

The Effectiveness of Darsak Platform in Developing the Skills of Solving Math Geometric Problems: A Case-Study of Eighth Grade Students in Jordan

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Abstract

This study aims to explore the effectiveness of Darsak platform in developing the skills of solving math geometric problems among 8th-grade students in Jordan. To achieve the objectives of the study, the quasi-experimental method has been used. The study sample consists of (36) students purposefully selected and equally distributed to two groups: one of them is an experimental group taught through Darsak platform and the other is a control group taught through the traditional method in the academic year (2020/2021). An achievement test in solving the geometric problem has been applied to the study sample, and its validity and reliability are verified. The results of the study show that there are statistically significant differences at the significance level ($\alpha = 0.05$) between the mean of the scores of the experimental group and the control group in the post-test of solving math geometric problems in favor of the experimental group. As a final point, the study has recommended the necessity of adopting electronic learning platforms as an integral part of the learning process in schools.

Keywords: Darsak platform, geometric problem solving, Mathematics, effectiveness.

INTRODUCTION

The knowledge age is currently based on the employment of technological innovations in all areas of life, as these technologies have paved the way for the growth of knowledge societies, contributed to their development, and indicated their advancement. The field of education is one of the most prominent of these fields affected by technology, beginning to adopt new formulas and practices to keep pace with the continual global developments to achieve quality requirements in education, which is the core of the educational system and a firm basis for raising its efficiency and advancement. Thanks to the conditions that the whole world is currently experiencing represented by the spread of COVID-19, educational institutions suddenly have found themselves forced to switch to distance learning to ensure the continuity of the teaching and learning process

and use the Internet, smartphones, and computers in remote communication with students (Yulia, 2020).

The acceleration of pace in the diversity of sources of e-learning technologies and the abundance of its applications contribute to the increase in the demand for their use, making it a stop to search for solutions to the problems facing educational institutions. These institutions can employ and benefit from these applications through the global Internet, which is an effective medium for e-learning that makes the learning process more effective, impactful, more accessible, enjoyable, and positive (Al-Qutaish, 2013).

In this context, e-learning platforms have emerged, which are one of the most important e-learning environments, i.e. distance learning that can provide a learning environment that

contributes to the transformation from a single-source environment to an interactive binary environment, from a resource-poor environment to a resource-rich environment, and from a fixed environment to a mobile environment. E-learning platforms are based on interactive social learning between the teacher and the learner, between the learner and his peers, and between the learner and the educational content.

Interactive learning platforms are an advanced step in the field of distance learning due to the availability of interactive and flexible technical tools that help provide learning based on social interaction that attracts students' attention, pushes them to improve their achievement levels, and provides teachers with cloud technologies and applications to manage the learning process that enables them to control and monitor students and follow up their performance in an organized electronic method (Al-Ahmadi, 2019).

In light of this trend, the Jordanian Ministry of Education has developed an ambitious plan at the beginning of the academic year (2020/2021) to confront the impact of the COVID-19 pandemic, as it resorted to distance learning, which has become popular these days all over the world. distance learning has become an existing and required system in most countries of the world to protect students and teachers from the risk of infection with the COVID-19 by allocating Darsak Platform as a free Jordanian distance learning platform, providing school students from the first grade to the secondary second grade with lessons through video clips scheduled according to the Jordanian education curriculum and provided by a distinguished group of teachers to make it easier for students to continue their learning and follow up their study materials (Ministry of Education, 2020).

Employing e-learning platforms in teaching subjects, including mathematics, is an attempt to enrich the educational process and make the content interactive and exciting so that it combines more than one type of learning media. The mathematics teacher's use of electronic learning platforms in teaching

contributes to enhancing students' abilities, training them to think, deepening their understanding of terms, processes and theories, and teaching them how to solve problems, draw conclusions, think critically and use technology. The role of e-learning platforms is highlighted through the contributions they make to mathematics teaching for different academic levels. These platforms provide students with various information that can contribute to raising their academic achievement, developing their perceptions, and increasing their scientific output in various fields (Zuhdi, 2017).

In this regard, educators see that there are justifications that encourage the use of the Internet in teaching mathematics, as it supports students' thinking processes, increases their motivation to self-learning, increases teachers' ability to communicate with them, and provides an atmosphere of fun and suspense. The use of the Internet in teaching mathematics will not be completely achieved without searching for effective methods and strategies such as the use of electronic learning platforms that make students think and not memorize mathematics, as they develop students' abilities to think and accustoms them to self-reliance and cooperation with others.

The importance of solving the mathematical problem lies in the fact that it sits at the top of the learning pyramid and occupies a prominent place as one of the most important areas of mathematical knowledge. Therefore, if the students' abilities are to be developed in solving the mathematical problem, it is worth emphasizing developing their abilities concerning the geometric problem by creating an interactive learning environment (Murley, Jukes & Stobaugh, 2013; NCTM, 2011).

In the international standards pact, the National Council of Teachers of Mathematics have recommended a curriculum that develops students' ability in mathematics, as the use of thinking and problem solving is considered one of the hypotheses that build and develop mathematical concepts, and an essential educational necessity due to several criteria mentioned in the standards pact for school

mathematics, including the facts that the development of students' mathematical problem-solving ability leads to a deeper understanding of the mathematical content they study, and students acquire ways of thinking, habits of perseverance, curiosity, and confidence in unfamiliar situations that prepare them to face challenges. Therefore, those in charge of mathematics curricula and methods of teaching should pay more attention to the skill of solving mathematical problems, especially solving geometric problems (NCTM, 2011).

Jordan's experience in e-learning via electronic platforms is one of the successful experiences that have given mathematics teaching a high priority. One example of these successful platforms is Darsak which is an electronic learning platform launched by the Ministry of Education on March 22, 2020. In detail, the platform provides learning content for students from the first to the twelfth grade (Tawjihi) through video recordings of basic subjects, including Arabic language, English language, Sciences, and Mathematics, along with specialization subjects for different branches of students in the eleventh and twelfth grades, knowing that Darsak platform can be accessed free of charge from 6 a.m. until 4 p.m. Nearly a month after its launch, assessment tests for learning for all students from the fourth grade to the eleventh grade, as well as experimental exams for high school students (Tawjihi) in its various branches have been conducted (Batshon and Shahzadeh, 2020).

Darsak platform is one of the education projects for digital transformation adopted by the Ministry of Education in partnership with the Ministry of Digital Economy and Entrepreneurship and with technical development from Mawdoo3 company. Darsak platform has made the student and the teacher, who are the nucleus of the educational process, the main focus for creating a new learning environment that relies on technology in delivering knowledge to the student, increasing his scientific outcome, and supporting the development of teachers' scientific and pedagogical capabilities.

Darsak platform is of great importance, as shown in the following elements:

The learner: Darsak provides the learner with an interactive and stimulating study environment, consolidating information among students through the use of multiple media that enable them to recall previous lessons, developing their mental skills and other skills necessary for the teaching and learning process, and allowing the student to access the platform at any time. Moreover, browsing during the period between six in the morning and four in the afternoon is free. In other words, browsing does not cost the student the cost of browsing the Internet, and his balance is not deducted for this browsing.

The teacher: Darsak enables the teacher to follow up on the student's educational performance, evaluate it, and guide the learner's behavior and discipline. The teacher also uses it to support his explanation with practical examples that help in communicating the idea to the student and clarifying the concepts and skills presented by the lesson, and benefiting from the experiences of other teachers by sharing information with them electronically and during presentation educational content.

School administration: Darsak enables the school administration to monitor and evaluate the performance of teachers and students, whether in the educational or administrative aspect.

Educational Supervisor: Darsak enables him or her to regularly follow up and evaluate the general performance of the school administration and teachers.

Parents: Darsak enables them to follow up on their children's achievements, view the attendance and absence record, and grades through their accounts on the platform.

The process of solving a geometric mathematical problem is the most complex mental activity, making intelligence sometimes known as problem-solving, and therefore problem-solving is a high mental activity that includes many overlapping mental processes

such as imagination, memorization, renewal, generalization, and analysis, along with information, skills, general abilities, and emotional processes such as desire and motivation (Abbas and Al-Absi, 2017). There is an increasing interest in improving mathematics's learning outcomes because of their distinct position among other fields of knowledge, as they constitute one of their basic components. One of the most prominent developments in the learning outcomes is the acquisition of deep mathematical concepts and skills, the acquisition of thinking strategies, and geometric mathematical problem-solving skills, which give the student an impetus to deal with emerging life situations and improve his abilities (Abu Zaina, 2011).

The importance of solving the geometric mathematical problem is reflected in the degree of global interest in this component of mathematical knowledge. The National Council of Teachers of Mathematics, in the international standards pact, has recommended that solving the problem should be the focus of school mathematics. The Council has also emphasized that mathematics programs should focus on problem-solving as part of understanding mathematics, and the document specified a special standard for solving a geometric problem within the approved process standards (NCTM, 2011).

The students' abilities to solve the geometric problem grow and develop if the students are accustomed to reflecting and evaluating their solutions to the problems so that the students can modify and adapt their solving strategies during the solution. However, students face difficulty in solving mathematical problems, especially in geometric issues, and this is evident through the confusion and mix-up that appear on the students, and their inability to determine the necessary method while trying to solve the geometric problem.

Abu Zina (2011), therefore, confirms that there are guidelines that help the teacher develop students' ability to solve mathematical problems, such as encouraging students to repeat the problem in words, clarifying it with shapes and representing it, and helping students

to evoke more information and ideas, as solving problems depends on the individual's outcome of experiences, knowledge, and skills, helping students to improve their abilities in testing hypotheses, and encouraging them to proceed with induction and investigation. In other words, the more the teacher emphasizes the links and relationships between the parts of the problem, the greater the student's chances of forming hypotheses and guessing solutions, and encouraging students to solve the problem in more than one way through the student's return to the experience of different methods. This helps to avoid the traditional mechanical method and thinking and help students adapt to problems by making the student understand that the issue is a situation or ambiguity for which there is no ready solution and that the student is supposed to face difficulty in solving it, knowing that this situation requires him to think, reconsider, and reflect.

The use of modern teaching tools helps students to build knowledge and mathematical systems in a meaningful way so that they can see the components and relationships between concepts, theories, and laws, benefit from them in building new knowledge and facts, and move students from the stage of mathematical achievement to the stage of organized mathematical thinking. Through the formation of conceptual systems with mathematical relations, students can develop and practice this thinking and address the challenges imposed by the technological and information revolution (Al-Bado, 2019). There is a close relationship between the use of Darsak platform and geometric problem-solving skills, as using Darsak platform leads to students returning to educational websites on the Internet and interacting with them, and their use and mastery of several educational programs on the Internet leads to an increase in the number of posts they submit. As a result, this develops students' geometric problem-solving skills and teaching geometric problem-solving skills and develops students' skills in solving it, provides a supportive environment for that, provide teachers and students with the ability to talk about many strategies through which they can

present challenging geometric problems for students.

In this take and give discussion, there is a need to use Darsak platform in developing the skills of solving mathematical problems, especially solving the geometric problem, because the use of electronic learning platforms has a positive effect in stimulating students' abilities and thinking skills. More importantly, as many studies, namely Ghallab and Abdel Raouf's study (2019), and Al-Saai's study (2015) have emphasized the effectiveness of electronic learning platforms and the necessity of employing them in the learning process, this study aims to explore the effectiveness of darsak platform in developing the skills of solving math geometric problems among the 8th-grade students in Jordan.

Literature Review and Previous Studies

This section gives insight into some important Arab and foreign studies related to the subject by presenting and benefiting from them according to their historical sequence from the most recent to the oldest. Al-Shamrani and Al-Ariani's study (2020) aims to reveal the effectiveness of using distance learning platforms (Future Gate) in developing cognitive achievement and reducing the level of test anxiety among middle school students in science and social studies subject in Jeddah in Saudia Arabia. Due to the nature of the study, the quasi-experimental approach has been used. The study sample consists of (230) male and female students, and two instruments, namely the cognitive achievement test and the test anxiety scale. The study shows that there is a statistically significant difference between the mean of the scores of male and female students in the pre-and post-application of the cognitive achievement test in science and social studies subjects in favor of the post-application. The study also shows that there is a statistically significant difference between the mean of the scores of male and female students in the pre-and post-application of the test anxiety scale in favor of the post-application.

In the same context, Shuqairat and Al-Rasai's study (2020) aims to reveal the effect of teaching using the Edrak educational platform on the achievement of tenth-grade students in mathematics, and their attitudes towards mathematics. Due to the nature of the study, the quasi-experimental method has been used. The study instruments consist of an achievement test and an attitude scale consisting of (24) items applied to a study sample of (50) students randomly divided into two groups, namely experimental and control. The results of the study show that there were statistically significant differences between the mean of the scores of the experimental and control groups in the post-application of the achievement test in favor of the experimental group. The results also show that there was a statistically significant difference between the mean scores of the experimental and control groups in the post-application of the students' attitude scale in favor of the experimental group.

The study of Ghallab and Abdel-Raouf (2019) aims to reveal the effect of using electronic learning platforms "Edmodo" in teaching home economics on the development of some habits of mind and achievement among middle school students. To achieve the objective of the study, one of the home economics units prescribed for the 8th grade which is a unit "productive family" has been reformulated, using electronic learning platforms. Also, a teacher's guide and student activity booklet, along with an achievement test and a scale for the productive habits of mind have been prepared. The pre-and post-test and pre-and-post scale have been applied to the study sample consisting of two experimental and control groups, each of 30 students, where the experimental group has studied the unit using electronic learning platforms, while the control group has studied the unit using the traditional method.

The study of Yustinaningrum (2018) aims to identify the effect of using learning platforms (Edmodo) on the achievement of tenth-grade students in mathematics and their attitudes towards it. Due to the nature of the study, the quasi-experimental approach has been used. The study sample consists of (35) students in the experimental group and (39) students in the

control group. The results show that there is a positive impact of using e-learning using the Edmodo platform on students' achievement in mathematics and increasing their interest in it.

Another study by (Benta, Bologa & Dzitac, 2014) aims to reveal the impact of the use of electronic learning platforms in activating and developing the learning process and participating in educational duties, activities, and tasks. To achieve the objectives of the study, the (2970) records of users from the service center over three months that are collected from electronic learning platforms have been analyzed. Several special courses have been used to learn the use of electronic learning platforms. The study sample consists of (202) male and female university students in Romania distributed into two groups (experimental and control). In detail, the experimental group consisting of (98) male and female students have been taught using the electronic learning platform, while the control group consisting of (104) male and female students have been taught in the traditional method. The results show that there is a statistically significant effect of the electronic learning platform in motivating students to participate in cognitive tasks. The results also show that there are statistically significant differences in students' achievement and performance in their educational tasks and duties in favor of the experimental group.

Against this, it is clear that previous studies have varied in their objectives, as some of them aim to explore the effectiveness of electronic learning platforms in student training, such as (Al-Shamrani and Al-Ariani, 2020; Shuqairat and Al-Rasai, 2020; Ghallab and Abdel-Raouf, 2019; Yustinaningrum, 2018). However, other studies have dealt with the role of electronic learning platforms in facilitating the learning process, such as (Benta, Bologa & Dzitac, 2014). Importantly, these studies are similar to the current study in dealing with electronic learning platforms.

More importantly, this study differs from the previous studies in using Darsak platform and studying its impact on developing geometric problem-solving skills for mathematics among

tenth-grade students. More notably, the current study distinguishes from the previous studies in its objective, study population, sample study, place, and time in the learning field, which have dealt with two variables: Darsak platform, and students' geometric problem-solving skills. It is also possible to summarize the areas of benefit from the relevant studies as follows: formulating study questions, constructing and developing study instruments, and verifying their validity and reliability.

Problem of the Study

Familiarity with mathematics alone without paying attention to its teaching methods constitutes a major obstacle in achieving the ambitions that mathematics seeks to achieve. Also, we shall know that the teaching method is the link between the student and the curriculum and one of the most important basic components in the success of the teaching and learning process, and this is evident when reviewing the results of international tests periodically held in Jordan, such as the Trends in International Mathematics and Science Study (TIMSS) test. The results of this test show a clear decline in students' achievement in mathematics and their lack of geometric problem-solving skills. Significantly, the Jordanian national report on the International Study of Mathematics and Science for the year 2019 indicates that the performance level of Jordanian students in mathematics is of a low level (Ministry of Education, 2021).

On top of the conditions imposed by the COVID-19 pandemic on the Ministry of Education to resort to e-learning through Darsak platform, the following studies (Al-Shamrani and Al-Ariani, 2020; Shuqairat and Al-Rasai, 2020; Ghallab and Abdel-Raouf, 2019; Yustinaningrum, 2018; Benta & et al., 2014) assert the importance of electronic learning platforms and their contribution to the learner and the learning process by raising the academic achievement rate, developing skills and positive attitudes towards different academic courses in general. Also, the studies of Shuqairat and Al-Rasai, 2020; Yustinaningrum, 2018) have recommended

supporting the use of electronic learning platforms in the teaching of mathematics.

With that, generally, speaking, the problem of the study is that there is a need to improve the methods and approaches used in teaching mathematics by moving towards employing teaching strategies that rely on the Internet, such as electronic learning platforms, along with the fact that no studies have done in the field of the electronic learning platforms despite the importance of mathematics, and the need to keep pace with development technology covering most of the academic subjects. Precisely, the problem of the study lies in exploring the effectiveness of Darsak platform in developing the skills of solving math geometric problems among the 8th-grade students in Jordan.

Objective of the Study

The objective of the research is:

- * Exploring the effectiveness of darsak platform in developing the skills of solving math geometric problems among the 8th-grade students in Jordan.

Question of the Study

The following research question is formulated to achieve the objective of the study.

- * What is the effectiveness of darsak platform in developing the skills of solving math geometric problems among the 8th-grade students in Jordan?

Hypothesis of the Study

To answer the question of the study question, the following null hypothesis has been formulated: There are no statistically significant differences at the significance level ($\alpha = 0.05$) in developing the skills of solving math geometric problems among the 8th-grade students in Jordan due to the teaching method, namely: Darsak platform and traditional method.

Significance of the Study

The significance of this study lies in the novelty of the topic and the lack of studies and

research that have dealt with the subject of the study as the topic the effectiveness of darsak platform in developing the skills of solving math geometric problems among the 8th-grade students in Jordan is of great interest to many higher education institutions, accreditation bodies, and researchers at the Arab and Jordanian levels. This study gains its importance from the fact that it helps in activating and developing the role of electronic learning platforms, especially Darsak platform, as an essential assistant in the current and future learning process, contributing to identifying the impact of learning platforms in raising learning efficiency and investing this in enriching students' academic achievement. This study is important as the evaluation of Darsak platform is also one of the current learning priorities due to the problems left by the COVID-19 pandemic in how to communicate between the teacher and students.

This study also attains its importance from the fact that it is unique in being the first study that examines this area for students of the basic stage. It is also hoped that this study will provide an opportunity for mathematics teachers to see how to use Darsak platform in teaching mathematics. Besides, it is hoped that this study will be a qualitative addition to the Arab learning library, and an area of encouragement for researchers to conduct other similar studies.

Terms of the Study

The following are the terms and definitions of the study.

Darsak platform: It is a free Jordanian distance learning platform that provides school students from the first grade to the twelfth grade with learning lessons through video clips organized and scheduled according to the Jordanian education curriculum provided by a distinguished group of teachers to make it easier for students to continue their learning, and follow up on their study materials (Ministry of Education, 2020). Procedurally, it is defined as electronic courses of mathematics for the eighth grade, consisting of videos, pictures, and animations to explain the course,

reading materials, tests, as well as forums for communication between students and teachers on the one hand, and students with each other on the other hand.

Geometric problem-solving skills: It is an organized mental activity for the student and a scientific approach that begins by stimulating the student's thinking about the existence of a problem that precedes thinking and searching for its solution according to scientific steps through the practice of several learning activities (Sulaiman, 2015). Procedurally: it is defined as a set of organized and arranged procedures carried out by the eighth-grade students in the geometric unit starting from determining the data and problem required to be answered, and then sequentially solving the problem until reaching the exact answer and verifying the correctness of the answer.

Traditional method: It is the method used by mathematics teachers in the classroom depending on explanation and class discussion in the form of questions and answers.

Limitations of the Study

This study is limited to exploring the effectiveness of darsak platform in developing the skills of solving math geometric problems among the 8th-grade students in Jordan. The study is also limited to the extended period during the first semester of the academic year 2020/2021. Besides, the study is limited to (36) students of the eighth grade at Rahba Rakkad Secondary School for Boys affiliated to the North Eastern Badia Education Directorate.

Methodology

This section gives insight into the study methodology and procedures.

Research Approach

The quasi-experimental approach has been used for two groups: experimental and control in this study as it suits the nature of the study's problem, objective, and question.

Study Population & Sample

The study population consists of all eighth-grade students in government schools affiliated with the North Eastern Badia Education Directorate in Jordan for the academic year 2020/2021. The study sample also consists of (36) students purposely selected from Rahba Rakkad Secondary School for Boys due to the cooperation of the subject teacher and the school administration in implementing the study. Then, they have been randomly distributed to (18) students for the experimental group and (18) students for the control group.

Groups Equivalence

To verify the equivalence of the two study groups before starting the processing, the geometric problem-solving test has been applied to the study sample first. As a second step, the arithmetic means, standard deviations, and t-value of the scores of each of the two study groups have been calculated (see Table (1).

Table 1. *Arithmetic Means, Standard Deviations, and T-test for the Effect of the Method on the Pre-test*

Group	Number	AM	SD	T-Value	Statistical Sig.
Control	18	7.02	1.74	0.14	1.62
Experimental	18	6.97	1.51		

Note. there are no statistically significant differences at the level of significance ($\alpha = 0.05$) between the mean of the scores of the students of the control and experimental groups on the achievement test, indicating that the control and experimental groups are equivalent

in the achievement test before the start of the experiment.

Study Instruments

This section gives insight into the study Instruments adopted in the study.

Teacher's Guide

The teacher's guide has been prepared to include procedures that show the teacher how to enter the platform and use it to teach the unit of foundations and equations. The guide also comprises study plans and worksheets for the seventh unit (triangles) from the eighth-grade textbook. The guide includes the following procedures and information:

- a. Steps to register on Darsak platform through the electronic email address (www.darsak.gov.jo), as it gives the student the freedom to access it with his national number and name if he is Jordanian, and with his identification card if he is not Jordanian, and then activate the account on the platform to use it.
- b. Steps required to create a teaching relationship on the platform for continuous learning, as Darsak platform gives a space for interaction between the student and the teacher and all the elements of the learning system, and provides statistics on the number of entry of students and teachers, the opportunity to submit homework and worksheets, and tests that the system spontaneously corrects automatically. It provides feedback to the student and the teacher on the level of performance and reinforces the principle of interactive learning.
- c. The contents of the teacher's learning board, including courses, classes, and learning videos for the Triangle Unit.

Face Validity of the Teacher's Guide

The teacher's guide has been verified by presenting it to a group of (11) validators with expertise and competence in the disciplines of methods teaching and curricula for mathematics, measurement, learning evaluation, education technology, and educational supervisors for mathematics. The validators are asked to read and review the contents of the guide, and express their opinions and suggestions about it in terms of its objectives and scientific material, and so on. The comments and suggestions of the validators have been reviewed and taken into account, and appropriate modifications and improvements have been incorporated into the contents of the guide.

Achievement Test in Solving the Geometric Problem

After the content has been analyzed for the study unit, along with the preparation of the specification table, the achievement test has been suitably prepared. The test consists of (20) multiple-choice items with four alternatives of graduated difficulty with a final mark of (20), whereby the student gets one mark for each correct answer and zero marks for the wrong answer.

Test Psychometric Properties

To apply the psychometric properties of the test, the difficulty, discrimination, reliability, and validity coefficients have been calculated. The test has been applied to an exploratory sample consisting of (32) students from outside the study sample. The following is the results:

Table 2 *Difficulty and Discrimination Coefficients for Achievement Test Items*

Item No.	Difficulty Coefficients	Discrimination Coefficients	Item No.	Difficulty Coefficients	Discrimination Coefficients	Item No.	Difficulty Coefficients	Discrimination Coefficients	Item No.	Difficulty Coefficients	Discrimination Coefficients
1	0.65	0.52	6	0.59	0.56	11	0.41	0.49	16	0.53	0.35
2	0.53	0.35	7	0.63	0.63	12	0.70	0.34	17	0.60	0.47
3	0.42	0.47	8	0.41	0.50	13	0.65	0.38	18	0.47	0.62
4	0.44	0.69	9	0.57	0.45	14	0.73	0.62	19	0.68	0.50

5	0.55	0.57	10	0.46	0.39	15	0.68	0.49	20	0.79	0.38
Item No.	Difficulty Coefficients	Discrimination Coefficients	Item No.	Difficulty Coefficients	Discrimination Coefficients	Item No.	Difficulty Coefficients	Discrimination Coefficients	Item No.	Difficulty Coefficients	Discrimination Coefficients

Difficulty and discrimination coefficients have been calculated for each of the test items depending on the exploratory sample. Table (2) shows the results of the difficulty and discrimination coefficients for the test items, where the difficulty coefficients have ranged between (0.41-0.79), while the discrimination coefficients have ranged between (0.34-0.69). These values of the coefficients of difficulty and discrimination are considered pedagogically acceptable (Al-Kilani and Al-Sharifen, 2016). Accordingly, no item is deleted from the achievement test in light of these values of the coefficients of difficulty and discrimination.

Test Validity

The content validity and construct validity of the test have been verified by presenting it to (11) specialized validators to express their comments about the formulation of questions and linguistic coherence, clarity of the question idea, scientific accuracy of the questions, coverage of the questions for the unit of study, and their relevance to the topics of the unit and the age group of students. Subsequently, modifications have been incorporated according to the validators' comments.

Test Reliability

The reliability of the test has been verified through two methods, namely: test and retest, as the test has been applied twice to an exploratory sample consisting of (32) students from outside the study sample with a time difference of two weeks between the two times of application. With that, the Pearson correlation coefficient between the two times of application is (0.82) which is considered a high and acceptable statistical value in this type of study. As for the second method, it is conducted through calculating the test reliability coefficient through The Kuder-

Richarson Formula 20, where the reliability coefficient is (0.85), which is a high and acceptable statistical value in this type of study, indicating the reliability of the test and its validity for application.

Statistical Processing

Descriptive statistics methods have been used to calculate the arithmetic means and standard deviations of the performance of the experimental and control group members on the pre-and-post achievement test. Also, "T" (independent sample T-test) has been used to calculate the significance of the differences between two independent groups, and the Eta coefficient (η^2) of the effect size, and the levels of the effect size with the Eta-squared coefficient (η^2) as follows: (0.14) a large effect size, (0.04) a medium effect size, and (0.01) a small size effect.

Results and Discussion

This section gives insight into the results and discussion related to the question of the study.

What is the effectiveness of darsak platform in developing the skills of solving math geometric problems among the 8th-grade students in Jordan?

To answer the question of the study question, the following null hypothesis has been formulated: There are no statistically significant differences at the significance level ($\alpha = 0.05$) in developing the skills of solving math geometric problems among the 8th-grade students in Jordan due to the teaching method, namely: Drasak platform and traditional method.

To test this hypothesis, the arithmetic means and standard deviations have been calculated. An independent sample T-test is also used to

calculate the significance of the differences between two independent groups to identify the differences between the mean of the scores of

the students of the experimental and control groups on the post-test as shown in Table (3).

Table 3. *T-test to Estimate the Difference in the Achievement Means of the Students of the Experimental and Control Groups on the Post-test*

Group	Number	AM	SD	T-Value	Statistical Sig.	Effect Size (η^2)
Control	18	12.47	2.05	18.94	0.004	0.32
Experimental	18	16.08	1.36			

The results in Table (3) show statistically significant differences at the significance level ($\alpha = 0.05$) in the development of geometric problem-solving skills for mathematics among eighth-grade students due to the teaching method: Darsak platform and traditional method, where the value of "t" is equal to (0.004), which is statistically significant at the significance level ($\alpha = 0.05$). Looking at the mean of the achievement of the members of the two study groups: experimental and control on the post-test, it is found that the difference is due to the mean of the achievement of the experimental group students, which amounted to (16.08), while the mean of the achievement of the control group on the post test is (12.47). By studying this statistically significant difference, it is inferred that there is the effectiveness of teaching using Darsak platform in developing geometric problem-solving skills for mathematics for eighth-graders.

Table (3) also shows that the value of the Eta-squared (η^2) to measure the effect size is equal to (0.32), and this value is greater than the level of the effect size specified for the large effect, which is equal to (0.14). In detail, this indicates the significant impact of Darsak platform in developing geometric problem-solving skills among the students of the experimental group. In other words, 32% of the improvement in the achievement of the experimental group students in the post-test is due to the use of Darsak platform in teaching mathematics to students. This result may be attributed to the outperformance of the experimental group that uses Darsak platform, which provided many stimuli that require activity and interaction with the content, and listening to the sounds as if it were a new method for them.

Notably, this is a reason for increasing focus and attention among students, which in turn develops their thinking skills in solving mathematical issues, flexibility, diversity, and wide arenas for presenting the educational material in terms of technologies and electronic learning means. The electronic educational platform provides many enriching activities, pictures, forms, and educational videos, and a feature in quick and immediate access to homework, participation, and effective communication with peers. The technology of educational platforms also allows the presentation of educational content to students in an interesting and different method from the traditional method represented by addressing the mind, helping to communicate, providing feedback to their colleagues, interacting in solving problems, and making the educational situation more interactive.

Moreover, the educational platform also helped to provide easy access to information at all times and with minimal effort, and an opportunity for students to exchange information with their colleagues, comment on it, and manage dialogue and discussion about it, increasing cognitive engagement during learning. The provision of immediate feedback by the teacher through the educational platform to the students and the reinforcement of the correct answers individually help to increase the behavioral engagement and contribute to the removal of fear, shame, and dread in the hearts of the students and boost their self-confidence, increasing the effectiveness of learning and the learner's motivation, and the movement between the components of the electronic environment in complete freedom, from which the student takes everything he needs to learn and develops his thinking and creative skills, thus increasing his academic

achievement. The result of this study agrees with the results of the studies of (Al-Shamrani and Al-Ariani, 2020; Shuqairat and Al-Rasai, 2020; Ghallab and Abdel-Raouf, 2019; Yustinaningrum, 2018) whose results show that there are statistically significant differences between the mean of the scores of the experimental and control groups in the post-application of the achievement test in favor of the experimental group.

Conclusion and Recommendations

In a nutshell, this study aims to explore the effectiveness of Darsak platform in developing the skills of solving math geometric problems among the 8th-grade students in Jordan. To end with, the study has recommended the necessity of adopting electronic learning platforms as an integral part of the learning process in schools.

In light of the results, the research recommends the necessity of adopting electronic learning platforms as an integral part of the education process in schools, directing and encouraging teachers to use the tools of the Darsak platform in teaching mathematics, holding training courses for them to enable them to prepare and implement teaching plans based on these tools, integrating all kinds of e-learning into the content of curricula and courses in general and mathematics in particular, holding introductory courses and making special guides and brochures to raise awareness of the importance and effectiveness of electronic educational platforms, alongside conducting similar studies dealing with the effectiveness of Darsak platform in other subjects and educational stages.

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