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Effectiveness of E-learning in the Engineering-related Lessons in the Math Course amongst the Higher Basic School Students in Jordan from the Teachers' Perspective

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ABSTRACT

This study explored the effectiveness of employing an e-learning platform for giving online engineering-related lessons in the math course for the higher basic school students from the teachers' perspective. The researcher adopted a descriptive analytical approach and designed a survey that is based on the five point Likert scale. He chose a purposive sample consisting from 95 female and male math teachers. Those teachers were chosen from 95 public schools located in Jordan. Those schools were chosen from three Jordanian cities (Irbid, Amman and Karak). Those cities represent the Central, Northern, and Southern Provinces. The sampled schools include: 35 schools in Amman, 30 schools in Karak and 30 schools in Irbid. The researcher passed the questionnaire forms to the chosen teachers through WhatsApp Application. All the passed forms were filled and analysed. It was found that it's very effective to employ the e-learning platform for giving online engineering-related lessons in the math course for the higher basic school students from the teachers' perspective. The researcher recommends holding courses for math teachers about the instructional strategies used for delivering online education in the math course.

Keywords: Math, e-learning, e-learning platform, teachers, students, basic schools, engineering lessons.

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1. Introduction

There are many developments made in the field of technology (Alderbashi and Khadragy, 2018). There are various modes used for delivering online education through which the e-learning platform is used. Such modes include: the blended learning mode, the flipped learning mode (Al-Derbashi, 2017) and distance education. Distance education may be called online education (Madi, 2022). All those instructional modes may be adopted for providing students with education regardless of the spatial or temporal limitations facing students. They may be adopted to expand the students' knowledge and develop their skills in various areas and fields (Al-Derbashi & Abed, 2017).

Through this article, the researcher aimed to shed a light on the use of the e-learning platform for the delivery of online math education. He decided to shed a light on such use due to its numerous merits and advantages. Online education is pattern of education that allows instructors to provide their pupils with education, though both parties are spatially separated from each other. However, both parties interact and communicate with each other through the use of an interactive telecommunications system (i.e. an e-learning platform).

E-learning platform refers to a program that offers a set of interactive services which are not restricted by temporal or spatial limitations. Those services are provided through using the Internet. This platform includes several tools and materials that can be used by students, teachers, and the ones interested in learning. It improves and supports the teaching-learning process. It offers access to a variety of learning activities. It allows learners to communicate with each other from a distance. It allows exchanging information, and solving problems (Al Mulla, and Abdullah, 2021). Microsoft Co. and other high-tech companies designed e-learning platforms (Abdulsattar, 202).

Through using e-learning platforms, the academic materials can be delivered to learners at home. Such platforms allow students to be tested at home. They offer students access to academic resources without having to visit the library nor meet the teacher in person (Schlosser and Simonson, 2009). Using an e-learning platform for delivering online education allows instructors to update the material at any time and from any place. It allows instructors to add multimedia-based content to the material (Madi, 2022). It improves the learning outcomes and positively affects learners' skills in using computer. That's because using such platforms requires improving students' skills in using computer and gaining knowledge about the way of using the computer (Amer, 2020).

Using an e-learning platform for delivering online education contributes to improving the key four language skills of students. It offers all students equal chances in terms of engagement in the lesson. It enhances the higher-order thinking skills of students. It raises the interest of students in the course being taught. It improves their learning experiences and raises the extent of retaining information in memory. That's because

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e-learning platforms are capable of presenting information in a visual and auditory manner. E-learning platforms can raise the extent of understanding the targeted information, because such platforms pass audio files, videos and images to students. Thus, they raise the achievement level of students in verbal and written tests, because such platforms allow repeating any lesson till understanding it (Al-Amery, 2020)

Using an e-learning platform for delivering online education allows accessing the academic material at any time and from any location. It positively affects students' motivation to learn and obtain knowledge, because the platform allows using games, multimedia and colours. It offer more opportunities for holding discussions about topics, due to having several chat tools on such platforms. It promotes a deeper understanding for the material. It offers opportunities for personal growth (Alrubian, 2021).

Using an e-learning platform for delivering online education saves students' time and effort, because students can learn without having to use transportation nor use the conventional libraries to search for information. It allows students to repeat the record lessons for several times till understanding the content. It makes students feel comfortable while learning at home in a comfortable environment. Thus, it raises students' level of concentration (Donmez et al., 2021). That positively affects the way through which the students interact with the colleagues, material and teacher.

Using an e-learning platform for delivering such education promotes a student-centered learning approach. That's because having a variety of online academic resources and libraries allows students to rely on themselves in reading, learning and acquiring knowledge. Such use offers more comfort, flexibility and accessibility for students, because e-learning platform allows students to learn regardless of the spatial and temporal limitations facing them. It reduces the instructors' cognitive load and makes it easier for instructors to record attendance. It raises student-instructor interaction (Mukhtar et al., 2020).

E-learning platforms can be used for delivering online math education. Such use makes learning math enjoyable and fun, because the platform allows representing the equation through real life situations. It allows providing students with instant feedback by their instructor due to the automatic features. It promotes autonomy in learning among students, because students can rely on themselves to learn. It offers personalized (individualized) learning opportunities for students. It contributes to reducing the instructors' loads in terms assessment due to the automatic correction features (Darragh & Franke, 2021).

However, using the e-learning platform for delivering online math education is faced by numerous difficulties and challenges. Such challenges include: psychological and educational challenges, and challenges related to the assessment process and IT field). For instance, it's challenging to choose the right instructional strategy for giving online lessons. It's challenging to offer students much security in the online assessment processes. It's challenging to deal with the students' concerns about the

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security of data. In addition, online lessons are associated with a rise in the anxiety level of students (Alqaim, 2021). It's also hard to maintain the academic integrity in the online assessment processes. (Mukhtar et al., 2020). In the light of such challenges, the researcher decided to investigate the effectiveness of using e-learning platform for giving online engineering-related lessons in the math course for the higher basic school students from the teachers' perspective.

2. Objective

This study explored the effectiveness of using e-learning platform for giving online engineering-related lessons in the math course for the higher basic school students from the teachers' perspective.

3. Question

This study explored the answer of this question:
What is the effectiveness of using e-learning platform for giving online engineering-related lessons in the math course for the higher basic school students from the teachers' perspective?

4. Significance

4.1. Theoretical significance

- This study is the first study to explore the effectiveness of using e-learning platform for giving online engineering-related lessons in the math course for the higher basic school students from the teachers' perspective
- This study serves as a useful reference that enriches the Arab libraries including the Jordanian libraries
- This study provides researchers and book authors with knowledge about the merits of using the e-learning platform for delivering online education in math course and other courses too.

4.2. Practical significance

- This study provides researchers with an instrument which could be used for obtaining data and conducting other studies
- This study provides decision makers and math teachers in Jordanian schools with knowledge about the benefits of using the e-learning platform for giving online math lessons
- This study provides the developers of math curricula with knowledge about the merits of using the e-learning platform for giving online math lessons. It provides such developers with knowledge about the significance of adding online-learning activities.

5. Limits and limitations:

-Spatial limits: The researcher obtained data from 95 Jordanian basic schools (35 basic schools in Amman, 30 basic schools in Karak and 30 basic schools in Irbid).

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Those cities represent three provinces in Jordan (the Northern, Southern and Central Provinces)

-Temporal limits: This study was carried out during the second semester of the academic year 2021/2022

-Human limits: The researcher obtained data from 95 math teachers chosen purposively from 95 Jordanian basic schools

-Thematic limits: The researcher explored the effectiveness of employing an e-learning platform for giving online engineering-related lessons in the math course for the higher basic school students from the teachers' perspective

-Limitations: The results can't be generalized due to the effect of the size, knowledge and experience of the sample on the results. It's because the results are influenced by the type of the instrument being used in this research. The results are influenced by the validity and reliability of the instrument.

6. Definitions:

-E-learning (Theoretical definition): It refers to delivering education through the use of information and Communication Technology (ITC) along with the use of a variety of instructional designs and formats. It may be synchronous and asynchronous (Lawn et al., 2017).] It can be defined as the use of mean for the provision of educational experiences in an interactive teaching-learning environment (Karima, 2019).

-E-learning (Operational definition): It refers to the use of an e-learning platforms for delivering online engineering-related lessons in the math course for the higher basic school students in Jordan

-E-learning platform: (Theoretical definition): It refers to a program that offers a set of interactive services which are not restricted by temporal or spatial limitations. Those services are provided through using the Internet. This platform includes several tools and materials that can be used by students, teachers, and the ones interested in learning. It improves and supports the teaching-learning process. It offers access to a variety of learning activities. It allows learners to communicate with each other from a distance. It allows exchanging information, and solving problems (Al Mulla, and Abdullah, 2021). Microsoft Co. and other high-tech companies designed e-learning platforms (Abdulsattar, 2021).

-E-learning platform: (Operational definition): It refers to a program used by higher basic school students for receiving engineering-related lessons in the math course

- The higher basic school students (Operational definition): They refer to the students in 7th, 8th, 9th and 10^{th} grades in Jordan.

7. Theoretical framework

The use of an e-learning platform for delivering online education reduces costs because one teacher can give lessons to numerous students at the same time. It prepares students and develops them to engage in a knowledge-based society. It allows students to meet the demands of the labour market in the future. It promotes a

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life-long learning approach among students, because it provides students with many academic resources (Appana, 2008). It provides learners with opportunities to gain knowledge and learn. It offers education of high quality due to the use of advanced auditory visual features and electronic tools. It positively affects the students' learning outcomes and improves their skills in several areas and felids (Barbour, and Reevesb, 2009).

The use of an e-learning platform for delivering online education motivates students to gain knowledge and learn new things. It enhances the way in which students interact with the instructor. It promotes collaboration between students and their colleagues. It provides new opportunities for learning. Such opportunities are characterized with flexibility (Sun, and Chen, 2016).

The use of an e-learning platform for delivering online education offers learning opportunities that are accessible and affordable. It allows students to overcome the financial and geographical limitations which prevent them from receiving education. It allows students to learn without facing problems related to schedule conflicts (Sun, and Chen, 2016).

The use of an e-learning platform for delivering online education allows students to send messages for their colleagues and hold discussions with them. It allows instructors to identify the acts of plagiarism that are committed by students. It provides students with access to academic blogs (Danver, 2016). It assists students in doing tasks and assignments. It allows students to organize their academic folders in an effective and professional manner. It allows students to engage in conversations and discussions which are related to academic topics and issues (Beaumont, 2018).

The use of an e-learning platform for delivering online education allows instructors to provide students with feedback instantly on projects and homework. It allows students to send questions whenever they want to their instructors. It allows students to share academic resources with their colleagues and instructors. It raises the engagement of students in the teaching-learning process. It allows students to attend conferences while sitting at home. It improves instructors' performance, and personal development and growth (Beaumont, 2018).

The use of an e-learning platform for delivering online education allows instructors to store academic resources and upload them whenever they want. It allows instructors to create a link that includes the academic material. It allows instructors to edit the uploaded material at any time. It makes it easier to pass the course material to students. It allows students to offer feedback instantly on the academic material. It allows students to save their time while learning (Habib, 2019).

The use of an e-learning platform for delivering online education makes it easier to assess students and identify the gaps in their knowledge. It allows instructors to make a professional diary. This diary allows instructors to develop themselves in professional areas. It allows students to record their progress. It allows students to

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find answers for questions without relying on the instructor. It offers learning opportunities that are deemed flexible. However, some challenges may be faced when using e-learning platforms. For instance, some platforms operate slowly. They may stop operating suddenly. The layout of some platforms are messy and not clear (Habib, 2019).

The use of an e-learning platform for delivering online education offers much flexibility in terms of time & place. It creates a learning environment that's involves much collaboration and interaction. It prevents the discontinuation of education during man-made and natural disasters, and pandemics. It enhances students' problem-solving skills, and critical thinking abilities. It raises students' adaptability with various cases and situations. It allows students to give immediate feedback. It allows them to ask and upload questions and learn with experiencing enjoyment and enthusiasm (Dhawan, 2020)

8. Previous Studies

Several empirical articles were reviewed to gain data about the study's topic. They are displayed below. They are arranged in accordance with the year of publication.

Donmez et al. (2021) explored the perceptions of students majoring in dentistry towards online education during the COVID-19 pandemic. Data was obtained from 1,605 undergraduates who were majoring in dentistry. A questionnaire was used for collecting data. It was found that the ones enrolled at a public university have more negative attitudes than the ones enrolled in a private university towards online education during the pandemic. In general, it was found that the students majoring in this major aren't satisfied with their experience in receiving distance education during the aforementioned pandemic.

El-Zawaidy and Zaki (2014) explored the perceptions of instructors towards using Blackboard in Saudi Arabia. 360 instructors were surveyed. They were chosen from King Saud University, King Khaled University and Taif University- College of Education. It was found that Blackboard is easy to use and respondents perceptive this platform as the best platform they have seen and used. It was found that Blackboard allows instructors to interact with their students and colleagues. This platforms motivates students to learn. The sampled students recommended using Blackboard.

Mosquera (2017) investigated the effectiveness of the use of a virtual environment in the process of teaching EFL students in a public university in Colombia. The sample consists from 210 students and 5 instructors. Those instructors and students were chosen through the use of the convenience method. A questionnaire was used. In addition, notes were taken through the use of the observation technique. Several results were reached. For instance, using a virtual environment makes those students feel motivated to learn language. It turns the learning process into an enjoyable process. It improves the experiences of instructors in teaching. It stimulates the learning process of students. It raises the effectiveness of the process of communication between the instructor and the students. It allows instructors to do

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numerous activities. It allows those students to interact in an effective manner their colleagues. This environment can be used in all courses.

Odeibat (2021) explored the level of test anxiety in the math course among the Jordanian secondary school students in the light of delivering distance education during the COVID 19 pandemic. She used a survey. The survey forms were passed to 250 female and male students who were chosen from 5 public secondary schools in Amman. 232 forms were retrieved and analysed. It was found that the test anxiety in the math course is moderate. In addition, students suffered from anxiety, headache, fatigue, difficulties in thinking right during the period preceding the math tests.

9. Methodology

9.1. Approach

The researcher adopted a descriptive analytical approach to explore the effectiveness of giving online engineering-related lessons in the math course for the higher basic school students. This approach is usually used in empirical studies for collecting data. According to Doyle et al. (2020), it is employed for exploring the philosophical framework underlying a specific phenomenon. It is used for investigating the impacts, merits and consequences of a specific phenomenon (Doyle et al., 2020).

The researcher also adopted the quantitative approach for processing the numerical data through using statistical means. According to Apuke (2017), this approach is used mainly for processing numerical data in the aim of answering researcher questions starting with the following expressions (How much, how, how many, where, and what?). It is adopted in the studies adopting the correlative, experimental, casual comparative methodologies and survey-based methodology (Apuke, 2017)

9.2. Population and sample

The population involves all the teachers teaching math course for the higher basic school students in Jordan. The researcher chose a purposive sample consisting from 95 female and male math teachers. Those teachers were chosen from 95 public schools located in Jordan. Those schools were chosen from three Jordanian cities (Irbid, Amman and Karak). Those cities represent the Central, Northern, and Southern Provinces. The sampled basic schools include: 35 basic schools in Amman, 30 basic schools in Karak and 30 basic schools in Irbid). The researcher passed the questionnaire forms in an electronic manner to the chosen teachers through using WhatsApp Application. All the passed forms were filled and analysed. Data about the sample is shown below:

Table (1): Data about the sample

Variable	Category	Frequency	Percentage
Gender	Male	42	44.2105
	Female	53	55.789
Province	Northern Province (Irbid)	30	31.578

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	Central Province (Amman)	35	36.842
	Southern Province (Karak)	30	31.578

N=95 math teachers

9.3. Instrument

The researcher designed a questionnaire after reviewing several books, research articles, TV interviews, MA theses, PhD dissertations and newspaper articles The designed questionnaire employs the five point Likert scale. It has two parts. The first part collects data about province and gender. The second part consists from 18 statements. It aims to obtain data about the effectiveness of employing an e-learning platform for giving online engineering-related lessons in the math course for the higher basic school students from the teachers' perspective.

Through the instrument, the researcher confirmed that the data will remain confidential under all conditions. It was designed based on the references published by Dhawan (2020), Beaumont (2018), Alrubian (2021), Amer (2020), Sun, and Chen (2016), Darragh & Franke (2021), Habib (2019), Donmez et al. (2021), Appana (2008) and Mosquera (2017).

9.4. Validity

The researcher passed the initial version of the questionnaire to three instructors and three math teachers in Jordan. The instructors hold PhD degree in teaching methods. The university instructors and the math teachers were asked to assess the instrument in terms of relevancy, language, and clarity. They were asked to make corrections, recommendations, and modifications where needed. All the instructors and the math teachers added that the instrument is clear, relevant to the goal. They added that the instrument is written without committing any language mistake.

However, one of the instructor recommended adding an item about assignments. Another instructor recommended adding an item about emotional and social development. A math teacher recommended adding a statement to part two suggesting that students should show objectivity when answering. Based on those recommendations, the researcher drafted the final version of the survey.

9.5. Reliability

The Cronbach alpha value is 0.89. The instrument is reliable because this value is greater than 0.70 as it's suggested by Salehi & Farhang (2019)

9.6. Data collection sources

The sources used for obtaining data are mentioned below:

-Secondary data sources: They include: the relevant books, research articles, MA theses, PhD dissertations and newspaper articles.

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-Primary data source: The researcher designed a five point Likert questionnaire and used it for obtaining demographic data and data about the sample. The questionnaire also obtains data about the effectiveness of employing an e-learning platform for giving online engineering-related lessons in the math course for the higher basic school students from the teachers' perspective

9.7. Data analysis

For classifying the means, the criteria shown in table 3 were used (Alderbashi, 2021)

Table: (2): The criteria used for classifying means into categories

Range	Level	Attitude
2.33 or less	Low	Negative
2.34-3.66	Moderate	Neutral
3.67 or more	High	Positive

*Source: Alderbashi (2021)

The five point Likert scale consists from 5 rating categories. Those categories are shown below (Al-Derbashi and Moussa, 2022)

Table (3): The categories and scores of the five point Likert scale

Category	Score
Strongly agree	5
Agree	4
Neutral	3
Disagree	2
Strongly disagree	1

*Source: Al-Derbashi and Moussa (2022)

10. Results and discussion

What is the effectiveness of employing an e-learning platform for giving online engineering-related lessons in the math course for the higher basic school students from the teachers' perspective?

To offer a reliable answer for the above question, the relevant values are calculated. They are displayed through the table shown below:

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Table (4): Means and standard deviations for investigating the effectiveness of employing an e-learning platform for giving online engineering-related lessons in the math course for the higher basic school students from the teachers' perspective

No.	Statement	Mean	Std.	Level	Attitude
	Employing the e-learning platform for giving online engineering-related lessons in the math course for the higher basic school students				
1.	Reduces the anxiety associated with learning	4.72	0.66	High	Positive
2.	Improves my problem-solving skills	4.91	0.53	High	Positive
3.	Improves my critical thinking skills.	4.88	0.79	High	Positive
4.	Allows me to learn with enjoyment and pleasure	4.95	0.23	High	Positive
5.	Allows me to ask questions and queries	4.53	0.14	High	Positive
6.	offers me more learning opportunities that are deemed flexible	4.59	0.72	High	Positive
7.	Increase the discussion opportunities	4.83	0.61	High	Positive
8.	Assists me when doing assignments	4.86	0.55	High	Positive
9.	Improves my learning outcomes	4.45	0.34	High	Positive
10.	motivates me to gain knowledge	4.70	0.82	High	Positive
11.	Facilitates the process of passing worksheets and academic materials to students	4.92	0.68	High	Positive
12.	Improves the teacher-student communication	1.85	0.20	Low	Negative
13.	Allows teachers to send feedback to students more frequently	4.63	0.17	High	Positive
14.	Positively affects my emotional and social development	2.02	0.93	Low	Negative
15.	Allows the teacher to assess my mathematical skills effectively	4.29	0.40	High	Positive
16.	Raises my level of concentration	1.73	0.42	Low	Negative
17.	Reduces costs	4.65	0.29	High	Positive
18.	Reduces the time dedicated by me for learning	4.90	0.18	High	Positive
	Overall	4.24	0.48	High	Positive

*Source of the instrument: This survey was designed based on the references published by Dhawan (2020), Beaumont (2018), Alrubian (2021), Amer (2020), Sun, and Chen (2016), Darragh & Franke (2021), Habib (2019), Donmez et al. (2021), Appana (2008) and Mosquera (2017).

It was found that respondents have positive attitudes towards employing the e-learning platform for giving online engineering-related lessons in the math course for

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the higher basic school students, because the overall mean is 4.24. That's attributed to the use of advanced platform by public schools. It's attributed to the fact that students today enjoy using technology in their learning process. It was found that employing the e-learning platform for giving such lessons reduces the anxiety associated with learning, because the mean of statement one is 4.72. This results indicates that using the e-learning platform for giving such lessons is very effective.

It was found that employing the e-learning platform for giving such lessons improves students' problem solving skills, because the mean of statement two is 4.91. This result is in agreement with the one found by Dhawan (2020). It's attributed to the fact that using an e-learning platform allows math teachers to send more worksheets that includes mathematical problems. That contributes to increasing the opportunities available for students to develop their problem solving skills.

It was found that employing the e-learning platform for giving such lessons improves students' critical thinking skills, because the mean of statement three is 4.88. This result is in agreement with the one found by Dhawan (2020). It's attributed to the fact that using an e-learning platform allows students to access more academic resources to gain knowledge and think about the reasons behind following certain steps when solving a mathematical problem. It's attributed to the fact that using an e-learning platform allows students to contact their teachers to assist them in connecting pieces of knowledge with each other.

It was found that employing the e-learning platform for giving such lessons allows students to learn with enjoyment and pleasure, because the mean of statement four is 4.95. This result is in agreement with the one found by Dhawan (2020). It's attributed to the fact that using an e-learning platform allows the math teacher to add electronic learning activities and digital games to the course to make learning fun. It was found that employing the e-learning platform for giving such lessons allows students to ask questions and queries, because the mean of statement six is 4.53. This result is in agreement with the one found by Beaumont (2018). It's attributed to the fact that using an e-learning platform allows students to upload their questions to the platform to be answered by their colleagues or teacher.

It was found that employing the e-learning platform for giving such lessons increases the discussion opportunities available to students, because the mean of statement seven is 4.83. This result is in agreement with the one found by Alrubian (2021). It's attributed to the fact that using an e-learning platform provides students with online chat tools for having discussions with colleagues and teacher about a specific mathematical issue.

It was found that employing the e-learning platform for giving such lessons assists students in doing assignments, because the mean of statement eight is 4.86. This result is in agreement with the one found by Beaumont (2018). It's attributed to the fact that using an e-learning platform allows students to use the knowledge uploaded to the

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platform by their colleagues and teacher for doing the assignment.

It was found that employing the e-learning platform for giving such lessons improves students' learning outcomes, because the mean of statement nine is 4.45. This result is in agreement with the one found by Amer (2020). It's attributed to the fact that using an e-learning platform allows students to access more resources to expand their knowledge. That shall positively affect students' achievement in exams.

It was found that employing the e-learning platform for giving such lessons motivates students to gain knowledge, because the mean of statement ten is 4.70. This result is in agreement with the one found by Sun, and Chen (2016). It's attributed to the fact that using an e-learning platform allows students to learn through using multimedia-based content. Such a content encourages students to learn. It was found that employing the e-learning platform for giving such lessons facilitates the process of passing worksheets and academic materials to students, because the mean of statement eleven is 4.92. That's attributed to the fact that e-learning platforms today have advanced features that facilitates the process of passing materials to students.

It was found that employing the e-learning platform for giving such lessons allows teachers to send feedback to students more frequently, because the mean of statement thirteen is 4.63. This result is in agreement with the one found by Darragh & Franke (2021). It's attributed to the fact that using an e-learning platform provides students with automatic correction feature. It was found that employing the e-learning platform for giving such lessons allows the teacher to assess students' mathematical skills effectively, because the mean of statement fifteen is 4.29. This result is in agreement with the one found by Habib (2019). It's attributed to the fact that using an e-learning platforms provides instructors with more time to identify the gaps in students' mathematical skills.

It was found that employing the e-learning platform for giving such lessons reduces costs, because the mean of statement seventeen is 4.65. This result is in agreement with the one found by Appana (2008). It's attributed to the fact that using an e-learning platform allows schools to save the costs used for buying papers to be used for worksheets and exams. It's attributed to the fact that using an e-learning platform allows students to save the costs needed for travelling and transportations. It was found that employing the e-learning platform for giving such lessons reduces the time dedicated by students for learning because the mean of statement eighteen is 4.90. This result is in agreement with the one found by Donmez et al. (2021). It's attributed to the fact that using an e-learning platform allows students to learn through reading the summaries uploaded to the platform.

However, it was found that employing the e-learning platform for giving such lessons doesn't improve the teacher-student communication, because the mean of statement 12 is 1.85. This result is not in agreement with the one found by Mosquera (2017). It's attributed to the fact that delivering online math lessons through this platform puts students in isolation. Such isolation negatively affects students' communication skills

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and their communication with their instructors.

It was found that employing the e-learning platform for giving such lessons negatively affects students' emotional and social development because the mean of statement 14 is 2.02. This result is attributed to the fact that receiving online math lessons through e-learning platform doesn't offer students face to face interaction opportunism. It was found that employing the e-learning platform for giving such lessons doesn't raise students' level of concentration because the mean of statement 16 is 1.73. This result is not in agreement with the one found by Donmez et al. (2021). It's attributed to the fact that the online games may distract students while learning online.

11. Conclusion:

It was found that it's very effective to employ the e-learning platform for giving online engineering-related lessons in the math course for the higher basic school students from the teachers' perspective. In addition, employing the e-learning platform for giving online engineering-related lessons in the math course allows students to save the time and costs needed for learning. It improves students' problem-solving skills and critical thinking skills. It allows students to learn with pleasure and fun. It allows students to ask questions and queries.

12. Recommendations:

The researcher recommends

- Holding courses for math teachers in Jordan about the way of using the e-learning platform to handle any crisis effectively in the future
- Holding courses for math teachers about the instructional strategies used for delivering online education in the math course

13. Suggestions for future research

The researcher recommends

- Conducting studies for exploring the training needs of teachers and faculty members in public and private schools, training centres and universities
- Conducting studies for exploring the challenges hindering the delivery of online education by teachers and faculty members in schools and universities

Appendix:

Hello, I am a researcher in Jordan working on research. To conduct this research, I need to collect data from you. This research aims to explore the effectiveness of employing an e-learning platform for giving online engineering-related lessons in the math course for the higher basic school students from the teachers' perspective. The data you will provide me with shall remain confidential under all situations and conditions.

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Please, answer the part below

Part one:
1)- I am
-a male
- a female

2)- I work at the
-Northern Province of Jordan
-Central Province of Jordan
-Southern Province of Jordan

Part Two: Please fill in the table shown below based on your own views and opinions with showing objectivity s

No.	Statement	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
	Employing the e-learning platform for giving online engineering-related lessons in the math course for the higher basic school students					
1.	Reduces the anxiety associated with learning					
2.	Improves my problem-solving skills					
3.	Improves my critical thinking skills.					
4.	Allows me to learn with enjoyment and pleasure					
5.	Allows me to ask questions and queries					
6.	offers me more learning opportunities that are deemed flexible					
7.	Increase the discussion opportunities					
8.	Assists me when doing assignments					
9.	Improves my learning outcomes					
10.	motivates me to gain knowledge					
11.	Facilitates the process of passing worksheets and academic materials to students					

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12.	Improves the teacher-student communication					
13.	Allows teachers to send feedback to students more frequently					
14.	Positively affects my emotional and social development					
15.	Allows the teacher to assess my mathematical skills effectively					
16.	Raises my level of concentration					
17.	Reduces costs					
18.	Reduces the time dedicated by me for learning					

Thank You for your time, kindness, and cooperation ☺

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