.

First: Results related to the question of the study: What is the Impact of Using Smart board in teaching Mathematics on the Achievement of Eighth Grade Primary Students in Aqaba Directorate of Education?

To answer the question, the arithmetical averages, standard deviations and modified averages were obtained for the achievement of the eighth grade students in the mathematics according to the group variable (experimental, the officer) and table (2) illustrates this.

Table (2)

The arithmetic averages, standard deviations, and modified arithmetic averages for the achievement of the eighth grade students in mathematics according to the variable of the group

Group	No.	Pre		Post			
		Arithmetic Average	Standard Deviation	Arithmetic Average	Standard Deviation	Modified Average	Standard Error
Experimental	26	16.23	6.452	22.65	3.273	22.67	.455
Control	26	16.35	4.647	20.31	2.881	20.29	.455
Total	52	16.29	5.567	21.48	3.275	21.48	.322

Table 3 shows apparent variance in the arithmetic averages, standard deviations, and modified averages for the achievement of eighth grade students in mathematics because of the different categories of the group variable (experimental, control), and P To illustrate the significance of the statistical differences between the arithmetic averages, the analysis of the accompanying mono-variance was used and table (3) illustrates this.

Table (3) Results of the analysis of the single variance accompanying the impact of the group on the achievement of eighth grade students in mathematics

Source of Contrast	Total squares	Degrees of freedom	Average squares	The value of the statistic (P)	Statistical significance (h)	Size of the effect (η2)
Pre- Test (Accompanying)	211.604	1	211.604	39.302	.000	.445
Group	74.148	1	74.148	13.772	.001	.219
Error	263.819	49	5.384			
Total Adjusted	546.981	51				

Table (3) shows that there is a statistically significant difference (a = 0.05) due to the effect of the group with a value of 13.772 and a statistical significance of 0010, and the differences came in favor of the experimental method.

In order to detect the effectiveness of using Smart board during the teaching of mathematics for the eighth grade in the achievement of students in the Directorate of Education of Aqaba, ETA (η2) was calculated to measure the effect size which was (0.219), which means that 21.9% of the variation in the performance of students is due to using Smart board while the remainder is due to other uncontrolled factors.

Discussion of Results and Recommendations

This chapter includes a discussion of the results of the study aimed at uncovering the effect of using the smart board during the teaching of mathematics for the eighth grade in the students' achievement in the Aqaba Directorate of Education

"What is the impact of using Smart board during the teaching of mathematics for the eighth grade in the achievement of students at the Aqaba Directorate of Education؟"

The results showed that there was a statistically significant effect at the level of (&=0 ،05) for the use of smart board in the achievement of the eighth grade students in mathematics, based on the differences in the achievement of students in mathematics between the experimental group and the control group. The differences were in favor of the experimental group, which studied the educational material through the smart board, compared to the control group, which studied the educational material in the traditional way.

These results can be explained by the fact that the smart board has characteristics that distinguish it from the other teaching methods in teaching. Thus, the method of education through the smart board is an effective and positive method, because it takes into account individual differences among students, in addition to that it helps to increase the interaction of the student with the educational process and increase the participation of students in the classroom, which helps to understand the educational material and intake it, and this helps to increase the student's achievement of concepts and terminology in mathematics

The results are attributed to the interactive and rich learning environment that the Smart Board offers, which moves students from the traditional learning environment to the technological learning environment in which learning resources are varied in an easy, simple and more interesting way, thus helping to increase student motivation towards the learning process. And that the impact of the effect of the use of smart board during the teaching of mathematics for the eighth primary grade in the achievement of students in the Directorate of Education Aqaba came through a variety of educational activities by the student provided by the smart board, and the clarity of the educational material, in addition to the activities and exercises provided, and access to instant feedback, and therefore all the previous factors have enriched the educational material, and it was presented in a different way from the traditional method, and so it appeared on the students in the achievement test, and this is a positive indicator of the impact of the use of smart board in the educational process.

In interpreting the results, the researcher believes that students' desire to learn through the use of Smart board has contributed to raising their academic achievement, as well as the influence of the Smart Board, and the role and way of preparing the educational material, which has increased the attention and follow-up of students, Which has had a significant impact on the absorption and understanding of information in shade of the use of the largest number of senses during the teaching process.

The smart blackboard has a high demand from students, as it is a modern educational tool that works to get the student out of boring traditional education, and that the use of smart board in the educational process as a new method has a tendency by students out of their love to use the tools of modern technology, which contributes to increase its effectiveness in the development of the educational process and providing a positive and active environment for the process of learning.

Recommendations

Based on the findings of the study, the researcher recommends the following:

1. Working on the generalization of the usage of the smart board and activating it in all schools, and for all stages of study, and in all subjects, especially mathematics.
2. Holding training sessions regarding the usage of the smart board continuously and systematically to activate and enhance the use of smart board in the educational process, especially in mathematics.
3. Circulating the results of the study on the different schools of the Hashemite Kingdom of Jordan, and benefiting from its results in increasing the students' achievement.
4. Activation of the use of smart board in all schools, and follow-up this aspect by the administrators of the educational process, especially school principals and educational supervisors.

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