

The Effectiveness of Using E-learning and Distance Learning Applications in Jordanian Universities in the light of the Coronavirus Pandemic from the Students' Point of View

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Abstract: This study aims to determine the effectiveness of the use of e-learning and distance learning (DL) tools in Jordanian universities according to the students' perception of the coronavirus. The study followed a descriptive research method using descriptive questionnaires. A sample of (372) male and female undergraduate and graduate students from different Jordanian universities. The results showed that (73.7%) of the respondents used online distance learning every day during the coronavirus pandemic. Most of the students believe that the coronavirus epidemic has changed the use of online education more and more and the use of electronic devices to increase communication with others (teachers, colleagues). There is no significant difference in the level ($\alpha \geq 0.05$) of the effectiveness of using E-Learning and Distance Learning applications according to gender and residence. Although a significant difference occurred between the variable age and the degree of university. The results of the study can be used to advise the teacher to focus more on activities that show a high level of enjoyment, especially website optimization and instruction. Colleges are now seen as important places of learning in the classroom. Websites and tutorials must be updated regularly.

Keywords: E-Learning, Distance Learning (DL), Coronavirus pandemic.

1 Introduction

Online education is not a result of the current crisis situation due to the outbreak of the Coronavirus in many countries around the world. Its transformation into an epidemic has hindered the continuation of the traditional face-to-face education system in all educational institutions at all levels. Many educational institutions have adopted the e-learning system and distance learning either completely or partially to increase the efficiency and quality of the learning process and improve it further to reach its goals. Many universities have adopted learning management systems such as Moodle, Blackboard and others to enable e-Learning and distance learning to serve the educational process, serve their students and faculty members, follow technological developments and - benefit from it in the learning process... This is also reflected in the acceptance of blended learning for some elective courses by each group. The University of Jordan started offering mixed scholarships in the spring semester of the 2016/2017 academic year.

The philosophy of e-Learning and distance learning builds on the foundations and principles of educational technology by aggregating individual education and providing learning opportunities to all learners according to their abilities and strengths. according to them, taking into account the differences between learners. It is therefore flexible and allows for continuous learning and personal learning, which allows easy learning and free travel between different sources of knowledge. (Al-Rifai, 2018) [1]. E-learning is an interactive learning method based on the use of electronic media to achieve learning objectives and deliver educational content to students regardless of spatial and temporal constraints. These media can be embedded into devices such as computers and satellite receivers or through computer networks such as the Internet and other media such as websites, online courses, virtual libraries, laboratories, university, etc. (Al-Mannai, 2016) [2].

The student learning experience is one of the most important factors in evaluating an online degree. Many students believe

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that online courses are no different from traditional courses. They believe that online learning is better than traditional learning and empowers them by giving them the ability to view information through laptops and smartphones instead of receiving information through interactive whiteboards or classroom screens. Students also believe that the comfort at home and the lack of problems of their classmates in the classroom made learning more relaxed and focused on their learning (Saxena, 2020) [3]. E-learning and distance learning have shown their ability to achieve many educational goals according to (Al-Saidi, 2019) [4]. Al-Saidi's study concluded that e-learning and distance learning helped to achieve the achievement of communication and dialogue with colleagues and useful tools, to acquire skills in scientific research and the development of the use of information and communication networks in education and professional, application, and in general good practice has been obtained about the effectiveness and impact of e-learning and distance learning.

Based on the above, and considering the contribution made by using e-Learning and distance learning tools in Jordanian universities due to the coronavirus pandemic, the ongoing in the distance education system under different conditions, this study determines the effectiveness of using e-Learning tools and distance learning in Jordanian universities due to the coronavirus pandemic from the perspective of students.

The Study Problem and Questions

Many Jordanian universities have undergone the experience of applying E-Learning and Distance Learning in different forms. The best example in this regard is the University of Jordan's experience in adopting multiple projects specialized in adopting information and communication technology in its programs and academic materials, its steadfast moving towards E-Learning, and using computerized educational software, to help in managing the learning process. Examples of this are: The E-Learning management system (Moodle), the (Academic Staff websites), and blended learning, which started in the Spring Semester of the academic year 2016-2017. The university took it upon itself to implement those electronic projects and strived to make them succeed and spent huge amounts of money on those projects. This work requires cooperation and concerted efforts and partnership from all members of the academic and administrative staff in the university to make this experiment successful (Al-Jarrah et al., 2016) [5].

E-Learning and Distance Learning is a fundamental transformation from traditional learning to computer-based distance learning. It encourages the professor to switch from being a source of information into a facilitator of the learning process, thus transforming the role of university professor as a sender, and the role of the student as recipient only, into the role of sharing among them in the education process. (Amer, 2015) [6].

After the outbreak of the Coronavirus and its transformation into an epidemic and becoming an epidemic for the whole world, many universities found themselves completely to become online and distance learning systems to continue the learning process and prevent its termination, thus continuing. achieve their goals due to the introduction of public distraction which led to the temporary closure of the university and the complete change of traditional teaching methods to online learning and learning from a distance. Universities have faced an amazing test for the readiness of their e-learning and distance learning systems and their ability to ensure that the learning process continues and achieves its goals. education and requirements. Based on the above, considering the application of e-learning and distance learning as an experiment carried out by Jordanian universities to continue the educational process under the coronavirus pandemic; Given the vision of the problem and the lack of recent studies at the national level on this experience and its impact on the educational process, it is important to study the effectiveness of E-Learning applications from the perspective of the people benefiting students. Therefore, this study examines the effectiveness of using e-learning and distance learning tools in Jordanian universities according to the students' perception of the coronavirus pandemic. Researchers can identify the problems of the study through the following important question: How effective is the use of e-learning and DL applications in Jordanian universities due to the coronavirus pandemic? from the students' point of view?

The researchers designed the study concept to answer the study questions as follows: and the application of distance education in Jordanian universities due to the coronavirus pandemic in the students' opinion...

The Importance of the Study

The importance of this study comes from the fact that it continues the current trend in research on the effectiveness of online learning and distance learning due to the coronavirus pandemic in Jordanian universities. The importance of this study is based on the results of previous studies about the importance of online and distance learning and the role of the educational system. Therefore, the importance of this study is reflected in the following sections:

The Theoretical Aspect:

This study helps to provide feedback on the effectiveness of e-Learning and distance learning tools in Jordanian universities due to the coronavirus pandemic from the perspective of students and to determine the reality of the experience of Jordanian universities and e-Learning in light of the coronavirus crisis. This study can become a reference for researchers in the field of e-learning and distance learning thanks to its results, which help to measure the level of

effectiveness of e-Learning and learning applications. remotely and other similar situations and chaos (Al-Ataiwi, 2017) [7].

The Practical Aspect:

The importance of this study is to provide solutions that serve the educational system to eliminate many problems that hinder student learning due to sudden and unexpected situations and crises that educational institutions can go through; identify the benefits of using e-learning tools in distance learning and learning processes; and encourage university members to use e-Learning tools in the learning and learning process, which can have a positive and clear impact on the learning process. The main purpose of this study is to reveal the effectiveness of e-learning and distance learning tools in Jordanian universities due to the coronavirus pandemic, in the opinion of the learners, which are students (Muhammad, 2020) [8].

Theoretical Framework and Previous Studies

This part covers a review of the theoretical framework related to the effectiveness of using E-Learning applications, as well as a review of several previous relevant studies.

I. The Theoretical Framework

E-Learning and Distance Learning

Utilizing E-Learning is an important means and an urgent necessity, under the current educational system affected by the Coronavirus pandemic, to overcome the problems facing the educational process due to the students' interruption from, and inaccessibility to their universities due to the comprehensive quarantine imposed by the government. Therefore, E-Learning and its applications were the most successful solution to maintain the continuity of the educational process, ensure that learners may receive knowledge and learning to achieve the interaction between them and the elements of the entire educational process, and assure the continuity of the educational process without any interruption (Matters, 2015) [9].

The importance of E-Learning is that it is one of the most prominent products of the contemporary technological revolution. Specialists in the educational process paid it great attention due to its special features that made it a reliable educational system in solving problems facing traditional education systems. This justifies the universities' need to move towards an E-Learning system that goes side by side with the traditional learning system subject to modern scientific standards imposed by the need for quality standards in educational outcomes (Dawood, 2018) [10].

Electronic Applications Used in E-Learning in Jordanian Universities in light of the Coronavirus Pandemic

The world is witnessing a widespread outbreak of the global pandemic (Coronavirus), which, dramatically and radically, affected various aspects of life all over the world, especially learning and education. The pandemic affected the learning and teaching of students at all levels, particularly in university education. Consequently, it was necessary to find new learning methods and techniques that ensure the continuation of the educational process in the higher education sector, i.e. universities. (Al-Azzam ,2016) [11].

The most prominent electronic applications utilized in E-Learning in Jordanian universities are Moodle Learning System which is an open-source E-Learning platform that includes learning management and content management systems (Salem, 2019) [12], Microsoft Teams which is a free educational platform for schools and universities, and a unified platform for communication and collaboration that combines continuous workplace chatting, video meetings, file storage (including file sharing) and application integration (Al-Bayati, 2015) [13], Google Classroom which is a free Web service, developed by Google for schools and universities. A simple and easy to use tool that helps professors manage the tasks of the educational process, Zoom Video conference which is an electronic application based on the principle of audio and video interaction between the professors and the learner through the Internet.

E-learning in Jordan under the Coronavirus Pandemic

At the beginning of June 2020, the Ministry of Higher Education and Science of Jordan published a report, which concluded that the number of computer courses in public universities since the beginning of the disease reached 20,258 courses. These courses account for 82.21% of courses offered in the 2019/2020 academic calendar at public universities in Jordan, while the proportion of computer science courses and courses offered at private universities for one semester is 93.94%. The newly released report also shows that the number of people entering the electronic application of public universities is 326,643 students, which is 77.07% of the registered students, while 133,749 students entered. University, representing 88.81% of the students at these universities.

The report showed that these percentages continued to increase, until the sixth week of e-Learning, in the case of computer science studies, with 94.5% in public universities and 99.27% in universities. privacy, an increase of 12.29% for the study.

public. university and 4.34%. % for private universities. According to this report, the number of students who benefit from computer training is 417,373 students in public universities and 168,294 students in private universities, an increase of 90,730 students, and the percentage of students who benefit and in the sixth week reached 86.49% of the audience... university and 85.52% in private universities.

The statement also showed that the academic system discussed at Jordanian universities through distance communication methods at the end of April 2020 reached 286, including 207 master's theses and 79 doctoral theses. This report highlights that the online learning experience in Jordanian universities has been evaluated by the Ministry of Higher Education and Science Research.

The report also shows that the level of student satisfaction and the effectiveness of online learning is 54.4% according to a study conducted by the Ministry of Higher Education and Scientific Research of Jordan, which was conducted around four topics, namely methods and technologies with age Satisfied. of 55.93%, electronic content with a satisfaction rate of 52.56%, effective teaching in the age of 56.83% and research and a satisfaction rate of 50.63%. The report showed that satisfaction with the effectiveness of online courses for master students reached 70.54% and 53.06% for high school students, while it reached 58.14% for middle school students.

The report shows that the results of the study conducted by the ministry did not show a significant difference in the level of satisfaction and effectiveness of online learning among students living in rural areas compared to those living in rural areas, satisfaction index. reached 54.72% among urban students and 54.37% among urban students. The report states that the highest satisfaction rate was recorded for humanities students at around 60.00%, followed by information technology students at 54.60%...

II. Relevant Previous Studies

A previous study discussed the topic of the effectiveness of using e-learning tools in Jordanian universities according to the students' perception of the coronavirus. The researchers reviewed several such studies related to the topic of the present study; here is a presentation of these studies divided in chronological order. Al-Mabhouh (2019) [14] conducted a study to reveal the level of use of Google education tools as an online learning system in Al-Aqsa University to acquire digital knowledge. The study uses a descriptive-analytical method, and the study sample consists of (153) faculty members. To achieve the objectives of the study, the study uses tools to measure the level of use of Google's teaching tools, consisting of three axes (building digital knowledge, obtaining digital knowledge and distributing digital knowledge). The study produced several results, the most important of which are the following: The number of ways to use Google teaching tools as an online learning system at Al-Aqsa University to acquire digital knowledge reached (2.65), in the availability of digital knowledge it reached (2.66), and in digital media reached (2.39), all of them have a low level. In addition to the lack of significant differences between faculty members' methods when using Google's educational tools as an online learning system at Al-Aqsa University to acquire digital knowledge, different variables (gender, college, university, and years. experience).

Al-Saidi (2019) [4] conducted a study to measure the effectiveness of using e-learning programs in teaching journalism and media and how to apply them to achieve the desired educational goals from the perspective of the students involved and distance learning in the Department of Press and Media at Jazan University in Saudi Arabia, which has (250) students. A research paper is used as a study tool that adopts a descriptive-interpretive approach. The results of the study showed interaction and discussion with colleagues and useful tools, acquisition of useful research skills, skills and media training and the development of the use of information and communication networks in education and professional tools. The results also show a significant relationship between the extent of the use of technology and tools in the distance e-learning system and the achievement of academic goals for the study of journalism and media, and a positive trend regarding the effectiveness and impact of e-learning programs... Ali et al. (2018) [15] conducted a study to evaluate the effectiveness of online learning for students at the university level. Data were collected from a questionnaire administered to (667) male and female college students in Bangladesh who use various e-Learning tools, methods or platforms. The results of the study show that e-learning is useful for student learning, convenient in terms of time and cost, suitable for self-learning, adds value to student learning and can be used for active learning. dynamic performance and fast response that can be applied outdoors. class. The results of the study also show that the quality of e-learning is satisfactory from the point of view of users, namely learners, which shows the effectiveness of using online learning in the learning process.

Al-Sa'i (2017) [16] conducted a study in Qatar to reveal the effectiveness of Virtual Reality presented in the Interactive Cube (I-Cube) from the perspective of students at the College of Education at Qatar University. The researcher used a quasi-experimental design and applied the study to a sample of (64) female students enrolled in technology courses for children. The researcher used a complete fire model (27) related to measuring the effectiveness of virtual reality technology and its electronic applications in the learning process. The results show that there is a significant difference in the performance of the experimental group due to the effectiveness of virtual reality as an online learning tool...

Sumaya et al. (2016) [17] conducted a study to determine the effectiveness of e-learning in education. The study included a literature search (38) including relevant articles, books and websites. The results of the study show the general value of learning and the quality of learning, freedom, satisfaction, learning at anytime and anywhere, the speed of the process of learning as a person, the learner is also available to cooperative learning, a significant saving of. time and money, the ability to learn for all, the achievement of quick results in learning, better learning through the use of multimedia, saving resources and reducing environmental pollution and noise. Overall, the results of the studies show that there is a positive effect of online learning on the learning process.

Aref El-Din (2016) [18] conducted a study in Indonesia to reveal the effectiveness of using e-learning tools in the development of Arabic language teaching at the university level. The researcher used the method of analysis of the tools used in the university and how they affect the development of the Arabic language. The researcher concluded that the use of e-learning tools will be effective if it meets the objectives set in the planning process that includes specific criteria, and that e-learning tools play a significant role and all learning and teaching methods. because they are the main pillars of the Arabic language development plan in Indonesia.

Commentary on the Previous Studies

After reviewing the previous studies, the approaches used therein, their goals, tools, and the results of those studies, the researchers found the following:

- Many previous studies have evaluated the effectiveness of using e-learning tools, but the effectiveness of e-learning tools has not been evaluated due to the crisis that has led to a complete change in online learning such as the current coronavirus crisis.
- Previous studies are selected according to the effectiveness of using e-learning tools and they are the following: Al-Saidi Study (2019) [4], Ali et al. (2018) [15], Al-Sa'i (2017) [16], Sumaya et al. (2016) [17], Aref El-Din (2016) [18] who found positive effects of using E-Learning tools.
- The current study evaluated the effectiveness of using e-learning tools. This is the most recent study at the national level and in the context of Jordan, which investigated the effectiveness of the use of e-learning tools in Jordanian universities in the context of the coronavirus pandemic...

2 Methodologies

The study followed a descriptive research method to reveal the effectiveness of e-learning tools in Jordanian universities according to students' opinions about the coronavirus, due to the quality of the research process for the purpose of the study. A sample of (372) male and female undergraduate and graduate students from different Jordanian universities. The survey instrument is a questionnaire developed in two parts; The personal information of the individuals in the study was organized into (50) five-point Likert scales as follows: Strongly Agree (5), Agree (4), Neutral (3), Disagree Agreement (2), strong. disagree (1). To determine the reliability of study tools, the authors of the questionnaire (8) with experience and expertise in the field of curriculum and instruction, measurement and evaluation, and educational technology were evaluated. important questions, the integrity of language structure, the importance of things. to the same target, with any changes or suggestions. Based on their feedback, some items were removed, added and changed to serve the same purpose. To check the validity of the questionnaire, a test/retest method was used. The questionnaire was distributed to one student (25) who was not part of the study but was from the population and was again included in the same random sample two weeks later. The reliability coefficient was also calculated by the internal consistency method as Cronbach-Alpha, i.e. 0.989 for the complete sample. Therefore, it is important for the purpose of this study. Data were entered in the Statistical Package for the Social Sciences (SPSS); to answer research questions. The change means that the response patterns of individual learners and study tools for each of the learning materials such as online learning effectiveness scales allow us to compare needs. A test of statistical significance (T-test) and a one-way ANOVA test were also performed to determine the significance of differences between demographic variables...

3 Results

The demographics profile of the study participants as given in Table (1).

Table 1:Frequency analysis for the personal information

		No.	Percent (%)
Gender	Female	242	65.1
	Male	130	34.9

Age	Less than 20 years	41	11.0
	20 - 23 years	248	66.7
	More than 23 years	83	22.3
Degree	High diploma	2	0.5
	Bachelor's	332	89.2
	MA	28	7.5
	PhD	10	2.7
University	Al Al-Bayt	213	57.3
	Al- Balqa' Applied	5	1.3
	University of Jordan	72	19.4
	Al-Zaytoonah	1	0.3
	Middle East	1	0.3
	Arab Open	1	0.3
	Hashemite	2	0.5
	Yarmouk	61	16.4
	Zarqa	1	0.3
	The World Islamic Sciences and Education.	2	0.5
	Philadelphia	1	0.3
	Command and Staff College	3	0.8
	Mu'tah	9	2.4
Academic year	First year	53	14.2
	Second year	88	23.7
	Third year	121	32.5
	Fourth year	81	21.8
	Postgraduate	29	7.8
Residence during Corona pandemic	Abroad	9	2.4
	Amman	145	39.0
	North governorate	125	33.6
	South governorate	3	0.8
	Central governorate (except Amman)	90	24.2

The results showed that (65.1%) of the study participants were male, while 34.9% were female. Regarding the age of the sample, the results are divided into three years, most of the sample is between 20 and 23 (66.7%) years. And the group over 23 years old comes second in percentage (22.3%) which shows the oldest age group in the sample of this research. In terms of diploma, approximately (90%) of the participants were at the baccalaureate. In addition, (57.3%) of the respondents studied at Al-Bayt University, followed by (19.4%) studied at the University of Jordan. The results of the school year showed that approximately (32.5%) of the sample was in their third year. While students in the second year are in second place in percentage (23.7%), which is almost the same percentage as those in the fourth year (21.8%). Finally, for residence during the corona epidemic, (39.0%) live in Amman who live in the north of the government. After that, the respondents were asked six questions about online distance learning during the corona epidemic in order and device. The results are shown in table (2).

Table 2: Online distance learning methods and devices during corona pandemic

		No.	Percent (%)
Using online distance learning daily?	Yes	274	73.7
	No	98	26.3
Method used to access online distance learning	Fixed internet	107	28.8
	Mobile phone internet	245	65.9
	Other	20	5.4
Device used to access online distance learning	PC	10	2.7
	Laptop	59	15.9
	Smart phone	297	79.8
	Not available	6	1.6
Best method to access online distance learning	PC	39	10.5

learning	Laptop	238	64.0
	Smart phone	80	21.5
	Not available	15	4.0
Internet provider	Umniah	103	27.7
	Orange	133	35.8
	Zain	122	32.8
	Other	14	3.8
Assessment the internet service	Weak	122	32.8
	Good	138	37.1
	Very good	75	20.2
	Excellent	37	9.9

Table (2) shows that (73.7%) of the respondents used online distance learning every day during the corona epidemic, and (65.9%) used the Internet through mobile phones. 79.8% of them use a smart phone. It should be noted that only (15.9%) of students used a laptop to access distance education online during the corona epidemic, although (64%) of them think that it is best to use get distance education online, this is because of money. the reason... Also, the students were not ready for this step at that time. As for the type of internet service provider, there is almost no distribution among students. The highest percentage of students (35.8%) used Orange as their internet service provider, probably because most of them live in Amman and it is the strongest network. Only (9.9%) of the respondents indicated the Internet service during the corona pandemic as a good service. And (32.8%) rated it as a bad job. To study the effectiveness of using e-learning and distance learning tools in Jordanian universities according to the students' perception of corona virus, the mean and standard were calculated for each item of the learning tool, and Table (3) shows that.

Table 3: Descriptive statistics of the study tool

No	Item	Mean	SD	Rank	Effectiveness level
40	The Corona pandemic was a turning point for my intensive and major use of the E-Learning system	3.43	1.29	1	Medium
17	<i>I face some problems and obstacles when studying the material electronically</i>	3.42	1.34	2	Medium
21	The use of electronic applications (WhatsApp, Facebook, Moodle, Zoom, Microsoft Teams) has increased to communicate with others (professor, colleagues)	3.33	1.32	3	Medium
14	The content provided online helps develop the skill of using information technology	3.26	1.30	4	Medium
1	The educational content provided can easily be accessed electronically and remotely	3.19	1.29	5	Medium
3	The course professor provided sufficient information on how to use the educational course website	3.18	1.24	6	Medium
28	Online and distance learning helps students get rid of the barrier of shyness by participating directly in front of colleagues	3.18	1.29	6	Medium
9	The electronic content includes assignments and tasks that help the student to learn	3.16	1.26	8	Medium
30	Electronic and distance learning provides close cooperation between students during the learning process	3.15	1.30	9	Medium
12	The electronically generated content encourages self-learning	3.14	1.34	10	Medium
20	The online content encourages access to educationally enriching sites to search for information	3.14	1.34	10	Medium
48	At the present time, I consider myself accustomed to using the E-Learning and distance learning system used in my university	3.11	1.33	12	Medium
29	Electronic and distance learning help increase academic interaction among students themselves	3.09	1.31	13	Medium
15	Using electronic and distance learning has developed	3.08	1.32	14	Medium

No	Item	Mean	SD	Rank	Effectiveness level
	multiple skills for the learner, such as thinking skills and time management				
31	There is constant coordination between the student and the professor about the content displayed online	3.02	1.32	15	Medium
5	The university facilitated the E-Learning process by providing free internet packages for students	3.01	1.27	16	Medium
19	E-learning and distance learning enhance students' self-confidence and their ability to learn independently	3.01	1.34	16	Medium
33	I get evaluated continuously during the E-Learning process	2.97	1.33	18	Medium
24	I can ask any questions and inquiries during E-Learning, and they are answered directly by the professor	2.96	1.32	19	Medium
38	I easily fulfill my homework, research and material requirements, using the E-Learning system	2.96	1.35	19	Medium
36	I prefer homework that requires the use of the E-Learning system	2.95	1.34	21	Medium
50	In general, I am satisfied with the professor's interaction with the E-Learning system used at my university	2.95	1.36	21	Medium
27	The electronic applications used in the educational process allow interaction with the professor comfortably	2.92	1.30	23	Medium
46	I believe that the E-Learning system allows the acquisition of additional information that the ordinary learning method may not provide	2.88	1.38	24	Medium
47	I enjoy doing my homework using the E-Learning system instead of the usual way	2.88	1.40	24	Medium
6	The online content of the subject is comprehensive and adequate	2.87	1.32	26	Medium
37	I control my learning process better when I employ the E-Learning system in the learning process	2.86	1.32	27	Medium
18	Through E-Learning, I feel important as a learner	2.85	1.31	28	Medium
34	Evaluation methods used in E-Learning are appropriate and varied	2.83	1.37	29	Medium
2	Internet speed is appropriate, and I can attend the lecture without any problems	2.82	1.26	30	Medium
4	There is appropriate technical assistance to facilitate the use of technological tools in the educational material	2.80	1.20	31	Medium
45	In general, I am satisfied with the E-Learning system used in my university	2.79	1.38	32	Medium
10	The volume of electronic content is proportional to the time allotted to it	2.78	1.27	33	Medium
41	The E-Learning system used in my university is characterized by the speed in downloading educational materials	2.77	1.32	34	Medium
8	The information obtained from the electronic scientific material does not differ from that provided in the ordinary way	2.76	1.30	35	Medium
42	In general, the university's E-Learning system is structured and of high quality	2.76	1.33	35	Medium
26	The educational material is accessed electronically without any significant obstacles	2.75	1.31	37	Medium
23	I prefer to use E-Learning in different courses in the future	2.74	1.42	38	Medium
39	The E-Learning system used at my university provides convenient capabilities and features for me	2.74	1.32	38	Medium

No	Item	Mean	SD	Rank	Effectiveness level
49	I prefer to perform tests and exams using the E-Learning system in all courses	2.71	1.39	40	Medium
44	I plan to use the E-Learning system used in my university continuously and regularly	2.69	1.40	41	Medium
16	In general, I am satisfied with studying the subject electronically	2.67	1.37	42	Medium
32	The electronically generated content takes into account the individual differences between students	2.66	1.30	43	Medium
35	I believe computerized tests are an appropriate and fair way to assess my learning	2.65	1.39	44	Medium
43	I would like the university administration to use the E-Learning system in all the university courses offered	2.62	1.41	45	Medium
11	The E-Learning method helped to understand the scientific material smoothly and clearly	2.61	1.30	46	Medium
13	The use of E-Learning and distance education provides fair and equal educational opportunities for all learners	2.60	1.32	47	Medium
25	Online and distance learning increases students' motivation for learning	2.60	1.36	47	Medium
7	The educational content is presented online in an attractive and interesting way	2.56	1.26	49	Medium
22	I do not see a difference between e-Learning and ordinary learning	2.38	1.29	50	Medium
The overall score for the effectiveness of using E-Learning applications		2.90	1.06		Medium

It is noted from Table (3) that the effectiveness of using E-Learning and distance learning applications in Jordanian universities in light of the corona pandemic was medium with a mean value of (2.90) and a standard deviation of (1.06). The arithmetic mean ranged between (2.38) and (3.43) out of 5, which corresponds to the 'Medium' level of effectiveness. The item that had the highest mean value is (40) "The corona pandemic was a turning point for my intensive and major use of the E-Learning system". On the other hand, the item (22) " I do not see a difference between E-Learning and the usual learning "had the lowest mean value. The standard deviation values (which describe the amount of dispersion between the students' views in their choices of 'Strongly agree', 'Agree', 'Neutral', 'Disagree', or 'Strongly disagree') revealed that the convergence values of the standard deviation of all items were between (1.06) and (1.42), both of which are more than 1, indicating that the views of the sample of students in the Jordanian universities are little diverge.

To investigate the significant differences among study sample regarding the effectiveness of using E-Learning and distance learning applications in Jordanian universities, the mean and standard deviations were calculated for each group separately as shown in Table (4).

Table 4: The mean and standard deviations for the sample responses according to the study variables

	N	Mean	SD
Gender			
Male	130	2.89	1.12
Female	242	2.91	1.03
Age			
Less than 20 years	41	2.97	0.85
20 - 23 years	248	2.75	1.10
More than 23 years	83	3.34	0.90
Degree			
Higher diploma	2	1.83	0.21
BA	332	2.82	1.06
MA	28	3.61	0.85
PhD	10	3.86	0.44
Residence during Corona pandemic			
Abroad	9	3.62	1.16
Amman	145	3.02	1.02

South governorates	3	2.71	0.72
North governorates	125	2.83	1.06
Central governorates (except Amman)	90	2.76	1.10

It is noted from Table (4) that there are apparent differences between the arithmetic mean for the effectiveness of using E-Learning and distance learning applications in the light of the Corona pandemic according to the demographic variables. Where females evaluated the using E-Learning and distance learning applications as being more efficient than males' evaluation. The highest mean value among age groups was for those who are more than 23 years old (3.34), followed by the students of the category (from 20 to 23 years) with a mean value of (2.75). Regarding the age degree groups, the PhD students had the highest mean value (3.86), followed by master's degree students with a mean value of (3.61). Students who lived abroad had the highest mean value (3.62) followed by those who lived in Amman (3.02).

Overall, there are apparent differences among groups for each variable. But to test if these differences are significant, t-test was conducted for gender variable and ANOVA test was conducted for the other variables, as shown in Table (5).

Table 5: Results of T-test and ANOVA test

	T-value		Sig.			
Gender	-0.136		0.892			
	Source of variation	Sum of Squares	Df	Mean Square	F	Sig.
Age	Between Groups	22.076	2	11.038	10.289	0.000
	Within Groups	395.859	369	1.073		
	Total	417.934	371			
Degree	Between Groups	27.451	3	9.15	8.623	0.000
	Within Groups	390.484	368	1.061		
	Total	417.934	371			
Residence during Corona pandemic	Between Groups	9.173	4	2.293	2.059	0.086
	Within Groups	408.761	367	1.114		
	Total	417.934	371			

The results in Table (5) indicated that there is no statistically significant difference at level ($\alpha \geq 0.05$) of the effectiveness of using E-Learning and distance learning applications in Jordanian universities in light of the corona pandemic according to the gender of students (male, female). Where the calculated value of (T) was (-0.136) and at the level of significance of (0.892).

For the age variable, the calculated value of F was (10.289) with a significance level of (0.000). Since the age variable has more than one category, a post hoc test (Scheffe' test) was used to see where the significant difference occurs regarding the effectiveness of using E-Learning and distance learning applications. The significant difference happened exactly between those who are more than 23 years old and those who are from 20 to 23 years, with a mean difference (0.59). There is a statistically significant difference at the level of ($\alpha = 0.05$) in the effectiveness of using E-Learning applications in Jordanian universities in light of the corona pandemic according to the academic degree variable, where the calculated F value was (8.623) and the significance level was (0.000). To find out the interpretation of differences between these mean values, Scheffe's test was conducted for the post comparisons. The results of the test show that the difference was in favor of the two categories (Ph.D. and Master) when comparing their two mean values with the two intermediate degrees (Bachelor's and Higher Diploma). Finally, regarding the place of residence, the calculated F value in ANOVA test was (2.059), and the significance level was (0.086), which is not statistically significant.

4 Discussions

The results show that students' satisfaction with the use of e-learning and distance learning tools in Jordanian universities as a result of the COVID-19 pandemic is average (Table 3). The results show that there is no significant difference at the level of significance ($\alpha \leq 0.05$) in the effectiveness of using e-learning and distance learning tools in the light of the COVID-19 epidemic in Jordanian universities in terms of the gender of students (female female). male). Also, the results showed that there is a significant difference in the level ($\alpha = 0.05$) and the effectiveness of using e-learning tools in Jordanian universities under the Corona virus, by changing the university level (Table 4-5).

This result can be explained by the fact that online learning gives students great creative freedom, helps to develop new methods for teaching and raises the level of education (De Souza Rodrigues et al., 2020) [19]. When you acknowledge the differences between students and people with special needs, distance learning can provide great personal flexibility

and access to learning anytime and anywhere. Speaker assignments can be completed quickly through e-Learning, allowing speakers to maximize their time and reduce workload. e-Learning tools also help to achieve these goals. That or if students are evaluated and the learning process is the goal.

E-learning also assists learners by removing barriers across specialized fields of knowledge, offering them many forms of motivation, and offering numerous opportunities for creativity. It also helps learners stay informed about what is current in learning various areas. Additionally, it helps students share their ideas online and obtain fresh perspectives to advance their learning. Through contact between students, teachers, and students themselves, E-Learning also helps students enhance their skills. With regard to the independence of distant learning, students are really happy. In order to deal with this new style of education, using modern technologies in the classroom needs to have strong and diverse skill sets.

Many educational leaders are choosing to close educational institutions as worries over COVID-19 increase. Distance learning has become a pressing issue that is necessary due to the circumstances that the entire globe, and Jordan in particular, are going through (Akour et al., 2020) [20]. Education institutions have been left in a state of shock and confusion as a result of the growing Corona Virus (Covid-19) problem, which has forced them to recognize the full depth of their vulnerabilities and shortcomings in keeping up with educational technologies. The use of educational software for online learning was having trouble at educational institutions.

The result of this study was consistent with what was stated in the study (Ibrahim et al., 2017; Lockma & Schirm, 2020; Al Soub et al., 2021) [21] [22] [23] which indicated a direct impact of E-Learning on students.

The study's findings can be utilized to advise the coach to focus more on tasks that demonstrate a moderate level of pleasure, particularly website optimization and directions. University campuses are now regarded as important learning environments and classrooms. The website and tutorials must be regularly optimized.

5 Conclusions

The crisis in the education sector - due to the Corona virus - has pushed E-Learning forward, so it has become an irreplaceable option (except in the absence of resources). Teachers will face great challenges in coping with this sudden change. However, they can overcome many barriers and obstacles through proper planning, increasing its use in the educational process and thus making it effective to serve students in their learning process. achieve targeted learning outcomes as a result of this modern educational system. The Jordanian government was well received following the outbreak of the coronavirus, which caused the suspension of studies on campus but continued electronically despite the suspension of work and implementation in Jordan.

6 Recommendations

Based on the results of this study, it can be concluded that the implementation of e-learning has been successfully implemented as a distance learning strategy during the coronavirus pandemic (Covid-19) in Jordan. Also, the implementation of e-learning can be effective in improving the ability of students if the role of the teacher as a teacher can support learning and create interesting learning through various online media. Implementing e-learning also has benefits in terms of flexibility during learning, as well as making it easier for students to complete and pursue careers. Therefore, the study offers the following recommendations:

1. As information technology (IT) has accelerated human life at a new pace, e-learning has changed the way learners learn. On the other hand, although e-learning is well received in Jordanian companies, researchers suggest that it is useful to organize training for professionals who are not good at technology.
2. Appropriate coordination between key stakeholders (such as teachers, parents, students, etc.) is essential for adapting online learning.
3. The curriculum should be revised to promote the use of e-learning. 4. Teachers can improve their current teaching methods to facilitate virtual engagement and student communication.
4. Undoubtedly, the government must ensure that there are reliable communication tools, high-quality digital educational experiences and promote technology-assisted learning for students to solve the problems that arose in the education system before and after the disaster.

Post-COVID-19 which is also inevitably important for continuous learning. There are a few measures to consider due to this disease; develop such programs that demonstrate tangible changes in content knowledge and student learning experiences and help them think critically.

Conflict of interest

The authors declare that there is no conflict regarding the publication of this paper.

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