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The Effect of Using Digital Education in Developing the Problem-Solving Ability and Attitudes towards Nearpod Platforms among Primary Stage Students in Jordan

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Abstract

This study aims to investigate the impact of using digital education in developing problem-solving ability and attitudes towards Nearpod platforms among primary students in Jordan. The study sample consisted of 64 students selected from the third-grade level. The study used the one group experimental approach. Problem-solving test and an Attitudes Checklist, applied. Results showed a statistically significant difference á 0.05 exists between the Arithmetic means scores of the posttest and the pretest in problem-solving ability in favor of posttest. Also, results of the study revealed a positive attitude towards using the digital platform (Nearpod platform), and a positive correlation between problem-solving ability and attitudes towards using the platform for third-grade students. Some recommendations and suggestions are cited.

Keywords: Digital education, problem-solving, attitudes towards digital education, Nearpod, platforms.

Introduction

Recently, worldwide epidemics, such as (COVID-19) pandemic, necessitates continuous changes in the educational patterns used. Thus, a change in the strategies and methods of implementing the curriculum calls for adequate training for teachers to deal with technology, modernization, providing application software that provides real interaction, increases in the role of the learner, and increases in learning opportunities for students through virtual laboratories, computerized lessons, exercises, and electronic tests. Mathematics education in a

distance education environment faces challenges represented in increasing the student's role in learning mathematics, increasing his motivation to learn, developing self-independence in learning mathematics, and providing educational programs that help the teacher achieve goals, as the principles of mathematics education emphasize the principle of technology of importance in supporting the teaching and learning of mathematics, and enriching the mathematics curriculum with activities (NCTM, 2000). John Dewy stresses the need to implement educational tasks through learners to gain experience directly, the need to provide real environments for learning to take place, the importance of tangible experiences in developing an understanding of mathematical concepts and increasing educational opportunities by providing activities that satisfy the needs and desires of students (Douglas & Michael, 2003).

The constructivist theory also emphasizes the need for students to use intuitive thinking and build their own knowledge by interacting with the educational situation. Learning is done through the work of the brain while learning concepts and solving problems and the use of constructive strategies come as a catalyst for development of mathematics instruction, in terms of indicating how the learner builds his experiences on his own, and the implementation of tasks. The teacher becomes responsible for appreciating students' expectations, conclusions, and ideas, listening to their ideas, accepting their differences in interpretation, and designing strategies to help them adopt new ideas (Albado, 2017). According to Piaget, the interaction between the learner's previous knowledge and new ideas helps adaptation to the environment and guarantees two interrelated processes: representation and adaptation. The acquisition of completely new information about the learner's environment requires the learner to form concepts, information, and solve mathematical problems (Fosnot & Perry, 1996; Oliver, 1989).

Among the goals of mathematics education in Jordan is the development of the ability to solve mathematical problems, link mathematics with other branches of science, its integration, the development of critical thinking among students, and the use of generalizations of mathematics and its skills in various life situations (Abuzina & Ababneh, 2010). Solving the problem helps build an integrated personality capable of facing life, employing educational experiences at work,

identifying and feeling the issue, analyzing it into its elements, collecting data about it, proposing solutions for it, testing it, and thus generalizing solutions to other situations (Bookman 2010, 2010). Moreover, solving problems can help students to analyze, think, learn concepts, skills, and mathematical generalizations, apply them in multiple situations, deeply understand topics, retain information, increase motivation towards learning mathematics, and make it enjoyable (Hartig, 1994).

The standards of mathematics education also emphasize the importance of the standard for mathematical problem-solving in building mathematical knowledge by solving a mathematical problem, linking the solution of mathematical problems with other contexts, and developing appropriate strategies to solve the mathematical problem, and they help to promote the learner's self-monitoring while solving the problem in mathematics and contemplating it, as well as the development of mathematical thinking by stimulating intellectual curiosity and curiosity, and solving the problem enables the learner to transfer mathematical concepts and skills in new situations (NCTM, 2000). The learners' mathematical experiences and their ability to solve mathematical problems are among the most prominent contemporary skills because mathematics is one of the subjects that provide generalizations and theories that help to understand the outside world. It helps to employ these mathematical applications in various areas of life, such as commerce, engineering, technology, and others.

International studies have been conducted since 1999, such as the International Studies that are conducted every 4 years (TIMSS - Trend International Mathematics and Science Study). The results show the low level of Jordanian students in mathematics compared to developed countries, and calls for a review of the mathematics curriculum, and an examination of the factors affecting students' achievement in mathematics (Alwarikat & Alshawa, 2018). At present, the need has become urgent to provide educational strategies compatible with the distance learning environment in teaching mathematics courses. The implementation of digital lessons, the provision of educational aids, digital activities, and training must be commensurate with this type of education so that the objectives of mathematics education are achieved.

Students develop the ability to solve problems and their mathematical expertise increases with mathematics of digital systems (Alghamdi, 2020).

When searching for websites through the Internet, there are many educational platforms, and electronic pages that provide active and interactive environments, such as the website (https://phet.colorado.edu) of the University of Colorado, and interactive educational lessons can be provided as well by using the (Nearpod) platform, which is a platform that provides interactive digital classes, and contains the ability to provide multiple activities, quizzes, individual and group interactive activities. There are many educational platforms that provide interactive learning such as the Zoom platform, the Teams platform, the Google class, the Nearpod platform, and others. These educational platforms provide a direct display of classroom lessons that are synchronous and non-synchronous. Many educational systems provide sites for learning management, such as Moodle, and these systems provide students with activities and learning resources, thus increasing student interaction and developing their learning and self-efficacy to address the issue facing them.

Digital education is the driving force in developing the cognitive capacities of both teachers and students because it aims to achieve human cognitive progress through the optimal formation of individuals' capabilities, knowledge, and skills, enabling them to interact directly and continuously with the environment surrounding its physical components. It helps to communicate and disseminate information using modern technologies such as computers, mobile phones, and personal digital assistants via Internet networks, for the purposes of education and training, knowledge management, and developing the capacities of learners (Ismail, 2009). Digital education is characterized by its low cost compared to traditional education, and increased opportunities for interaction through training and practice programs available on educational platforms, pictorial classes installed on the platforms, formative and final tests, in addition to the speed of digital publishing, and ease of communication with students through Internet applications and mobile devices. Also, digital dissemination provides diverse experiences, multiple sources, and access to information in a shorter time (Ismail, 2009). Alhaila (2006) believes that what distinguishes digital education

is that it brings students together in virtual classes, and communication between them and teachers is done through a platform of their own on the Internet, and examinations are conducted remotely through the evaluation of tasks presented by the affiliates of the educational institution during their study period, in addition to the possibility of continuing their education without restrictions on space and time.

Digital Education Through the Nearpod Platform

Digital education is defined as education that aims to create an interactive environment rich in applications based on computer technologies and the Internet and enables students to access learning resources at any time or place (Hamed & Fa'eq, 2019). Digital education is also defined as providing educational content with its explanations, interactive exercises, and partial or comprehensive follow-up in the classroom, or remotely by computer software, educational platforms, or internet networks (Albdour, 2016). Musa & Abdullah (2005) defined digital education as an integrated educational system to provide educational content through a digital container based on the use of modern technology in processing information and communication, with the aim of providing an interactive learning environment with a variety of sources, whether synchronous or asynchronous, without being restricted to a place or time.

Based on the above, digital education can be defined as that type of education which uses multimedia, modern technology tools, Internet networks, computer, and mobile devices, in order to achieve the desired educational goals, without restrictions or conditions on place or time. Digital education is a system that has its own inputs, from teachers, students, tools, curriculum, and digital content, as well as its own processes in providing resources to support students and teachers alike, direct and indirect interactive activities, formative and diagnostic tests, and related tasks. In scientific research, investigation, and experiments, the education outputs in this system are represented in the learner and the knowledge and experiences he possesses that qualify him to carry out his duties in a changing era.

It is imperative to have basic elements for digital education, which are:

1 - A teacher trained on how to employ modern technology in education, including educational software, educational platforms, proper planning for interactive activities, multimedia, and digital calendar.

2 - A student trained on how to deal with modern technological tools, including educational platforms, follow-up activities, carrying out tasks and duties, and delivering them on time.

3 - The technological equipment and tools necessary in this era, which are computer devices, internet services, and application software available on computers.

4 - Parents who are aware of the importance of this type of education in the current era due to emergency and non-emergency situations.

5 - A school administration that provides material tools and equipment for teachers, and adequate training on how to employ this type of education.

6 - A modern curriculum that provides flexibility in planning, student participation in activities, and enhances the student's role and independence.

Among the advantages of digital education is that it provides educational materials that enable the learner to refer to it at different times, which leads to mastery learning, as well as providing simulated interaction between the teacher and students through virtual lessons, taking into account individual differences between students in learning and assigning tasks, and computerizing the curriculum, making the content digital, and the evaluation done digitally. This saves time and effort for both teachers and students and helps students to have independence in thinking, solving problems, and developing self-learning skills (Hamed and Fa'eq, 2019).

There are many educational platforms available on websites that help in providing classes to students in an interactive way, such as the (Moodle) platform and the (Teams) platform, and there are also other educational platforms to provide lessons and interactive activities such as Nearpod, as this educational platform provides an opportunity for

the teacher to present the planned class session through this platform, through the possibility of providing learning resources and interactive educational activities as follows:

1 - Educational resources: Present educational content through the available educational presentations and resources such as Video, Slide, Web content, Nearpod 3D, PhET simulation, BBC video, Sway, Slideshow, Audio Pdf (Nearpod).

2 - Interactive activities: Quizzes, Time to climb, Flip grid, Matching pairs, Draw it, Collaborative board, Fill in the blanks, Memory test, Poll, Open-ended questions (Nearpod).

Teaching can be done using the Nearpod platform using the following steps:

1 - Define educational outcomes and presenting them at the beginning of the class.

2 - Determine the tools to be used in the classroom such as electronic pens, interactive whiteboards, drawing tools, digital writing and others.

3 - Define educational resources such as presentations, worksheets, multimedia (video, audio, solid figures, geometric shapes) and others.

4 - Define interactive activities such as competitions, voting, memory tests, formative and final tests, conducting experiments and others.

5 - Final evaluation and follow-up.

6 - Giving simultaneous and asynchronous duties.

Literature Review

There are many studies that deal with digital education in the field of education in general. Abdelaziz (2013) conducted a study to investigate the effectiveness of an educational enrichment website on the Internet in increasing the achievement of first-grade middle school pupils of some scientific concepts. The study sample was divided into an experimental group (using the educational site) and a control group (using the usual method of teaching). The experimental group is the control group in educational attainment in general and for all its

cognitive levels. In a study conducted by Alhaila (2006) aiming to investigate the effect of using the Internet on the achievement of students of the College of Educational Sciences in the educational technology course, the study sample consisted of 60 students from the UNRWA University in Jordan, and they were divided into two groups, one of which is experimental (using Internet applications) and the other control (without using Internet applications), and the results of the study showed the superiority of the experimental group over the control group in both immediate and delayed achievement. Alajlouni (2014) conducted a study to investigate the educational effects of using the Internet on students of the Arab Open University. The study population consisted of students of the Arab Open University in the Jordan branch, and the results of the study showed that the educational effects of Internet use were high in general, and for each dimension of learning: Motivation and planning for learning, learning experiences and skills, methods of thinking and research, academic achievement and creativity, and the cultural dimension.

In the field of mathematics education, Alomar (2015) conducted a study for investigating the effect of using digital courses in teaching mathematics on the achievement of primary second-grade students in Riyadh, and the study was applied to primary second-grade students in Riyadh, whose number reached (183), and the results of the study indicated the superiority of the experimental group, who used digital education approach on the control group who used traditional education approach. Nazla et al. (2015) conducted a study to investigate the effectiveness of mathematical activities that have links to new geometries with the use of dynamic interactive software in developing visual inference and listening for engineering study of the preparatory stage. The study sample consisted of second grade middle school students in Giza Governorate in Egypt. The results of the study showed that the use of the interactive and dynamic software helped clarify many of the minute details of the technical designs included in the program activities. The results of the study also showed the effectiveness of mathematical activities in developing dimensional achievement and visual reasoning in engineering.

Alzekri & Alshibl (2018) conducted a study aiming at designing numerical units in mathematics and measuring their impact on develop-

ing the innovative mathematical capabilities of talented students in the first joint year at King Saud University. The results of the study showed a decline in the innovative mathematical capabilities of talented students in the joint first year at King Saud University. The study also reached a list of design standards for digital learning units (educational standards, technical standards), and the impact of education using digital units on the innovative mathematical abilities of talented students in the joint first year of King Saud University. Shalash (2018) conducted a study to explore the effect of using interactive digital activities in modifying alternative concepts in the subject of regular fractions among fifth-grade students. The study sample consisted of (24) students in the fifth grade in Ramallah. Results showed positive effect of using digital activities in modifying alternative concepts in regular fractions. It also recommended the need to pay attention to alternative concepts that students carry and try to treat them through modern strategies.

As of students in colleges of education and the need to train pre-service and in-service teachers on digital education strategies, Salem (2021) conducted a study to investigate the reality of mathematics teachers' practice in the preparatory and secondary stages of digital learning and their attitudes towards their use in teaching and its relationship to some variables. The study sample included 93 teachers from mathematics teachers in secondary and middle school, and the results of the study showed that the practices of mathematics teachers and teachers for digital education are average, as well as their tendency towards their use of medium. Alghamdi & Alruwaili (2020) conducted a study on the status quo of the digital learning experience in teaching science and mathematics from the teachers' point of view. The study sample consisted of mathematics and science teachers in Al-Jawf region in Saudi Arabia, and used the qualitative approach via the Zoom platform. The results showed that digital education was at a low level, the infrastructure for digital education was not prepared, and that the qualification of digital teachers was at a low level.

Sharabi (2017) conducted a study to investigate the impact of presenting two types of interactive learning activities via digital sites on learning efficiency and attitudes towards digital learning among students / teachers. The study sample consisted of 62 students from the

Ismailia College of Education in the field of educational technology. Results indicated that simultaneous interactive learning activities are the best available patterns and encourage learners to learn, while the asynchronous interactive learning activities style is the least likely to produce results. Sweidan (2011) conducted a study to explore the impact of designing a program based on digital activities using the smart board to develop the skills of producing interactive educational software for kindergarten teachers, and to develop children's logical thinking skills. The study sample consisted of (30) kindergarten teachers in Cairo, Egypt. The results showed the effect of designing the program based on digital activities using a smart board on the development of knowledge, on the development of the skills of the Autherware program, as well as on the development of dealing with multimedia, and the development of the production of interactive educational software.

The study of Hoover (2021) aimed to investigate levels of motivation of primary school students in the distance learning environment of a sample of elementary school students in the state of Texas. The results of the study showed that the use of digital education helped increase the level of internal and external motivation of students, the results of the study indicated that the commitment of students to digital games provides a high motivation for learning. Mangram & Sun (2021) conducted an evaluation study of the needs of pre-service mathematics teachers at the secondary level, and the results of the study showed that the needs of mathematics teachers focus on the educational and professional aspect, and in some cases focus on the cognitive aspect.

Commenting on the previous studies, the researchers noted that the studies focused on the employment of digital education among pre-service teachers and their attitudes towards it, and obstacles to employing digital education in education, such as the study of Alghamdi and Alruwaili (2020), and the study of Salem (2021).

Some previous studies investigated the impact of digital education on dependent variables such as achievement, visual inference, innovative capabilities, and modification of alternative concepts (Abdulaziz, 2013; Alomar, 2004; Nazla et al., 2015; Alzekri & Alshibl, 2018; Shalash, 2018).The current study differs from previous studies in its employment of digital education among primary school students in developing the

ability to solve mathematical problems, and applying new interactive platforms (Nearpod), and it is important to employ modern educational platforms in mathematics education.

Study Problem

The study problem is represented in the low level of problem solving in mathematics for elementary students in Jordan schools in the distance education environment, and the need to provide tools that help to organize education in a way that increases students' interaction in classrooms while providing classroom lessons remotely in mathematics topics and providing interactive programs and activities that increase students' ability to solve mathematical problems, and provide an interesting environment for learning through play, and practice for students through virtual laboratories and providing various activities. After the spread of the Coronavirus (COVID-19) pandemic in 2020, this directly affected education worldwide, especially in the subject of mathematics, as the nature of mathematics needs to present the lessons in an active and interactive way, which the learner performs during the virtual lessons, and after the implementation of the lessons in the form of duties and mathematical tasks.

In light of the challenges facing education during emergency conditions, it was imperative to provide educational platforms, digital education; plan mathematics lessons digitally, implement classroom lessons through educational platforms, and provide computerized teaching aids, formative, diagnostic and final tests. The quality of distance education also needs qualified teachers who are trained on how to effectively employ educational technology. Not only do teachers possess teaching skills and knowledge of mathematical content, but the technology component has become an important element in the current era in order to transfer knowledge to students easily and simply. However, the teaching methods used in teaching mathematics remotely are limited to displaying educational content directly, or to presenting video lessons only, and this reduces students' opportunities for active learning, and thus the ability to solve the mathematical problem decreases.

Based on the foregoing, educational systems seek to provide tools that help in providing educational sites, in which interactive classroom

sessions are provided, in which dialogue and discussion take place with students. They carry out scientific experiments and reach mathematical investigations and conclusions in an effort to achieve the goals of teaching mathematics. The current study aims to explore the impact of employing digital education using the Nearpod platform in developing the ability to solve the mathematical problems and attitudes towards using the Nearpod platform in mathematics among primary school students in Amman schools in the distance learning environment.

Study Questions

1 - What is the effect of using digital education in developing problem-solving ability in mathematics among third-grade students in Jordan?

2 - What is the level of attitudes towards the use of digital platforms in mathematics for third-grade students in Jordan?

3 - Is there a correlation between problem-solving ability and attitudes towards the educational platform for third-grade students in Jordan?

Importance of the Study

This study is providing tools that help teachers to use them during mathematics education, specifically in the distance education environment. Students need to enrich their knowledge through various educational systems and interactive software that helps them acquire mathematical knowledge and experiences; for example, to understand the concept of the fraction is presented through interactive activities with materials, drawings, and abstracts as well as with interactive exercises and immediate feedback. This study also provides samples of computerized classroom lessons on the Nearpod digital learning site. The mathematical problem-solving test for third-grade students provides test items that reveal their ability to use their knowledge and experiences in different life situations, and the study provides a tool for measuring the degree of attitudes of primary school students towards employing digital platforms in teaching mathematics.

Terminology of the Study

In this study, digital education is intended to provide simultaneous interactive classroom sessions across educational platforms using the Nearpod platform, and this platform provides the opportunity to plan math classes, implement them simultaneously with painting, provide interactive activities, implement mathematical experiments through virtual laboratories, and integrate other platforms with such platforms as quizzes, Kahoot, and Teams.

Methodology

The experimental approach of one group was used in the current study, the use of a pre-posttest, and a description of the basic stage students 'attitudes in the distance learning environment towards the use of interactive educational platforms. This approach is most appropriate for this study in light of the availability of the study personnel, and the possibility of application.

Subjects: The study sample consists of 64 students in private education schools in Amman city during the year 2020/2021.

Study Instruments

Problem-Solving Ability Test: The Mathematical Problem-Solving Test aimed to measure students' ability to employ Mathematics skills, concepts, and generalizations in real, new, and distinct situations.

Validity: The validity of the test was verified using face validity, where the test was presented in its initial form to a group of specialists in the field of mathematics education about the accuracy of the test items, and their belonging to the required process which is solving the mathematical problem. They made some observations about the test items and in light of their observations some items were deleted along with other modifications. The test consisted in its final form of 20 test items that measure a student's ability to solve a mathematical problem using the steps of solving a mathematical problem, so that the student demonstrates his ability to determine the data and what is required, develop a plan for the solution (determine the process or strategy required to solve), implement the solution plan (clarify the skills he

made, the generalizations he used, the method for relating generalizations to each other), and finally, he demonstrates how to make sure the solution is correct.

Test constructive validity was verified by applying the test to an exploratory sample of 30 students from the third grade of basic school in Amman's private schools, and then the correlation coefficients were calculated for each of the test items with the total score of the test that ranged between 0.81-0.89. This is acceptable for the purposes of the current study.The test reliability was verified by applying the test to an exploratory sample of the study population, numbering 30, using the stability of internal consistency of Coder Richardson's equation 21, and its value was 0.93, which is acceptable for the purposes of the current study.

The Attitude Scale Towards Using the Nearpod Platform: The Attitude scale towards the Nearpod platform was developed, and this Likert scale contains five levels: 5-very high, 4-high, 3-medium, 2-low, 1-very low. In order to develop a scale for the attitudes towards the educational platform, and how to use it were reviewed, and the skills that a Mathematics teacher must possess in order to implement classroom lessons through it. In light of defining the attitudes towards educational platforms and the important elements in its application, in terms of ease of use and possibility implementing sports content through it, and supporting it with activities, educational resources, games, and tests, the following five axes were reached:

1 - Provide interaction with the activities provided by the platform (four items).

2 - Availability of a variety of sources for sports content (four items).

3 - The platform helps to increase the level of motivation and excitement to learn (four paragraphs).

4 - The ability to learn synchronously and asynchronously (four items).

5 - Usability (four items).

The Scale validity was also verified by presenting it to a group of qualified and experienced referees in the field of educational technology and methods of teaching Mathematics. In light of their observations,

the test items were modified, and some were deleted. The scale was also applied to an exploratory sample consisting of (30) male and female students of the third basic grade in Amman schools for the academic year 2020/2021, and then the test reliability was verified using the Kuder-Richardson formula 21 (k-21). R = 0.89, which is considered acceptable for the purposes of the current study.

Nearpod Platform

This is a free educational platform that can be accessed via the Internet, and provides the ability to plan classroom lessons in Mathematics. It provides an opportunity for the teacher to engage students in many interactive activities, virtual labs, presentations, formative, diagnostic and final tests (Nearpod).

The steps for teaching using this platform are:

1 - Define the educational outcomes and present them at the beginning of the class.

2 - Determine the tools to be used in the classroom such as digital pens, interactive whiteboards, drawing tools, electronic writing, and others.

3 - Define educational resources such as presentations, worksheets, multimedia (video, audio, solid figures, geometric shapes), and others.

4 - Determine the interactive activities such as competitions, voting, memory tests, formative and final tests, conducting experiments, and others.

5 - Final evaluation and follow-up.

6 - Giving duties both synchronous and non-synchronous.

The validity of the procedures used to employ this platform was verified by presenting a group of sessions implemented to a group of specialists in the field of methods and the technology of teaching mathematics, and they made notes about the classroom classes and methods of implementation so that the procedures for implementing classrooms and enhancing activities were modified: Interactivity, in-

creasing the student's role and interaction, giving other asynchronous interactive activities, increasing students' self-learning level, and learning independence.

Statistics Used

Arithmetic means, standard deviations, single group T-test, effect size (2), and Pearson correlation coefficient were used.

Study Design

One group experimental design was used in the study by applying the problem-solving test beforehand, then using digital education via the Nearpod platform, then applying the problem-solving test and a dimensional trend scale.

Procedures

The current study was conducted according to the following steps:

1 - Reviewing previous studies on educational platforms, digital education, solving the mathematics problem, and attitudes towards employing educational platforms in mathematics.

2 - Developing educational software using the Internet in teaching mathematics and examine previous studies in the field of mathematics education.

3 - Selecting the study sample from students of the third primary for the 2020/2021 scholastic year.

4. Building the study tools (problem-solving ability, attitudes towards using the platform) and verifying the validity and consistency of each of them.

5 - Training mathematics teachers on how to build and implement classroom lessons using digital education through the Nearpod platform.

6 - Pre-application of the Maths problem-solving test on the study group.

7 - Executing the classroom through the Nearpod platform.

Results

The First Question: To answer the first question, arithmetic means and standard deviations, and t-test for the significant differences between post-test and pre-test of problem-solving ability among third grade at Jordan schools came as shown in the following table:

Table 1

Results of the T-test for the Significance of the Differences Between the Post and Pre-Arithmetic Mean in Problem-Solving Among the Third Basic Students in Amman

Group	No.	Arithmetic means	Standard deviation	T-value	Sig.	η^2
Pre-test	64	58.83	9.52	15.62	0.000	0.794
Post-test	64	80.58	8.37			

As shown in Table 1, statistically significant differences $\alpha \leq 0.05$ do exist between post-test and pre-test of problem-solving ability among grade 3 students, and the value of t-test 15.62, with high effect size 0.78. This indicates the impact of using digital education through the Nearpod platform due to the employment of the educational platform in the distance education environment, as the platform provided interactive activities that helped implement various mathematical problems, strengthened strategies for solving mathematical problems, and provided mathematical instruction by presenting the teacher in the virtual classroom, digital worksheets, and the virtual laboratory that provides the platform. This result is consistent with the study results of (Alajlouni, 2014) on the effect of using the Internet in increasing students' motivation in thinking and research. It also agrees with the Study of (Alomar, 2015) regarding the effectiveness of digital courses in increasing the level of achievement in mathematics among primary school students. It also agrees with the study of (Alzekri & Alshibl, 2018) on the impact of digital courses on developing innovative capabilities in mathematics among gifted students.

The Second Question: Arithmetic means, standard deviations, and percentages to investigate the degree of attitudes towards the use of educational platforms in mathematics among third-grade students in

Jordan schools in a distance learning environment, and the following table shows the total score of the attitudes and for each component of attitudes:

Table2

Arithmetic means, standard deviations, and percentages of attitudes towards the use of educational platforms in mathematics among third-grade students in Jordan schools.

Core	Arithmetic means	Standard deviation	Percentage	Ranke
1. Provide interaction with the activities provided by the platform.	4.06	0.680	812%	4
2. Availability of a variety of sources for sports content.	4.37	0.622	87.4%	2
3. The platform helps to increase the level of motivation and excitement to learn.	3.88	0.602	77.6%	5
4. The ability to learn synchronously and asynchronously.	4.46	0.549	89.2%	1
5. Usability.	4.33	0.636	86.6%	3
Total	4.22	0.460	84.4%	

It is noticed from the previous table that the degree of overall attitudes towards the use of digital education through the Nearpod platform reached 84.4%, which is a high percentage, and the order of its components in descending order as follows: The ability to learn synchronously and asynchronously 89.2%, the availability of various resources and multiple sports content 87.4%, ease of use 86.6%, providing interaction with the activities provided by the platform 81.2%, which help increase the level of motivation and suspense for the learner 77.6%. This indicates that the educational platform has increased the level of motivation and activity for students, as well as providing resources to support students 'education, ease of use, and are available on the Internet for free, and contain many interactive activities and competitions. The researchers noted through the use of classroom lessons during the implementation of the experiment that the degree of

student interaction is high, and they are very much integrated with activities, especially during the presentation of competitions and educational games which prompted students to learn better and increased their eagerness to attend classes and actively participate. This result is consistent with the study of (Sharpy, 2017) on the impact of interactive learning on the development of attitudes and learning efficiency of student teachers, also consistent of Hoover's study (2021) on the importance of digital education in developing external and internal motivation among primary school students.

The Third Question: Pearson correlation coefficient was used between the two variables, a coefficient 0.803; which is significant at $\alpha \leq 0.050$ level. This indicates the existence of a positive correlation between the problem-solving ability and attitudes towards digital education using the Nearpod platform. The researchers observed that teaching students through the Nearpod platform increased the students' opportunity to learn actively, it also provided interactive activities, and was linked with other platforms that help solve problems in Mathematics and thus led to an increase in the student's ability to solve the mathematical problems.

Recommendations

In light of the results of the study, the researchers recommend the necessity of providing digital education through interactive educational platforms available on the Internet, and providing training for mathematics teachers in the basic stage on interactive educational platforms, and how to implement and evaluate classroom lessons in a distance learning environment, and increase students participation, paying attention to their motivation, and their attitudes towards distance methods of education. According to the importance of these methods in increasing students' ability to solve the mathematical problem. The researchers also suggest conducting other studies on further educational platforms and employing these platforms in developing other processes in mathematics such as mathematical communication, mathematical connectivity, and critical and creative thinking.

فاعلية التعليم الرقمي باستخدام منصة نيربود (Nearpod) في تنمية القدرة على حل المسألة الرياضية والاتجاهات نحوها لدى طلبة المرحلة الابتدائية في الأردن

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المملكة الأردنية الهاشمية

ملخص

هدفت هذه الدراسة لتقصي فاعلية التعليم الرقمي في تنمية القدرة على حل المسألة الرياضية والاتجاهات نحوها لدى طلبة الصف الثالث الابتدائي في الأردن، تكونت عينة الدراسة من 64 طالبًا وطالبة من طلبة الصف الثالث الابتدائي في التعليم الخاص في مدارس عمان؛ ممن تلقوا تعليمهم عن بعد. استخدم في الدراسة المنهج شبه التجريبي لمجموعة واحدة، وتم إعداد اختبار في حل المسائل الرياضية، ومقياس للإتجاهات نحو استخدام التعليم الرقمي باستخدام منصة نيربود (Nearpod)، بعد أن تم التحقق من صدقه وثباته. أظهرت نتائج الدراسة أن هناك تأثيرًا دالًا لمنصة التعليم الرقمي بدليل وجود فرق ذي دلالة إحصائية α 0.05 يبين متوسطي درجات التطبيق البعدي والتطبيق القبلي في القدرة على حل المسألة الرياضية؛ لصالح التطبيق البعدي، كما أظهرت النتائج اتجاهًا موجبًا نحو استخدام المنصة التعليمية في تدريس الرياضيات، وكذلك أظهرت النتائج علاقة ارتباطية موجبة بين القدرة على حل المسألة الرياضية والاتجاه نحو استخدام المنصة لدى طلبة المرحلة الابتدائية. وفي ضوء نتائج الدراسة تم تقديم بعض التوصيات والمقترحات.

الكلمات المفتاحية: التعليم الرقمي، حل المسألة الرياضية، الاتجاهات نحو التعليم الرقمي.

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