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RESEARCH ARTICLE

The Effectiveness of Distance Learning and Blended Learning in Jordanian Universities: A Comparative Study

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ABSTRACT

This paper evaluates the effectiveness of distance learning and blended learning from the students' perspective at the Jordanian universities. The methodology involves utilizing the descriptive-comparative approach. The research sample consists of a simple random sampling of (390) university students. A 40-item questionnaire is used as a research instrument and distributed in four dimensions of motivation, techniques, teaching, and evaluation. The results showed that the appreciation degree of the effectiveness of distance learning among undergraduate students at the Jordanian universities is medium. The findings also show no statistically significant differences of their responses to effectiveness of distance learning according to the gender, university major, and university type variables. However, the results show that the appreciation degree of the effectiveness of blended learning among undergraduate students in Jordanian universities is high. The findings also indicate no statistically significant differences in the research sample's responses to the degree the effectiveness of blended learning according to the gender, university major, and university type. Given the results, this paper recommends utilizing the blended learning in teaching university courses.

INTRODUCTION

Of note, the world has witnessed a great interest in e-learning, as the trend in its use was previously different from the beginning of work with distance learning by industry, government and the army for vocational training (Altarawneh & Al-Ghammaz, 2023). In Europe, however, distance learning opened new areas as mail courses were established in the mid-nineteenth century, until the Internet began to be used in educational institutions and knowledge exchange through means of communication after it was limited to newspapers and participation in forums. Universities and schools have websites where the Internet, smartphones and computers are seen as essential educational tools. Therefore, courses for teachers in e-learning and its various means have been intensively launched.

A high level of agreement is on the continuous rise among many people interested in e-learning that there are three main types of e-learning (Al-Taher & Attia, 2012; Mahmoud, 2012). The first is synchronous e-learning, which is the type of e-learning that requires the presence of the teacher and learners at the same time in front of the computers used in e-learning. The second is asynchronous learning, which is indirect e-learning, where the learner and the teacher are separated in place and time, and there is no need for them to be present at the same time, as the teacher adds the educational content elements. Within the second type, the learning resources, teaching plan and assessment methods are attached to the e-learning website in a way that allows the learner to interact with them, provide responses to the teacher and ask any inquiry

or question to the teacher via e-mail and forums, and the teacher in turn answers in the same way (Al-Shanaq & Bani Domi, 2009).

Moreover, the third is blended learning, which is the integration and blending of education between classes given directly to learners as is the case in traditional learning classes, along with meetings, online activities and interaction, where it can be said that it is a combination of synchronous e-learning and asynchronous e-learning (Al-Shanaq & Bani Domi, 2009). The most important advantages of e-learning are the ability to create a balanced interaction between humans and machines, developing learners' skills and positive attitudes towards study subjects that may be difficult from their point of view, along with having the ability to display images, sound, drawing and movement, which provides a tangible material experience for the learner.

E-learning plays an important and fundamental role in the success of the educational process. Considering the highly technological development and the spread of modern means of communication such as computers, the Internet, and various media, such as audio, image, and video, these means have made it possible for many people to receive education with ease and simplicity and with the least time and effort. Al-Mallah (2010) refers to the Jordanian experience in e-learning through sound policies that support the introduction of technology into the educational process. Also, practical measures have been taken to establish the foundations of e-learning and provide educational resources and curricula through knowledge networks, and to gradually implement the subsequent stages of the project, which may cost up to five hundred million US dollars. With that, Knowledge is available to everyone regardless of time and place by providing continuous learning opportunities for all in Jordan through cooperation between the Ministry of Education and the Integrated Technology Group Company to establish the e-learning system “Edusave”.

E-learning aims to provide learners with the skills and competencies required to use the culture of information and communication, achieve new generations of teachers and learners capable of dealing with the requirements of the modern era, and fill the shortage of academic cadres in some educational sectors by providing virtual classes and creating educational networks to organize the work of educational institutions and manage them (Al-Salmi, 2020). For example, the COVID-19 pandemic hit all aspects of life, most importantly the field of education, the shift to distance learning was the best necessary solution to achieve physical distancing between students to preserve their safety from infection with COVID-19 and maintain the study pattern without being affected (Oyaba & Abu Al-Qasim, 2020). The traditional learning method was also discontinued and replaced by distance learning, thus ensuring the continuity of education from home.

With the entry of the COVID-19 pandemic into the world and its invasion of educational environments, the Ministry of Higher Education and the Jordanian Ministry of Education were forced to completely transform the educational process to distance learning to protect the health of citizens. Between (2020) and (2021), the distance learning process continued under the prevailing environmental conditions, as universities used educational platforms such as Zoom, Microsoft Teams, specialized programs for tests, and social media platforms. In the beginning of (2022), the general epidemiological situation in the Jordanian state improved, as education for the academic year (2021/2022) was transformed into blended learning that combines traditional learning and online learning. The university schedule, thus, was divided into two parts: one part remotely and the other part, which is directly and normally practical on campus, continuing to use what was previously mentioned in online learning. With this thorough introduction, the related literature review and research problems are given in the next sections.

LITERATURE REVIEW

Research has documented the significance of the concepts of distance learning and e-learning in the education-based environment. Cicha et al. (2021) revealed the expectations of first-year students about distance learning according to the expanded general technology acceptance model prepared for e-learning and the impact of experience and self-rules. The methodology involves utilizing the descriptive-analytical approach. The results indicated the most important factors that affect students and can convince them to

change from studying in halls to studying remotely and to feel enjoyment in this type of learning. Considering the results, the study recommended conducting more studies on distance learning.

Moreover, Puspaningtyas and Gulfaam (2021) described students' attitudes towards the use of video animation in blended learning. The methodology involves utilizing the descriptive-analytical approach. The results showed that the use of blended learning subjects in learning makes it easier to understand the teaching subjects, improves active participation in lectures, and increases self-confidence and learning independence. The results indicated that blended learning using animated videos makes learning more interesting, as more than (90%) of students said that they could understand online educational subjects better if there was a teacher explaining the material in the video. Given the results, the study recommended using animated videos to increase learning motivation and develop students' creative thinking abilities.

Besides, Al-Ajmi, Al-Sawafia, and Al-Saudi (2022) found out the extent of the availability of distance learning technology skills among students at Al-Sharqiya University in the Sultanate of Oman and revealed the differences between the means of scores of some of these technical skills according to the gender, faculty, and academic year variables. The methodology involves utilizing the descriptive approach. The results revealed that distance learning technology skills were available to the students in the study sample at a medium level. It was also found that there were no statistically significant differences in the means of skills between males and females. The study recommended that universities and those responsible for university education should pay attention to providing qualification programs in teaching and learning techniques related to distance learning for university students.

From a different lens, Barhoumi (2022) identified the perceptions of students at the School of Arts, Humanities and Social Sciences regarding the importance of using blended learning at the Sharjah University in the United Arab Emirates and the Hail University in the Kingdom of Saudi Arabia. The methodology involves utilizing the descriptive approach. The results showed a clear agreement between the students of the two universities regarding the importance of blended learning. It was also found that the degree of agreement on the availability of equipment and means among the students was medium. Given the results, the study recommended developing curricula in a manner consistent with blended learning.

Additionally, Bobbink et al. (2022) found out the impact of blended learning and e-learning in the actual nursing faculty at a wound care department in western Switzerland. The methodology involves utilizing the descriptive approach. The results showed that blended and e-learning are valuable ways to provide flexibility and deliver learning modules based on the latest evidence. Given the findings, the study recommended developing a learning approach in nursing because it allows flexibility and incorporates the latest findings and recommendations.

Likewise, Ismail and Chiro (2022) explored and compared the perceptions and attitudes of chiropractic medical students in South Africa regarding the introduction of blended learning in 2019 and the shift to e-learning in 2020 due to the COVID-19 pandemic. The methodology involves utilizing the descriptive approach. The results showed positive attitudes of students towards both types of learning. However, it was also found that e-learning obtained a higher result compared to blended learning due to the importance of time and the ease of controlling time during study. Also, there were strong relationships in both groups between accessibility, satisfaction with the situation, effectiveness and ease of use.

A thorough look at the previous research work and studies demonstrates that the current research study is like some previous studies in utilizing the descriptive-comparative approach, which is similar in the research approach and research instrument “the questionnaire”, and the selection of students as a study sample (Badhe, Badhe & Patil, 2020; Gherhes et al., 2021; Al-Hajri, Al-Farsi & Al-Ajami, 2021). Also, the current research study agrees with previous studies in terms of the aim and comparison between two types of learning (Badhe, Badhe & Patil, 2020; Gherhes, Stoian, Fărcas & Stanici, 2021). However, the current research study differs from previous studies in comparing distance learning and blended learning, like previous studies comparing traditional learning and distance learning. Importantly, the current study has taken advantage of reviewing previous studies to deepen the understanding of the study problem and

interpret the results. However, this research study is of a high significance, as it combines two variables and compares the effectiveness of blended learning and distance learning. More importantly, it is also regarded as the first research study of its kind to compare distance learning and blended learning in Jordan.

3. Research Problem

The features of the research problem are noticed through the reality of applying the blended learning and distance learning systems, which imposed an educational and pedagogical reality making these two models a general framework for many university courses adopted by the Ministry of Higher Education in Jordan. University students dealt with it realistically and were divided between supporters of e-learning who praised its flexibility and smooth presentation of educational content through its applications and forms in enriching their experiences and opponents who claimed that e-learning made them feel isolated and deprived them of university life. Opponents also claimed that e-learning revealed the flaw in providing a basic technological base that forced the teacher and student to develop their skills in using technology in education and educational platforms and using electronic applications to follow lectures.

Accordingly, all these impressions have prompted the researchers as guardians who are sometimes forced to follow their children sitting in front of the computer, content with the teacher explaining the lesson through the educational video on Zoom and the electronic recording of the lecture being played while they are busy playing electronic games. E-learning, with its positives and negatives, has attracted the interest of one of the researchers, as distance learning enabled her, as primary school teacher, to communicate with her students during the COVID-19 pandemic by directing them to follow educational platforms and download the Teams and Zoom applications on their smartphones and home computers. It is also noted that it was difficult to ensure the students' readiness and knowledge of how to use it until the communication mechanism moved from distance learning to blended learning during the rotation of school students in the Hashemite Kingdom of Jordan. Therefore, a new pattern has emerged that requires students to adapt to the two types of education, leading to confusion in the educational process.

As gleaned from the previous studies, it is noted that there are few studies that compared these two types of e-learning, alongside the need to follow up on everything new regarding them, measure their degree of effectiveness, and compare them, which is a reason to consider it a phenomenon worthy of follow-up and research. Therefore, it is necessary to conduct a comparative study on the effectiveness of distance learning and blended learning from the undergraduate students' perspective in Jordanian universities who studied courses through the two e-learning patterns and identify their views on the effectiveness of e-learning and its patterns, which bridges the gap between old and modern studies, thus providing important indicators related to education that are of interest to decision-makers in educational institutions in the Ministry of Higher Education. With this in mind, the research problem is reflected in answering the following research questions:

1. What is the appreciation degree of the effectiveness of distance learning among undergraduate students in Jordanian universities?

2. Are there statistically significant differences at the significance level ($0.05 = \alpha$) between the means of the research sample participants' responses to their appreciation degree of the effectiveness of distance learning attributed to the gender, university major, and university type variables?

3. What is the appreciation degree of the effectiveness of blended learning among undergraduate students in Jordanian universities?

4. Are there statistically significant differences at the significance level ($0.05 = \alpha$) between the means of the research sample participants' responses to their appreciation degree of the effectiveness of blended learning attributed to the gender, university major, and university type variables?

5. Are there statistically significant differences at the significance level (0.05 = α) between the means of the research sample participants' responses to their appreciation degree of the effectiveness of distance learning and blended learning?

4. Research Significance

Theoretically, the research significance is reflected in providing an opportunity to deliver scientific research that contributes to enriching the Arabic library and plays a role in supporting theoretical literature in general. At the same time, this research can stimulate interest from researchers and graduate students to explore these topics from different angles, which may lead to the production of more open and comprehensive studies.

5. Research Terms & Definitions

In this research study, the terms "Effectiveness", "Distance Learning", and "Blended Learning" are mentioned, and their procedural definitions are as follows**:**

Effectiveness: It is defined as "the efforts exerted to attain the highest levels of achievement at the lowest costs to achieve the best desired results" (Abu Shakhdam, 2020, p. 368). Procedurally, effectiveness is defined as the extent of achievement and interaction of distance learning and blended learning to achieve the best desired results considering the instrument prepared to measure the effectiveness of the two learning methods of distance learning and blended learning in the dimensions of motivation, techniques, teaching, and evaluation.

Distance Learning: It is defined as "the process of providing education or training through electronic educational means, including satellites, video, recorded audio tapes, computer programs, various educational technical systems and means, in addition to several other means" (Hijazia & Al-Khamisi, 2021, p. 10). Procedurally, distance learning is defined as delivering educational subjects to the learner in Jordanian universities using interactive educational platforms, electronic networks and smart devices to ensure physical distancing. The effectiveness of distance learning was measured by calculating the mean of responses of the research sample participants to the distance learning effectiveness scale from the undergraduate students' perspectives at the Jordanian universities who received distance learning courses considering the following dimensions of motivation, techniques, teaching, and evaluation prepared for the purposes of the current research study.

Blended Learning: It is defined as the integration of the use of educational technology and different learning and teaching methods according to the learning theories appropriate to the educational situation to increase the effectiveness of learning and teaching (Abu Aita & Al-Khrisha, 2019, p. 331). Procedurally, blended learning is defined as the method used by Jordanian universities in teaching and is based on combining the two styles of traditional learning and distance learning through technology and using electronic platforms. The effectiveness of distance learning was measured by calculating the mean of responses of the research sample participants to the blended learning effectiveness scale from the undergraduate students' perspectives at the Jordanian universities who received blended learning courses considering the following dimensions of motivation, techniques, teaching, and evaluation prepared for the purposes of the current research study.

6. Research Limitations

The findings of this research can be generalized considering the following limitations:

1. Human Limitations: This research study is limited to a sample of undergraduate students in Jordanian universities.

2. Spatial Limitations: This research study is conducted at the private and public Jordanian universities in Amman City, Jordan.

3. Temporal Limitations: This research study is conducted in the second semester of the academic year (2021/2022).

4. Objective Limitations: This research study is limited to evaluating the effectiveness of distance learning and blended learning from the students' perspective at the Jordanian universities.

7. Theoretical Framework

The theoretical framework is constructed to thoroughly address the concepts of "Distance Learning" and "Blended Learning".

7.1 Distance Learning

Distance learning has a set of justifications represented by the geographical justifications, which include the long distance between teachers and educational institutions, the presence of geographically isolated areas, the small population in some areas, and the inability of institutions to provide services (Al-Yawar, 2007). There are social and cultural justifications represented by technological changes and coexistence with them, eradicating cultural and information illiteracy, and absorbing workers in public and private institutions. Moreover, the economic justifications are represented by the high cost of formal education, saving time and effort and contributing to production, providing services to the deprived in society, and the necessity of providing human cadres to serve economic development. On the other hand, psychological justifications are reflected in increasing the learner's motivation, meeting the aspirations of individuals regardless of age, profession or gender, and removing the psychological barrier between the learner and his desire to learn.

According to Ba'armah (2020), distance learning is distinguished by its flexibility and meeting the social and professional needs of students, using communication technology in a practical way, as it suits all members of society, whether lecturers or students, is characterized by leaving an impact and effectiveness of techniques, improving students' time management skills, reducing the absorption capacity of students within universities, providing greater opportunities to develop courses and teaching methods using technology and various educational media. The most prominent advantages of distance learning lie in protecting the student's right to learn and ensuring the continuity of the educational process in all circumstances and conditions, enhancing the principle of self-learning and the effectiveness of knowledge through easy access to information, saving time for everyone so that the teacher does not need to give the same content repeatedly, having the flexibility to deliver and access educational content and moving the teacher's role from the instructor to the guiding supervisor.

Other key advantages of distance learning are the multiplicity of sources of knowledge and not being limited to books only, the ease of communicating with the teacher at any time and asking questions that need answers, as it helps expand the scope of education and contribute to immediate evaluation, identifying results and correcting errors (Sami, 2019). However, the disadvantages of distance learning include the high financial cost, especially in the beginning because it requires equipment, devices, communication tools, and training, leads to boredom due to the lack of direct interaction between the teacher and the learner, socially isolate students due to the difficulty of getting to know his colleagues and the difficulty of evaluating the student due to the lack of credibility, increases the chances of distraction, and lacks justice and fairness due to the disparity in the availability of the necessary technology, time, and motivation for students (Sami, 2019).

7.2 Blended Learning

The emergence of blended learning is a natural development of e-learning, combining e-learning with traditional learning, as it does not cancel e-learning or traditional learning, but rather combines the two together (Abu Musa & Al-Sous, 2014, p. 30). As revealed by (Al-Ghanim, 2016, p. 252), there are a number of benefits that can be achieved when using blended learning in the educational process, such as increasing the effectiveness of learning and diversifying knowledge methods through blended learning, as the learner can employ more than one method of knowledge, selecting the appropriate method for his abilities from

among many electronic and traditional methods. Thus, it helps students gain more knowledge, raise the quality of the educational process, achieve active learning for learners and educational flexibility, provide practice and training in the educational environment, and increase effectiveness and diversity in the use of strategies.

On the other hand, Al-Qiq and Al-Hidmi (2021) indicate that blended learning has several problems attributed to human reasons such as teachers, learners, and material reasons such as costs, devices, software, communications, technological infrastructure. There are also difficulties represented by the lack of appropriate training opportunities for teachers on the use of modern technology in education, the failure of some learners to deal with planning and organization in blended learning appropriately, the difficulty of teachers shifting from the traditional learning method based on the teacher's lecture to memorizing information for students to a modern learning method, and the majority of programs and tools are developed in English, which creates an obstacle for some students to deal with them easily.

Regarding the curricula, as most of them are still printed on paper, they should be converted into electronic files that are easy to handle. Locally, interest in e-learning at the University of Jordan began in 2017 when an agreement was signed between the University of Jordan and the Queen Rania Foundation for Education and Development (Edraak) to develop an e-course for the subjects of Arabic Language Skills and National Culture (University of Jordan, 2017).

8. METHOD

Research Approach

The methodology involves utilizing the descriptive-comparative approach, as it is the scientific method that fulfills the purposes of this study.

Research Population & Sample

The research population consisted of all (74978) male and female undergraduate students in Jordanian public and private universities in the academic year (2021/2022) in Amman City who studied a few courses using the e-learning system. Public universities included the University of Jordan and the World Islamic Sciences & Education University, while private universities included Isra University, Petra University, Al-Zaytoonah University of Jordan, Middle East University, and Amman Arab University. The research sample comprised (390) male and female students selected using a simple random sampling method based on the sample size determination table from the research population size prepared by (Margan & Krejci, 1970).

Research Instrument

The research instrument “questionnaire” consisted of two sections: demographic data for the research sample participants. The second section includes a 40-item questionnaire divided in two domains: “the effectiveness of distance learning” consisted of (17) items and distributed in four dimensions of motivation, techniques, teaching, and evaluation, and the second domain “the effectiveness of blended learning” consisted of (23) items and distributed in four dimensions of motivation, techniques, teaching, and evaluation.

Research Instrument Validity

The research instrument validity is also checked by reviewing the questionnaire in its initial forms from (11) experienced and specialized faculty members in several Jordanian institutions and universities. The comments, modifications, and recommendations proposed by the validators are considered, as the items have obtained an approval rating of (81%) or more. The necessary action is taken with the items suggested to be deleted, modified, or reformulated, and thus the questionnaire in its final form consists of (40) items.

Research Instrument Reliability

To check the research instrument reliability, the reliability was calculated using the Cronbach's Alpha method for internal consistency. The research instrument was also applied to a survey sample of (30) male and female students outside its sample, where Pearson's correlation coefficient was calculated between the item and the related domain and between the item and the overall questionnaire for each dimension of the questionnaire. The values of the correlation coefficients between the item and the related domain and between the item and the overall degree for the distance learning domain were also calculated, where the correlation coefficients with the domain ranged between (0.69) and (0.96), while the correlation coefficients with the overall degree ranged between (0.45) and (0.95), which are statistically significant and are acceptable values for conducting this research study.

Moreover, the values of the correlation coefficients between the item and the related domain and between the item and the overall degree for the blended learning domain were also calculated, where the correlation coefficients with the domain ranged between (0.36) and (0.93), while the correlation coefficients with the overall degree ranged between (0.35) and (0.81), which are statistically significant and are acceptable values for conducting this research study (Odeh, 2014). However, the reliability coefficients using the Cronbach's alpha method for the distance learning domain ranged between (0.90) and (0.98) for the domains where the overall reliability coefficient was (0.99). Also, in the blended learning domain, the reliability coefficients ranged between (0.85) and (0.96) for the domains and the overall reliability coefficient was (0.97).

Statistical Processing

To answer the main research question and process the data statistically, the following statistical methods were utilized.

To answer the first research question, the means, standard deviations, degrees and ranks were calculated.

To answer the second, third, fourth, and fifth research questions, the Independent Sample t-test and Multivariate Analysis of Variance (MANOVA) were also used. The adjusted range of the research instrument was determined as follows:

A high degree follows the adjusted range is (5.00 - 3.68)

A medium degree follows the adjusted range is (3.67 - 2.34)

A low degree follows the adjusted range is (2.33 - 1.00).

9. RESULTS & DISCUSSION

Results related to the First Research Question

What is the appreciation degree of the effectiveness of distance learning among undergraduate students in Jordanian universities?

To answer this question, the means, standard deviations, ranks, and the appreciation degree of the effectiveness of distance learning among undergraduate students at the Jordanian universities were calculated. Table (1) illustrates those results.

Table 1 :**Means, Standard Deviations, Ranks, and the Appreciation Degree of the Effectiveness of Distance Learning among Undergraduate Students at the Jordanian Universities Arranged in Descending Order**

Serial Number in the Instrument	Rank	Dimensions	AM	SD	Appreciation Degree
3	1	Motivation	3.69	1.00	High

1	2	Techniques	3.68	0.97	High
3	3	Teaching	3.66	0.96	Medium
4	4	Evaluation	3.59	1.00	Medium
Overall Distance Learning Degree			3.66	0.90	Medium

As indicated in Table (1), the appreciation degree for the effectiveness of distance learning among undergraduate students in Jordanian universities in general is medium in all dimensions and in the overall degree, except for the dimension of motivation and techniques, where the appreciation degree is high. This result is attributed to the fact that the distance learning process is a process that depends entirely on technology, which may affect motivation because distance learning may break the fear barrier. This result is consistent with the study results of the study by Badhe, Badhe, and Patil (2021) and Zyoud's study (2021), which showed that the results of motivation and use of techniques are high. However, the result of this question differed from the results of the studies (Aristeidou & Cross, 2021; Khalifa & Majidar, 2021; Sabahy, 2019), which showed that students lack motivation and have obstacles in dealing with techniques.

Regarding the dimension of techniques, the results showed that the dimension of techniques is ranked second, as all its items are of a medium degree, except for items (1), (2), (9), and (11), which are of a high degree. The results also showed that the item stipulating "I obtain electronic study material using educational programs for e-learning" is ranked first with a mean (3.96) and a standard deviation (1.24). This result is attributed to students' awareness of the importance of using educational programs and the ability of the teaching staff to provide electronic study material using platforms and the ease of sending it to students. Also, the results showed that item stating "The university provides the necessary technological infrastructure for e-learning" is ranked last with a mean (3.56) and a standard deviation (1.24). The result is attributed to the lack of readiness of some universities for distance learning, especially since the COVID-19 pandemic happened without warning, in addition to the fact that some universities lack sufficient financial support to develop their infrastructure.

Regarding the teaching dimension, the results indicate that the teaching dimension is ranked third, with all its items at a medium level. It is also shown that the item stating "I can access the study material easily and smoothly in e-learning" is ranked first with a mean (3.92) and a standard deviation (1.22). This result is attributed to students' awareness of the importance of technology as a source of information, as the development of students' skills towards technology is attributed to students' prior exposure to courses that help them use technology and the ease of receiving educational material. The results also show that the item stipulating "Different methods are used in presenting educational material such as simulation and problem solving in the e-learning system" is ranked last with a mean (3.45) and a standard deviation (1.25). This is attributed to the lack of development of infrastructure in Jordan and the failure to keep pace with developments in the world that have reached the use of the virtual world in education.

Concerning the motivation dimension, the results indicate that the dimension of motivation is ranked first, as all its items were at a high level, except for items (37) and (38), which were at a medium level. The results showed that the item stipulating "My use of e-learning makes learning more exciting and motivating" is ranked first with a mean of (3.82) and a standard deviation of (1.30). This is due to students' desire to learn continuously through technology, as it provides fun and diverse teaching methods, strategies, and programs in education. The results showed that item (38) stating "I feel comfortable and confident as a result of studying the scientific material in e-learning" is ranked last with a mean of (3.51) and a standard deviation of (1.26). This is attributed to the inability to fully communicate with the teaching staff or obtain information in a different way, as some students may face challenges on the Internet or a sense of responsibility towards self-learning, which prompts the learner to search for information via the Internet if some teachers do not answer them. It may also be attributed to the weakness of the computer and technical skills necessary to use distance learning technology by female students and the lack of permanent Internet networks.

Concerning the evaluation dimension, the results indicate that the results show that the evaluation dimension is ranked fourth, as all its items were of medium degree, except for item (42), which is in a high degree, as item (42) stating "The content includes exercises that help me in self-assessment" is ranked first with a mean of (3.81) and a standard deviation of (1.26). This result is attributed to the use of exercises by some teachers and universities that help students learn independently and evaluate themselves, which helps them know the amount of information they have benefited from and review the information they feel they are weak in. item (49) which states "E-learning contributes to reducing the level of anxiety about low achievement in tests" is ranked last with a mean (3.45) and a standard deviation (1.19). This may be attributed to the presence of electronic tests that depend on essay answers that make the student solve them manually and send them to teachers, which increases psychological pressure in addition to determining the time required to send the answers. Also, this may be attributed to the use of advanced strategies in evaluation that may be new and strange to students.

Results related to the Second Research Question

Are there statistically significant differences at the significance level (0.05 = α) between the means of the research sample participants' responses to their appreciation degree of the effectiveness of distance learning attributed to the gender, university major, and university type variables?

Multivariate analysis of variance (MANOVA) was used to calculate the means and standard deviations of the effectiveness of distance learning among undergraduate students according to the gender, university major, and university type variables. Table (2) illustrates those results.

Table 2: Multivariate Analysis of Variance (MANOVA) to Calculate the Means and Standard Deviations of the Effectiveness of Distance Learning among Undergraduate Students According to the Gender, University Major, and University Type Variables

Variables	Levels	AM & SD	Techniques	Teaching	Motivation	Evaluation	Overall Degree
Gender	Male	AM	3.75	3.70	3.80	3.73	3.73
		SD	1.02	1.01	1.04	1.00	0.94
	Female	AM	3.63	3.63	3.63	3.50	3.61
		SD	0.93	0.93	0.97	0.99	0.87
University Major	Scientific	AM	3.59	3.57	3.66	3.58	3.59
		SD	0.98	0.92	0.96	0.98	0.88
	Humanities	AM	3.77	3.76	3.72	3.59	3.73
		SD	0.93	1.00	1.03	0.88	0.92
University Type	Public	AM	3.65	3.68	3.67	3.53	3.65
		SD	1.01	0.97	1.03	1.06	0.92
	Private	AM	3.70	3.62	3.71	3.64	3.65
		SD	0.92	0.95	0.96	0.93	0.87

As indicated in Table (2), There are no statistically significant differences between the means of the responses of the study sample members regarding the appreciation degree of the effectiveness of distance learning among undergraduate students, depending on the gender, university major, and university type variables in all dimensions and the total degree. Regarding the gender variable, this result is attributed to students' awareness of the importance of education without considering the differences attributed to

gender and their exposure to the same educational conditions. Also, they are of similar educational and age levels and have accumulated and similar educational and computer experiences and similar developmental characteristics. The result of this question agreed with the studies (Al-Kharousi & Al-Amri, 2021; Khalifa, Khalifa, & Majidar, 2021; Zyoud, 2021).

Regarding the major university variable, this result is attributed to the use of the same educational platforms by faculty members in all specializations, and the exposure of students to the same conditions during the pandemic period, as all specializations used the same strategies, methods and techniques in a similar manner. The result of this question was consistent with the studies (Al-Hajri, Al-Farsi, & Al-Ajami, 2021; Khalifa, Khalifa, & Majidar, 2021; Zyoud, 2021). Regarding the university type variable, this result is attributed to the similarity of the infrastructure of universities, the scientific expertise of the teaching staff, and the general pattern within universities in Jordan in terms of available software and the Internet. The result of this question agreed with the studies (Cicha et al., 2021; Al-Kharousi & Al-Amri, 2021). This result differed from the result of Zyoud's study (2021).

Results related to the Third Research Question

What is the appreciation degree of the effectiveness of blended learning among undergraduate students in Jordanian universities?

Table 3: Means, Standard Deviations, Ranks, and the Appreciation Degree of the Effectiveness of Blended Learning among Undergraduate Students at the Jordanian Universities Arranged in Descending Order

Serial Number in the Instrument	Rank	Dimensions	AM	SD	Appreciation Degree
3	1	**Motivation**	3.99	0.77	High
1	2	**Techniques**	3.98	0.74	High
2	3	**Teaching**	3.96	0.74	High
4	4	**Evaluation**	3.92	0.81	High
Overall Blended Learning Degree			3.96	0.68	High

As indicated in Table (3), the appreciation degree for the effectiveness of blended learning among undergraduate students in Jordanian universities in general is high in all dimensions and in the overall degree. This may be because blended learning provides students with a reasonable degree of comfort and flexibility, as they can control the pace of learning and how they learn. Blended learning also allows students to interact with teachers and peers, as social skills develop within the context. In addition, blended learning provides an opportunity for the faculty member to develop a clear roadmap for students, as expected from each student and the requirements to reach the final goal. Blended learning also enables faculty members to move within activities to interact with individual or small groups of students and check progress. This result is attributed to the fact that blended learning allows the faculty member to customize courses and understand the individual needs of each student. This result is also attributed to the fact that blended learning combines new technology with traditional teaching methods, thus providing learners with a more comprehensive educational experience. This result is consistent with the results of the studies (Barhoumi, 2022; Imran, Saleh, & Mohammad, 2022; Puspaningtyas & Gulfaam, 2021; Salim, 2022), which showed that the effectiveness of blended learning was high.

Regarding the dimension of techniques, the results showed that the dimension of techniques is ranked second, as all its items are of a high degree. Item (1) stating "I obtain electronic study material using

educational programs for e-learning" is ranked first with a mean (4.15) and a standard deviation (0.93). This may be attributed to the fact that blended learning contains a set of activities and means that require students to complete them individually and collectively in order for learning to occur and the goal of the lecture to be achieved, which prompts students to interact in the classroom and the possibility of obtaining the study material, whether electronically or through traditional classes. The results also showed that item (4) which states "The university provides the necessary technological infrastructure for e-learning" is ranked last with a mean (3.85) and a standard deviation (1.09). This may be attributed to the technological challenge represented by the lack of computers for most students.

Regrading the teaching dimension, the results indicate that the teaching dimension is ranked third, with all its items at a high level. It is also shown that item (12) stating "I can access the study material easily and smoothly in e-learning" ranked first with a mean (4.16) and a standard deviation (0.92). This is attributed to the fact that faculty members provide students with sites that serve the courses they study, and direct communication facilitates the faculty's ability to provide the material either in paper or electronic form. However, item (31) which states that "e-learning is an obstacle to social interaction and exchange of experiences with colleagues" is ranked last with a mean of (3.84) and a standard deviation of (1.10). This is attributed to the fact that blended learning contains a set of activities and means that require students to complete them individually and collectively for learning to occur and the goal of the lecture to be achieved, which prompts students to interact within the classroom. Blended learning also enables students to enjoy dealing with teachers and colleagues face to face.

Concerning the motivation dimension, the results indicate that the dimension of motivation is ranked first, as all its items were at a high level. The results showed that item (35) stipulating "My use of e-learning makes learning more exciting and motivating" is ranked first with a mean of (4.13) and a standard deviation of (0.96). This is attributed to the fact that the student uses various media and programs, where information is presented to the student in a different way, such as a video or an image. E-learning is also characterized by flexibility, as it gives the student the freedom to select the appropriate time and place. Item (38), which states, "I feel comfortable and confident as a result of studying the scientific material in e-learning" is ranked last with a mean of (3.87) and a standard deviation of (1.06). This is due to the weakness of the technological infrastructure for distance learning and the inability of all students to own their own computers, in addition to the weak speed of the Internet networks and their interruption most of the time.

Concerning the evaluation dimension, the results indicate that the results show that the evaluation dimension is ranked fourth, as all its items were of high degree. Item (42) stating "The content includes exercises that help me in self-assessment" is ranked first with a mean of (4.07) and a standard deviation of (0.98). This is attributed to the teaching staff who provide students with various activities within the content, the capabilities of the teaching staff and their awareness of the importance of assessment as a process that helps students measure their knowledge and skills, and the students' desire to develop themselves and measure their skills and information. Item (49) which states "E-learning contributes to reducing the level of anxiety about low achievement in tests" I ranked last with a mean of (3.83) and a standard deviation of (1.10). This may be attributed to the presence of electronic tests that depend on essay answers that make the student solve them manually and send them to teachers, which increases psychological pressure in addition to determining the time required to send the answers through it.

Results related to the Fourth Research Question

Are there statistically significant differences at the significance level ($0.05 = \alpha$) between the means of the research sample participants' responses to their appreciation degree of the effectiveness of blended learning attributed to the gender, university major, and university type variables?

Multivariate analysis of variance (MANOVA) was used to calculate the means and standard deviations of the effectiveness of distance learning among undergraduate students according to the gender, university major, and university type variables. Table (4) illustrates those results.

Table 4: Results of Multivariate Analysis of Variance (MANOVA) to Indicate the Differences between the Means of the Research Sample Participant' Responses to the Appreciation Degree of the Effectiveness of Distance Learning among Undergraduate Students According to the Gender, University Major, and University Type Variables

Source of Variation	Dimensions	Sum of Squares	df	Mean of Squares	F-Value	Sig. Level
Gender Hotelling's Trace Value 0.388	Techniques	1.642	1	1.642	1.775	.184**0**
	Teaching	.341**0**	1	.341**0**	.371**0**	.543**0**
	Motivation	.494**0**	1	0.494	.501**0**	0.479
	Evaluation	1.557	1	1.557	1.566	.212**0**
	Total Degree	3.310	1	3.310	3.579	0.065
University Major Hotelling's Trace Value 0.124	Techniques	1.819	1	1.819	1.983	.160**0**
	Teaching	.036**0**	1	.036**0**	.037**0**	.848**0**
	Motivation	.193**0**	1	.193**0**	.194**0**	.660**0**
	Evaluation	.068**0**	1	.068**0**	.073**0**	.787**0**
	Total Degree	.830**0**	1	.830**0**	.905**0**	.342**0**
University Type Hotelling's Trace Value 0.106	Techniques	.441**0**	1	.441**0**	.447**0**	.504**0**
	Teaching	.099**0**	1	.099**0**	.100**0**	.752**0**
	Motivation	1.642	1	1.642	1.775	.184**0**
	Evaluation	.341**0**	1	.341**0**	.371**0**	.543**0**
	Total Degree	.494**0**	1	.494**0**	.501**0**	.479**0**
Error	Techniques	353.301	382	0.925		
	Teaching	350.485	382	.917**0**		
	Motivation	376.315	382	.985**0**		
	Evaluation	379.913	382	.995**0**		
	Total Degree	350.485	382	.917**0**		
Total	Techniques	363.867	389			
	Teaching	362.089	389			
	Motivation	388.734	389			
	Evaluation	390.305	389			
	Total Degree	363.867	389			

As revealed by Table (4), there are no statistically significant differences between the means of the research sample participants' responses to the appreciation degree of the effectiveness of blended learning among undergraduate students according to the variables of gender, university major, and university type in all dimensions and the total degree. Regarding the gender variable, this result is attributed to students' awareness of the importance of education without considering the differences attributed to gender and their exposure to the same educational conditions. Also, they are of similar educational and age levels and have accumulated and similar educational and computer experiences and similar developmental characteristics. The result of this question agreed with the study (Gambari et al., 2017). Regarding the university major variable, the result is attributed to the use of the same educational platforms by the faculty in all specializations and the exposure of students to the same conditions during the pandemic period, as all specializations used the same strategies, methods and techniques in a similar manner. The result of this question was consistent with (Puspaningtyas & Gulfaam, 2021). Regarding the university variable, this result is attributed to the similarity of the infrastructure and scientific expertise of the faculty and the general pattern within universities in Jordan in terms of available software and the Internet. The result of this question was in line with (Bouilheres et al., 2020).

Results related to the Fourth Research Question

Are there statistically significant differences at the significance level (0.05 = α) between the means of the research sample participants' responses to their appreciation degree of the effectiveness of distance learning and blended learning?

The t-test was used for correlated samples on the domains of distance learning, blended learning, and the total degree of undergraduate students. Table (5) illustrates those results.

Table 5: Means, Standard Deviations, and T-Test for Correlated Samples on the Domains of Distance Learning, Blended Learning, and the Total Degree of Undergraduate Students

Dimension	N	AM	SD	T-Value	Sig. Level
Techniques -Distance Learning	390	**3.6**8	0.97	**-5.28**	**0.00**
Techniques -Blended Learning	**390**	**3.9**8	0.74		
Teaching-Distance Learning	390	**3.6**6	0.96	**-5.47**	**0.00**
Teaching-Blended Learning	**390**	**3.9**6	0.74		
Motivation-Distance Learning	**390**	**3.69**	1.00	**-5.32**	**0.00**
Motivation-Blended Learning	**390**	**3.9**9	0.77		
Evaluation-Distance Learning	**390**	**3.5**9	1.00	**-5.89**	**0.00**
Evaluation-Blended Learning	**390**	**3.9**2	0.81		
Total Distance Learning	**390**	**3.6**6	0.90	**-5.93**	**0.00**
Total Blended Learning	**390**	**3.9**6	0.68		

As shown in Table (5), there were statistically significant differences at the significance level (0.05 = α) between the means of the research sample participants' responses to their assessment of the effectiveness of distance learning and blended learning in all dimensions and the total score and in favor of blended learning. This result was consistent with the results of studies (Barhoumi, 2022; Imran, Saleh, & Muhammad, 2022; Salim, 2022). This result is attributed to blended learning that ensures personal interaction between faculty members and students because online learning is used as a learning method integrated with other teaching strategies, unlike distance learning in which there is no personal interaction between faculty members and students as it relies on digital forms of communication. This result is also attributed to the extent of effectiveness achieved by blended learning in the educational process. It also helps the student to learn independently, increases the effectiveness between the learner and the teacher, and adds a kind of excitement and attractiveness to the educational material, especially since it combines two types of learning, raises students' computer skills and helps to retain information for a longer period.

10. CONCLUSION

In a nutshell, the current paper evaluates the effectiveness of distance learning and blended learning from the students' perspective at the Jordanian universities. The results showed that the appreciation degree of the effectiveness of distance learning among undergraduate students at the Jordanian universities is medium. The findings also show no statistically significant differences of their responses to effectiveness of distance learning according to the gender, university major, and university type variables. However, the results show that the appreciation degree of the effectiveness of blended learning among undergraduate students in Jordanian universities is high. The findings also indicate no statistically significant differences in the research sample's responses to the degree the effectiveness of blended learning according to the gender, university major, and university type.

11. Recommendations

Given the results, this paper recommends providing an infrastructure in universities compatible with the needs of students in distance learning and blended learning, furnishing students with free internet packages, and developing plans that ensure confidentiality and transparency in conducting tests in blended learning and distance learning. Other key recommendations include increasing students' awareness of the importance of distance learning, holding training courses for students that include training them on the use of blended learning and distance learning technologies, diversifying educational strategies to ensure the preservation and recall of information during learning, and having university faculty members provide students with activities and assignments that increase their interaction in the educational process. This article also recommends adopting blended learning as a type of e-learning and creating a virtual environment that simulates reality, which contributes to increasing students' interaction and their sense of excitement and enjoyment in distance learning, developing strategies and assessment methods in distance learning, and contributing to creating an educational method that suits students' needs and characteristics.

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