



## RESEARCH ARTICLE

# Students' attitudes towards e-Learning in Jordanian universities

Buthiana Elias Awais<sup>1</sup>, Amjad Mahmoud Daradkah<sup>1\*</sup>, Feryal Yousef AlKhatib<sup>2</sup>, Esraa Ahmed Telfah<sup>2</sup>, Yasmin Abdullah Al-Shunnaq<sup>3</sup>, Maria Salih Tawalbeh<sup>3</sup>, Fadi Fuad Ghawanmeh<sup>4</sup>, Heba Sadiq Daradkah<sup>5</sup>

<sup>1</sup>Department of Educational Administration, Faculty of Educational Sciences, Ajloun National University, Ajloun, Jordan

<sup>2</sup> Department of School of Education , Faculty of Educational Sciences, Irbid National University, Irbid, Jordan

<sup>3</sup>Talal Abu-Ghazaleh for education quality (TAG-EDUQA ) .Amman Jordan

<sup>4</sup> Department of Educational Administration, Faculty of Educational Sciences, Zarqa University, Zarqa, Jordan

<sup>5</sup>Ministry of Education Jordan.

**ARTICLE INFO**

Received: Apr 24, 2024

Accepted: Jul 2, 2024

**Keywords**

Attitudes

Blended learning

E-learning

Students

Universities

**\*Corresponding Author:**

amjad.drakah@anu.edu.jo

amdaradkah@yahoo.com

**ABSTRACT**

The study aims to examine the attitudes of students towards e-learning in Jordanian universities. The research adopts a descriptive-analytical approach to achieve its objectives. The study sample consists of 484 male and female students from Jordanian universities. A questionnaire was developed as a research instrument to assess students' attitudes towards e-learning. The validity and reliability of the instrument were confirmed, and it was administered during the second semester of the academic year 2022/2023. The findings reveal that students' attitudes towards e-learning are moderately positive. Furthermore, statistically significant differences were observed in students' attitudes towards e-learning based on gender, academic year, and faculty. The results also indicate that Jordanian university students prefer face-to-face learning as their primary choice, followed by blended learning, and then e-learning. Based on these findings, the article recommends the integration of e-learning techniques in university courses and the provision of training courses for faculty members on e-course design.

**1. Introduction:**

The distinguishing feature of the twenty-first century is the rapid and borderless change that affects all aspects of society. The information revolution and advancements in communication have become the driving force behind this change, with their influence growing each day (Altarawneh & Al-Ghammaz, 2023). Scientific and technological advancements have permeated every aspect of life, leading to inevitable transformations in lifestyles and work patterns. Education, in particular, has been profoundly impacted, as technology has infiltrated educational institutions and reshaped various activities. As a result, integrating technology into the core curriculum has become crucial, and educational content has taken on a technical nature (Al-Buhairi, 2008).

University education holds great significance for thousands of young individuals as it complements their school education across various disciplines. Its primary goal is to foster the development of society by preparing highly skilled professionals. Additionally, universities serve as centers for

guidance, counseling, dialogue, and constructive criticism of societal practices. They are instrumental in generating knowledge and applying it through research, teaching, and training in diverse fields. Traditional learning methods and approaches are no longer sufficient to keep up with the advancements of this era.

Importantly, it is now necessary to follow modern technical methods with the participation of Furthermore, all stakeholders involved in the learning process must engage in targeted programs that prioritize qualitative performance. This entails embracing technology with a spirit of fair competition and utilizing multiple learning sources. It also requires adopting future-oriented educational visions, which necessitate a serious commitment to qualitative teaching that actively engages students and acknowledges their attitudes towards the learning process. In this context, students are not mere recipients of information but active participants and creators of knowledge and experiences through various means (Al-Buhairi, 2008).

The growing interest in communication and information technologies, and their integration into various activities, is a defining characteristic of the modern world. Today, society has developed a deeper understanding of the role of knowledge and individuals in shaping education systems and advancing society. This understanding has propelled contemporary societies into the realm of the emerging electronic revolution. Consequently, the production of computers, software, CDs, multimedia, and satellites has flourished. These advancements have, in turn, led to the development of communication systems and computer networks, facilitating the acquisition, processing, and utilization of information. This has given rise to what is known as e-learning, enabling the possibility of distance education (Clayton, 2010).

The e-learning revolution has brought about a direct and significant impact on the educational process, rendering the traditional model of memorization and direct instruction in university education less relevant. Instead, university education has entered the era of technology, informatics, and the Internet. E-learning serves as a means to enhance the learning process, transforming it from a routine, instruction-based approach into an interactive and creative process that aims to develop skills and capabilities. However, successful implementation of e-learning necessitates the provision of suitable infrastructure, including devices, equipment, educational resources, and software. Additionally, e-learning plays a pivotal role in designing electronic courses that align with educational objectives. In recent years, many universities worldwide have adopted electronic management systems to facilitate the e-learning process, whether through open-source or closed-source systems (Yousef, 2020).

The concept of e-learning revolves around delivering educational content to learners using modern communication technologies, within an interactive environment that can be synchronous or asynchronous, depending on the interaction between the teacher and the learner. E-learning leverages the capabilities of wireless communication devices to transmit information beyond the confines of the traditional classroom. This approach aligns with the evolving nature of education, which is influenced by global phenomena and the demands of globalization (Al-Atrebi, 2019).

One of the advantages of the e-learning system is that it provides different learning resources and offers many varied educational opportunities for the learner that allow positive interaction with other classmates, teachers, and experts in all fields through the available means of communication. E-learning contributes significantly to the development of the student's various cognitive skills, as the e-learning system allows the use of various educational strategies commensurate with its different characteristics, thus achieving the required education effectiveness (Al-Mallah, 2017). With a detailed introduction to the concept of e-learning, the related literature review is provided in the next section.

## 2. LITERATURE REVIEW:

Numerous research studies have highlighted the importance of e-learning in the learning-teaching process. Hawass (2021) examines the concept of e-learning, its advantages, and its drawbacks. The study utilizes a descriptive approach to fulfill its research objectives. A questionnaire is employed as a research instrument to assess the pros and cons of e-learning. The study sample comprises 200 male and female students from an Algerian university. The findings reveal several advantages of e-learning, including the reduction of time and effort, enhanced engagement and enjoyment in education, the ability to reach a large number of students without constraints of time and space, encouragement of self-directed learning, and the provision of diverse methods and approaches that cater to different learning styles. The results also highlight the disadvantages and obstacles associated with e-learning, such as limited human interaction between teachers and students, inadequate availability of e-learning resources, and frequent power outages, which pose significant challenges to the implementation of e-learning.

Overall, the literature review underscores the potential benefits of e-learning, while acknowledging the existing challenges and limitations. It sets the foundation for further exploration of students' attitudes towards e-learning in the context of Jordanian universities.

And he sees Rivera-Mamani et al. (2023) that e-learning is an educational strategy at the university. Alsadi and others (2024) believe that there is a vast increase in the number of university students wishing to take E-learning media as their main source of getting their learning material from professors.

In addition, Al-King (2021) conducted a study to examine the attitudes of students in the Faculty of Education at the University of Hama towards e-learning and its relationship to their academic achievement during the COVID-19 pandemic. The research adopts a descriptive approach to achieve its objectives. The study utilizes an attitude scale towards e-learning and an academic achievement motivation scale as research instruments. The sample consists of 313 male and female students from the second and fourth years of the Faculty of Education at the University of Hama.

The results of the study indicate that the students in the Faculty of Education, as well as the overall study sample, hold positive attitudes towards e-learning. Furthermore, the study finds no statistically significant difference in the mean scores of students' attitudes towards e-learning based on gender. However, there is a statistically significant difference in the mean scores of students' attitudes towards e-learning based on their academic year, with fourth-year students exhibiting higher scores compared to second-year students.

These findings shed light on the positive attitudes of students in the Faculty of Education towards e-learning and highlight the importance of considering the academic year variable in understanding students' perceptions and experiences with e-learning.

Similarly, Yousef (2020) conducted a study to explore the attitudes and opinions of university students towards the e-learning process during the global crisis of the COVID-19 pandemic. The pandemic led to the closure of educational institutions worldwide, prompting the adoption of electronic education systems to ensure continuity amidst social distancing measures. As this experience was new to most students, the study aimed to assess their satisfaction with the e-learning system. The sample consisted of 151 students from the Faculty of Communication and Information at King Abdulaziz University.

The study employed a questionnaire as the data collection instrument. The results indicated a high level of satisfaction among students with the e-learning system. Moreover, the majority of students expressed a preference for e-learning over traditional education.

These findings highlight the positive reception of the e-learning system by university students during the COVID-19 pandemic. It suggests that the e-learning approach was well-received and preferred by students as an alternative to traditional in-person education during the period of social restrictions and closure of educational institutions.

In a similar vein, Badhe, Badhe, and Patil (2020) conducted a study comparing students' perspectives on e-learning and face-to-face learning in the classrooms of three medical faculties in India. The research employed a descriptive approach to achieve its objectives. A questionnaire was utilized to collect data from a study sample of 70 randomly selected students from the University of Medical Sciences.

The findings of the study revealed that 89.6% of the study sample believed that face-to-face teaching was more effective than e-learning, while only 10.4% of the students felt that distance learning was the better option. Based on these results, the study recommended the development of new methods and approaches for e-learning, as well as training teachers to effectively implement them.

Similarly, Asoro and Osunade (2020) investigated the attitudes of higher education students towards e-learning in Nigeria. The study employed a descriptive approach to achieve its research objectives. A questionnaire was used as a research instrument to measure students' attitudes towards e-learning in a sample of 170 students.

The results of the study revealed a positive effect on the attitudes of higher education students towards e-learning. Additionally, the findings indicated no significant differences in students' attitudes towards e-learning based on gender.

These studies contribute to the understanding of students' perspectives on e-learning in different contexts. While one study emphasizes the preference for face-to-face teaching over e-learning among medical students in India, the other highlights the positive attitudes of higher education students in Nigeria towards e-learning.

From a different perspective, Gambari et al. (2017) conducted a study to examine the effectiveness of blended learning and e-learning approaches on the performance of undergraduate students in Kwara State, Nigeria. The study employed an experimental approach with two experimental groups (blended learning and e-learning) and a control group (traditional teaching method). The research utilized pre-and post-tests and a questionnaire as research instruments to collect data from a sample of 30 students.

The findings revealed a significant difference in the performance of the three groups, with the experimental group using blended learning demonstrating better outcomes. Based on these results, the study recommended the encouragement of university lecturers to adopt blended learning as an effective approach in educating their students.

In a similar vein, Mazki and Abdelrahim (2016) investigated the attitudes of students at Al-Madinah International University in Malaysia towards the effectiveness of the e-learning system, both in terms of positive and negative aspects. The research employed a descriptive survey method to achieve its objectives. A questionnaire was used as a research instrument to assess the students'

attitudes towards the effectiveness of the e-learning system in a sample of 200 male and female students.

The results indicated that the students had a positive attitude towards the effectiveness of the e-learning system. Furthermore, there were no statistically significant differences in the degree of students' attitudes towards the effectiveness of the e-learning system based on gender. However, statistically significant differences were found in the degree of students' attitudes towards the effectiveness of the e-learning system based on the faculty variable, with students from the Faculty of Information Technology and the Faculty of Administrative and Financial Sciences exhibiting more positive attitudes.

These studies contribute to the understanding of the effectiveness and attitudes towards e-learning in different educational contexts. The findings support the adoption of blended learning and highlight positive attitudes towards e-learning among university students.

Furthermore, Awad and Helles (2015) conducted a study to examine the attitudes of postgraduate students at Palestinian universities towards technological education and its relationship to certain variables. The research employed a descriptive method to achieve its objectives, and the study sample consisted of 91 male and female students.

The results of the study indicated that postgraduate students at Palestinian universities held a positive attitude towards technological education overall. Furthermore, there were no statistically significant differences in the responses of postgraduate students towards technological education based on gender and academic year. However, statistically significant differences were found in the responses of postgraduate students towards technological education based on the university variable, with the Islamic University showing more positive attitudes.

In another related study, Kandillingec (2015) investigated the attitudes of students in secondary technical and vocational schools for girls towards e-learning and its relationship to various variables. The research adopted a descriptive method, and the study sample consisted of 119 male and female students.

The findings of the study revealed that students in secondary technical and vocational schools for girls held positive attitudes towards e-learning. Additionally, no statistically significant differences were found in the attitudes of students from technical and vocational schools in secondary schools for girls towards e-learning based on gender and experience.

These studies provide insights into the attitudes of postgraduate students at Palestinian universities towards technological education and the attitudes of students in secondary technical and vocational schools for girls towards e-learning. The findings highlight the overall positive attitudes in both contexts and contribute to our understanding of students' perceptions and experiences with technology-enhanced education.

The study by Suleiman and Daradkah (2014) aimed to explore contemporary international experiences in the areas and standards of e-learning quality in universities. Additionally, it aimed to identify the areas and standards that could be applied to enhance e-learning quality at Taif University. The study also sought to identify specific standards for e-learning based on international experiences, with the objectives of improving the educational process, evaluating performance quality at all levels, identifying weaknesses and shortcomings, and proposing methods, recommendations, and procedures to enhance university education.

The researchers employed a descriptive method and utilized the Delphi technique to develop the initial and final drafts of the standards. The study was conducted with faculty members from various colleges at Taif University. The findings indicated a consensus among experts regarding the importance of the listed standards for formulating e-learning quality standards at Taif University, based on contemporary international experiences. These standards encompassed areas such as mission and institutional effectiveness, organization, governance, leadership, academic programs, teaching methods, faculty members, staff, students, library, learning resources, infrastructure, and technical support.

The study concluded with several recommendations, including the gradual integration of e-learning with traditional education, adherence to local and international quality standards and accreditation, and the involvement of external evaluators and experts to utilize the questionnaire in managing and organizing the e-learning evaluation processes at the university.

In analyzing previous studies related to the variables of the current research, several studies (Hawass, 2021; Al-King, 2021; Asoro&Osunade, 2020; Al-Mahamadi, 2018; Awad&Helles, 2015; Kandilingec, 2015; Mazki&Abdelrahim, 2016) were found to align with the objectives of the current study. However, some variations were observed in terms of sample nature, quality, and size. For instance, certain studies focused on samples from the secondary stage (e.g., Kandilingec, 2015), while others targeted teaching staff (e.g., Al-Mahmadi, 2018) or university students (e.g., Awad&Helles, 2015; Mazki&Abdelrahim, 2016). The current research adopts a descriptive approach, which is consistent with most of the previous studies.

The research problem arises from the significant role of university education in human development, serving as the primary means for achieving progress and qualitative advancements across various fields. To keep pace with scientific progress, there is a growing need to integrate technology into the university educational process, enhancing its systems and optimizing its functional role. By incorporating technology, universities can equip future generations with the necessary skills to engage in emerging sciences and adapt to modern technologies. Consequently, governments and states strive to embrace new educational approaches in line with the requirements of the information and digital revolution, recognizing the social, educational, cultural, and civilizational significance of attitudes towards internet usage and social networks (Al-Hayla& Marie, 2014).

Studying attitudes towards e-learning and understanding its importance is crucial, as it surpasses mere awareness of the network's applications in design. Faculty members' reluctance to employ the internet in education can be attributed to a lack of awareness regarding the technology's importance, limited proficiency in its usage, and the absence of computer skills. Addressing these challenges necessitates the development of training programs focused on general computer literacy and the specific utilization of the internet and technology in education (Al-Shannaq&Doumi, 2010).

Positive attitudes towards the utilization of electronic education systems are fundamental to the success and effectiveness of e-learning, carrying equal importance to other components of the e-learning system within any educational institution (Al-Saud, 2010). Consequently, it becomes crucial to identify the nature of students' attitudes towards e-learning, considering its various patterns and strategies, as this holds more significance than merely understanding its internet-based applications. Conversely, negative attitudes towards e-learning represent prominent barriers to its implementation and adoption. Therefore, it is essential to introduce the e-learning system to educational institutions, particularly higher education institutions like universities. This introduction should prioritize providing the necessary infrastructure requirements and addressing important aspects related to the human element and attitudes towards e-learning. In light of these

considerations, the research problem revolves around examining students' attitudes towards e-learning in Jordanian universities.

#### **4. Research Questions**

Given the research problem, the research questions are:

1. What are students' attitudes towards e-learning in Jordanian universities?
2. What is the preferred learning mechanism among Jordanian university students for applied courses?
3. Are there statistically significant differences at the significance level ( $\alpha=0.05$ ) in the attitudes of Jordanian university students towards e-learning according to the variables "gender, academic year, and faculty"?
4. What methods can be adopted for e-learning in applied courses?
5. What are the pros and cons of e-learning for applied courses from the perspective of Jordanian university students?

#### **5. Research Objectives**

The following research objectives are articulated to answer the research questions.

1. Identify students' attitudes towards e-learning in Jordanian universities.
2. Recognize the preferred learning mechanism among Jordanian university students for applied courses.
3. Find out if there are statistically significant differences at the significance level ( $\alpha = 0.05$ ) in the attitudes of Jordanian university students towards e-learning due to the variables "gender, academic year, and faculty".
4. Determine the methods that can be adopted for e-learning in applied courses.
5. Pinpoint the pros and cons of e-learning for applied courses from the perspective of Jordanian university students.

#### **6. Research Significance**

The theoretical significance is reflected in the theoretical frameworks that the research will add to the subject of students' attitudes towards e-learning in Jordanian universities, which researchers and scholars can benefit from in future studies. This research can contribute to employing the theoretical literature and previous studies related to the research instrument whose validity and reliability are checked in the field of curricula and teaching methods. The significance of the applied research rests in the achieved results about the use of e-learning and its benefits in the educational process represented in revealing students' attitudes towards e-learning in Jordanian universities.

The attitudes towards e-learning addressed in this research can benefit those in charge of developing teaching strategies and preparing curricula, which contributes to the development of the educational process in universities. The current research provides a measure related to students' attitudes towards e-learning in Jordanian universities, in which there are psychometric

characteristics of validity and reliability that benefit researchers and scholars working in the educational field.

## **7. Research Limitations**

The findings of this study can be generalized in light of the following limitations:

1. Human Limitations: This study is limited to a sample of Jordanian university students.
2. Spatial Limitations: This study is conducted at Jordanian universities.
3. Temporal Limitations: This study is conducted in the second semester of the academic year 2022/2023.
4. Objective Limitations: This study is limited to identifying the degree of achieving organizational rigidity at Umm Al-Qura and Ajloun National Universities from the viewpoint of faculty members. The generalization of the findings of the current research is determined by the psychometric characteristics of the research instrument in terms of validity and reliability.

## **8. Research Terms and Definitions**

In this study, various terms are mentioned, and their procedural definitions are as follows:

**E-learning:** It is a method of learning that aims to deliver information to the learner, relying on modern technologies such as computers, educational software, and virtual classes (Khamis, 2011). Procedurally, e-learning is defined as one of the types of education based on electronic means.

**Attitude:** It is "an individual's response or willingness towards accepting or rejecting a specific topic, person, idea, or opinion (Amasha, 2014, p. 1). Procedurally, attitude is defined as the degree of students' responses on the scale of attitude towards e-learning prepared for this purpose.

## **9. THEORETICAL FRAMEWORK**

With the nature of the research, the theoretical framework is based on attitudes and e-learning.

### **9.1 Attitudes**

Educational literature abounds with many definitions that reflect the concept of attitude in life. **Attitude:** A relatively stable acquired system of an individual's feelings, information, and willingness to perform certain actions toward any subject. The attitude is represented in acceptance and rejection towards a subject and is expressed verbally or behaviorally or even rejection and acceptance in dreams or through facial and eye gestures and tends to be somewhat stable (Abu Dawabeh, 2012).

On the other hand, attitude is the degree of positive or negative emotionality associated with a particular psychological subject. The psychological theme means any symbol, slogan, person, subject, institution, or idea that people may have different feelings towards, positively or negatively (Mansoor, 2010). Attitude is also known as a state of nervous and psychological readiness and readiness organized through a person's experience and has a directive or dynamic effect on the individual's response to all topics and situations that provoke these attitudes (Sidky, 2010).

#### **9.1.1 Characteristics of Attitudes**



One of the characteristics of attitudes is that attitudes consist of cognitive, emotional, and performance implications. The components of attitudes are also affected by several factors, including the environment in its broadest sense. Besides, attitudes are relatively stable, acquired, and learned, and are not randomly formed. Attitudes are also related to social stimuli and situations and within the surrounding environmental conditions. Some of them are vague and clear, some resist modification, and some are easy to modify and change. The attitude is influenced by the individual's experience and is more subjective than objective. The attitude can be measured and evaluated with different tools and methods. The attitude is always between two opposing sides, one supportive and the other opposed (Al-Rashidi, 2013).

### **9.1.2 The Beginning of Attitudes**

Attitudes arise in many methods such as experience and direct contact with the subject of attitudes, exposure to social organizations that include all aspects of life, the role of the environment in its broad sense, and acquaintance with the media of its various types.

### **9.1.3 The Functions of Attitudes**

Attitudes are responsible for a set of functions, together with performing a utilitarian function that serves as a means for individuals to reach their desired goals to satisfy their needs to defend themselves and their freedom to preserve their permanence. It is also one of the values, ideas, and beliefs that individuals adhere to reflect their personality, and push them towards identifying the secrets of the universe and discovering the surrounding environmental conditions (Sidqi, 2010).

### **9.1.4 The Significance of Attitudes**

Attitudes play a significant and crucial role in the educational-learning process in all its cognitive, skillful, and emotional aspects because students' feelings and attitudes towards school subjects, curricular and extracurricular activities, themselves, colleagues, and teachers affect their ability to achieve educational and learning goals. As education based on real motivation among students will inevitably lead to the formation of appropriate psychological attitudes, it will be more beneficial than education that leads to acquiring knowledge only. The reason for this is that psychological tendencies remain and retain their effect for a long time, while cognitive experiences are generally subject to factors of forgetfulness. Moreover, attitudes affect students' abilities to socially interact, work together, and be present with others, and thus impact their ability to adapt and respond to the constant changes faced in school, university, society, and the environment around them (Qutami & Adass, 2002).

## **9.2 E-Learning**

### **9.2.1 The Concept of E-learning**

It is a teaching method using modern communication mechanisms and means of computers, networks, and multimedia, along with research mechanisms, electronic libraries, websites, and Internet portals, whether remotely or in the classroom. It is also a method of education using modern technologies of all kinds to deliver information to the learner in the shortest time and least effort while maximizing the benefit (Khalifa, 2020). E-learning is a kind of technology-based education that uses different technology tools, and there are several definitions dealing with the concept of e-learning. As defined by Karrer (2007), it is a contemporary style of learning and teaching methods based on the use of technology tools such as computers, smartphones, and video in the educational process, whether remotely or in the classroom.

Moreover, Fayyad and Hassoun (2009) define it as providing training and educational programs through a variety of electronic media, including disks and the Internet synchronously or asynchronously. Also, Bennet et al. (2015) define e-learning as a wide range of applications and processes that use electronic media and available tools to deliver vocational education and training. E-learning is flexible because it reduces time, effort, and cost for students and helps them access recorded educational materials and videos via the Internet at any time as necessary, allowing them to remember the required information better than traditional education. In addition, educational institutions apply e-learning technologies to improve communication between students and teachers for better knowledge exchange and to strengthen the learning community to achieve educational goals (Roth, Pierce & Brewer, 2020).

### **9.2.2 The Objectives of E-learning**

The objectives of e-learning are plenty and various such as raising the quality of courses, resources, and educational programs and improving the quality of learning and its outcomes through the application of the principles of active and effective learning and the use of constructivist and social cognitive theories that focus on building learning and not just memorizing. Other objectives include achieving equality and equal educational opportunities for all because anyone can access e-learning without conditions of gender, age, marital status, and health, freeing learners from the restrictions of the traditional education system such as attendance and adherence to a specific schedule and appointments, and achieving fun and activity for the learner through exciting presentations that include audio, images, videos, and games, as well as active learner participation through discussions and projects.

The objectives are also reflected in developing the academic and professional performance of professors and teachers through rich information and resources, saving time and increasing the speed of learning through the permanent availability of scientific material, communicating with teachers and colleagues at any time, and not being tied to the speed and capabilities of others. Another related objective is reducing costs and minimizing expenditures in the long term by eliminating some of the necessary work in traditional education such as travel and transportation, administrative costs, educational materials, and publications, which helps in the universality of learning and the dissemination of quality education, as increasing numbers do not hinder the quality of education (Khamis, 2011).

### **9.2.3 The Characteristics of E-learning**

E-learning is characterized by several characteristics such as creating an interactive environment during the education process through the multiplicity of technologies used such as printed texts, pictures, and videos, being unrestrictive with time or place, as it can be used anywhere in the world, seven days a week, 24 hours a day, teaching large numbers in a short time and making up for the shortage of academic cadres, expanding the scope of education for different groups of society, regardless of age, social and economic level, or health status, so that everyone can continue their education, and being full with multiple sources of knowledge as a result of contacting various Internet websites and dealing with thousands of websites, databases, and scientific sources.

Other characteristics are reflected in encouraging self-learning and group participation among colleagues, taking into account the individual differences and personal abilities of the learner, helping in communication, dialogue, and exchange of information between students and each other and between students and teachers, being diverse in evaluation methods "pre and post", in addition to accurate, immediate, rapid evaluation with error correction, and easy to update the scientific content, so the learner gets continuous feedback, which enhances the learning process, and

improving the use of technological skills and developing knowledge and research skills (Al-Khazaleh, 2014).

### 9.2.4 The Significance of E-learning in Universities

University education does not focus on the skillful and practical aspects of education at the level of its focus on the cognitive aspects. University education mainly concentrates on memorizing information without paying attention to the learners' emotions and feelings and developing their values and attitudes, in addition to deficiencies in some aspects of the cognitive aspect such as developing problem-solving skills, critical and creative thinking, and the method of knowledge formation. For example, if anyone learns the method of obtaining knowledge, he can access it whenever they want, and if university education brings their students to this goal, it will help them to pursue learning in the future.

E-learning is also based on the individual's participation in learning activities, which increases the demand for it and the desire to follow it, unlike other methods that create an atmosphere of aversion. Through e-learning, the learner acquires the skills of how to learn, which means lifelong learning and self-development, as well as motivation and positive attitudes to the learning process. The characteristics of e-learning represented in flexibility and ease of use are commensurate with the psychological characteristics of adult learners (Lal& Al-Jundi, 2010).

## 10. METHODS

### Research Approach

The descriptive analytical approach is adopted due to its suitability for the current research.

### Research Population

The research population consists of all Jordanian university students for the academic year (2022-2023).

### Research Sample

A random sample of (480) male and female students is selected from the research population representing Yarmouk University, the University of Jordan, Ajloun National University, and the Jordan University for Science and Technology. Table (1) illustrates the distribution of the research sample according to its variables.

**Table 1: Distribution of the Research Sample of Jordanian University Students According to the Variables of Gender, Academic Year, & Faculty**

Variable	Categories	Number
Gender	Female	164
	Male	320
	Total	484
Academic Year	First Year	60
	Second Year	156
	Third Year	140
	Fourth Year	52
	Fifth Year	52
	Sixth Year	28

	Total	484
<b>Faculty</b>	Educational Sciences	208
	Science & Information Technology	32
	Engineering	100
	Business Management	68
	Medicine & Medical Sciences	80
	Total	484

### Research Instruments

To achieve the research objectives, the theoretical literature and previous studies related to the subject of the current study are reviewed to construct a research instrument related to the attitudes of Jordanian university students toward e-learning. A questionnaire consisting of (17) items is developed as a research instrument related to the attitudes of Jordanian university students towards e-learning. The response is done on a five-point Likert scale (strongly agree, agree, neutral, disagree, strongly disagree) and corresponds to the following weights in order (1, 2, 3, 4, & 5). The student responds to the questionnaire items by selecting the degree of his or her approval of them, in addition to three open-ended questions related to the attitudes of Jordanian university students towards e-learning.

### Research Instrument Validity

The content validity of the research instrument of the questionnaire on the attitudes of Jordanian university students towards e-learning is checked by reviewing the questionnaire in its initial forms from (10) experienced and specialized faculty members in curricula, teaching, measurement, and evaluation in Jordanian universities. The comments, modifications, and recommendations proposed by the validators are taken into account, as the items have obtained an approval rating of (80%) or more. Based on the consensus of more than (80%) of the validators, the questionnaire items are kept as they are due to their suitability for the current study.

### Research Instrument Reliability

The reliability of the questionnaire on the Jordanian university students' attitudes toward e-learning is checked by calculating the reliability coefficient by applying Cronbach's Alpha formula on all items, where its value is (0.89). This value is considered high and appropriate for the current research (Odeh, 2014).

### Research Variables

#### 1. Independent Variables

**Gender:** Female and Male

**Academic Rank:** First Year, Second Year, Third Year, Fourth Year, Fifth Year, & Sixth Year

**Faculty:** Educational Sciences, Science & Information Technology, Engineering, Business Management, & Medicine & Medical Sciences

#### 2. Dependent Variables

It is the Jordanian university students' attitudes toward e-learning.

### Statistical Processing

The Statistical Package for Social Sciences (SPSS) program is used to calculate the means and standard deviations to answer the study questions. Besides, the three-way analysis of variance test "Three-Way ANOVA" is used to answer the second question to find out the significance of the differences among the means. Qualitative analysis is also used to answer the rest of the questions.

### Statistical Criterion for the Research Instrument

The statistical criterion is adopted using the means to determine the Jordanian university students' attitudes towards e-learning as shown in Table (2).

**Table 2: Statistical Criterion of the Jordanian University Students' Attitudes towards E-learning based on Means**

Means	Level
1.00-1.80	Very Low
1.81-2.61	Low
2.61-3.41	Medium
3.42-4.22	High
4.23—5.00	Very High

## 10. RESULTS & DISCUSSION

### Results Related to the First Research Question

#### What are students' attitudes toward e-learning in Jordanian universities?

To answer this question, the means, standard deviations, ranks, and degrees of individual responses to the items related to the students' attitudes toward e-learning in Jordanian universities are calculated. Table (3) illustrates those results.

**Table 3: Means, Standard Deviations, Ranks, and Degrees of Individual Responses to the Questionnaire Items Related to Students' Attitudes toward E-learning in Jordanian Universities Arranged in Descending Order According to the Means**

No.	Text of Item	Means	Standard Deviation	Rank	Degree
15	E-learning is generally unsuitable for practical courses requiring laboratories and field training.	4.25	.966	1	Very High
4	The activities used in e-learning are less than in face-to-face education.	3.70	1.265	2	High
8	The lack of time in the classroom does not allow us to make up for what we have lost on the practical side.	3.69	1.069	3	High
1	I feel bored during the remote teaching process due to the lack of interaction among students.	3.64	1.228	4	High
9	Teachers' time does not allow us to make up for what we have missed.	3.64	1.165	5	High
16	E-learning enhances the skill of self-learning and searching for information.	3.59	1.636	6	High
3	E-learning has a poor quality compared to	3.56	1.361	7	High

	traditional education.				
2	The time allotted for explaining the required subject is aligned with the amount of the subject matter.	3.40	1.245	8	Medium
10	There are methods to measure the level of attention of students during e-learning.	3.31	1.201	9	Medium
12	I do not feel any difficulties related to the normal exam environment such as fear or confusion.	3.15	1.360	10	Medium
5	The use of explanatory films makes it easier for us and compensates us for the practical application in laboratories.	3.13	1.318	11	Medium
17	Technology in education is expected to replace the teacher in the future.	3.08	1.616	12	Medium
13	I am being continuously evaluated during the distance learning process.	3.04	1.203	13	Medium
14	The evaluation methods used are appropriate and are carried out in a variety of ways.	3.00	1.205	14	Medium
7	The teachers try to compensate us for the lack of training by intensifying the hours of practical training.	2.81	1.209	15	Medium
6	E-learning is equivalent to face-to-face education in technical courses.	4.25	1.290	16	Low
11	The electronic assessment is accurate and measures the level of practical skills of the students.	2.42	1.298	17	Low
<b>All Instrument Items</b>		3.30	.423		Medium

As shown in Table (3), students' attitudes towards e-learning in Jordanian universities are in a medium degree, with a mean of (3.30). Item (15) stipulating "E-learning is generally unsuitable for practical courses requiring laboratories and field training" is ranked first with a mean of (4.25) and a very high degree. However, item (11) stipulating "The electronic assessment is accurate and measures the level of practical skills of the students" is ranked last with a mean (2.42) and a low level. This result is due to the lack of knowledge about the uses of e-learning in university education in Jordanian universities, as students do not expect technology to replace the teacher in education in the future. Also, this result is because there is a weakness in matching the time allotted to explain the required material with the size of the study material, and the use of explanatory films did not compensate them for the practical application in the laboratories.

Other reasons are the weakness of the teachers' attempt to compensate students for the training losses by intensifying the hours of practical training and a deficiency in the use of methods that measure the level of attention and awareness among students during e-learning and methods of continuous evaluation during the distance education process. This result is consistent with the results of (Al-Mahmadi, 2018), which confirms that students' attitudes towards e-learning are of a medium degree. However, this result differs from the results of (Kandilingec, 2015; 2020 & Asoro & Osunade; Yousef, 2020; Al-King, 2021), which show that students' attitudes towards e-learning are high.

As Item (15) stipulating "E-learning is generally unsuitable for practical courses requiring laboratories and field training" is ranked first with a mean of (4.25) and a very high degree, this indicates the lack of an interactive teaching environment full of educational technology resources suitable for practical courses that need laboratories and field training. This also shows that the educational content still does not help in the use of technology in teaching due to the lack of

materials and devices required for training in the field of e-learning. Likewise, as item (11) stipulating "The electronic assessment is accurate and measures the level of practical skills of the students is ranked last with a mean (2.42) and a low level, this indicates the shortcomings in the methods of electronic assessment, especially those that measure the level of practical skills of students due to the lack of academic cadres specialized in e-learning. This result is consistent with the result (Hawass, 2021) that one of the disadvantages of e-learning is the lack of sufficient e-learning requirements.

### Results Related to the Second Research Question

#### What is the preferred learning mechanism among Jordanian university students for applied courses?

Frequencies and the percentages of the research sample "Jordanian university students" for their preference for the learning mechanism for applied courses are calculated and arranged in descending order. Table (4) illustrates those results.

**Table 4: Frequencies and Percentages of the Research Sample "Jordanian University Students" for their Preference for the Learning Mechanism for Applied Courses Arranged in Descending Order**

Rank	Learning Mechanism	Frequency	Percentage
1	Face-to-face Learning	292	60.3%
2	Blended Learning	136	28.1%
3	Electronic Learning	56	11.6%
Total		<b>484</b>	<b>100%</b>

As shown in Table (4), the majority of (292) male and female students of the research sample prefer the face-to-face learning style for applied courses, with a rate of (60.3%) of the total sample. The blended learning style for applied courses is ranked second, as the number of students preferring it is (136) male and female students at a rate of (28.1%) of the total sample. The e-learning style is ranked third and last, as the number of students preferring it is (56) male and female students at a rate of (11.6%) of the total sample population.

The university students' preference for the face-to-face learning mechanism for applied courses, with a rate of (60.3%) in the first place indicates that they are not yet accustomed to e-learning, and are still affected by the traditional learning pattern (face-to-face education). To elucidate, university students are not familiar with practicing applied courses directly on the Internet, in addition to the unavailability of a computer connected to the Internet for all university students. This result agrees with the result of (Badhe, Badhe&Patil, 2020) that face-to-face learning is more effective than e-learning.

Moreover, the university students' choice for the blended learning style for applied courses with a rate of (28.1%) in the second place demonstrates that blended education is an educational style based on the process of merging traditional education "face-to-face" in the classroom with the teacher and learning via the Internet regularly. This result agrees with the result of (Gambari et al., 2017), asserting a significant difference in the effectiveness of blended learning styles and e-learning styles and traditional education between university students' performance in favor of "blended learning style."

Likewise, university students' selection of the e-learning style for applied courses (11.6%) in the third place shows that e-learning is an educational style that relies on providing educational opportunities to the learner without direct supervision from the teacher and without commitment to a specific time and place. As a result, university students fear the e-learning style because of its many disadvantages, including the student's failure to receive the information correctly, the

student's lack of mastery and acquisition of practical skills, the inability to carry out practical activities and practical exercises, and poor participation and communication. This is confirmed by the result (Hawass, 2021) that the obstacles to e-learning are represented in the weakness of human interaction between the teacher and the student, and the lack of a large proportion of students in the experience of dealing with the means of information and communication technology.

### Results Related to the Third Research Question

**Are there statistically significant differences at the significance level ( $\alpha=0.05$ ) in the attitudes of Jordanian university students towards e-learning according to the variables “gender, academic year, and faculty”?**

To answer this question, the means and standard deviations of individual responses to the entire items related to the students' attitudes towards e-learning in Jordanian universities are calculated according to the variables “gender, academic year, and faculty”? Table (5) illustrates those results.

**Table 5: Means and Standard Deviations of Individual Responses to the Entire Items Related to the Students' Attitudes towards E-learning in Jordanian Universities According to the Variables “Gender, Academic Year, and Faculty”**

Variable	Categories	Mean	Standard Deviation
Gender	Female	3.40	.434
	Male	3.24	.408
	Total	3.30	.423
Academic Year	First Year	3.33	.457
	Second Year	3.24	.359
	Third Year	3.40	.521
	Fourth Year	3.30	.240
	Fifth Year	3.30	.407
	Sixth Year	2.98	.216
	Total	3.30	.423
Faculty	Educational Sciences	3.21	.347
	Science & Information Technology	3.53	.330
	Engineering	3.38	.486
	Business Management	3.26	.552
	Medicine & Medical Sciences	3.39	.314
	Total	3.30	.423

Table (5) shows apparent differences among the means of the responses of the research sample to the entire items of the research instrument related to the attitudes of Jordanian university students towards e-learning according to the variables “gender, academic year, and faculty” together. To



determine the statistical significance of these apparent differences, a three-way analysis of variance test "Three-Way ANOVA" is applied. Table (6) illustrates those results.

**Table 6: Three-way Analysis of Variance of the Means of the Research Sample's Responses to the Entire Items of the Research Instrument Related to the Attitudes of Jordanian University Students towards E-learning According to the Variables "Gender, Academic Year, and Faculty" Together**

Variable	Sums of Squares	Degrees of Freedom	Mean Square	F	Statistical Significance
Gender	1.152	1	1.152	9.621	.002
Academic Year	4.870	5	.974	8.136	.000
Faculty	2.123	4	.531	4.433	.002
Error	53.514	447	.120		
Modified Sum	86.391	483			

Table (6) illustrates that the value of the statistical significance for the gender variable is (0.002), which is less than the level of statistical significance ( $\alpha = 0.05$ ). This indicates a statistically significant difference at the statistical significance level ( $\alpha = 0.05$ ) between the two means of the responses of the research sample on the entire items of the research instrument related to the attitudes of Jordanian university students towards e-learning due to the gender variable in favor of the male category with a mean value of (3.95). This result is due to the presence of statistically significant differences in students' attitudes towards e-learning in favor of males due to the nature of males, given that they are very proficient in using electronic technologies in various fields of life.

What is more, this result is because e-learning allows them to practice their studies and do their work at the same time because they are not forced by a specific and restricted timetable, as they can practice their studies from anywhere, whether from home or the workplace through the use of the Internet. Also, the nature of males differs from that of females, if the Internet is not available at home, they can go to Internet cafes and browse various websites and educational platforms, unlike females. This result differs from the results of (Al-King, 2021; Asoro&Osunade, 2020; Mazki&Abdelrahim, 2016; Kandilingec, 2015; Awad&Helles, 2015).

Additionally, the value of the statistical significance of the academic year variable is (0.000), which is less than the statistical significance level ( $\alpha = 0.05$ ). This indicates a statistically significant difference at the level of statistical significance ( $\alpha = 0.05$ ) between the means of the responses of the research sample to the items of the research instrument related to the attitudes of Jordanian university students towards integrated e-learning due to the variable of the academic year. Scheffé's test is used to find out the significance of the differences, as shown in Table (7).

**Table 7: Results of the Scheffé's Test**

Academic Year Level	Third	First	Fourth	Fifth	Second	Sixth
Mean	3.40	3.33	3.30	3.24	3.30	
Third	3.40	-.06	.10	.10	-.15*	2.98
First	3.33		-.03	.03	.09	.41*
Fourth	3.30			-.05	.00	.35*
Fifth	3.30				-.05	.32*
Second	3.24					.32*
Sixth	2.98					.26*

As shown in Table (7), the differences are between each of the third categories on the one hand, and between the second and sixth categories on the other hand, where the differences are in favor of the third category. The differences also are between the first and sixth categories, where the differences are in favor of the first category, while the differences are between the fourth and sixth categories, and the differences are in favor of the fourth category. Also, the differences are between the fifth and sixth categories, and the differences are in favor of the fifth category, while the differences are between the second and sixth categories, and differences are in favor of the second category.

This result is due to the fact that when comparing the mean of university students in the first academic stages at the university, who have the category "first, second, and third" with the mean of the university students of the category "fourth, fifth, and sixth", it is found that university students in the first academic stages at the university can pay attention and follow-up more than any academic level and find in e-learning what provides them with clarifications and explanations that make them move positively towards it. This result is consistent with the results of (Al-King, 2021). However, this result differs from the results of (Awad&Helles, 2015). The value of the statistical significance of the faculty variable is (0.002), which is less than the level of statistical significance ( $\alpha = 0.05$ ). This indicates a statistically significant difference at the level of statistical significance ( $\alpha = 0.05$ ) between the means of the responses of the research sample to the entire items of the research instrument related to the attitudes of Jordanian university students towards integrated e-learning due to the faculty variable. Scheffé's test is used to find out the significance of the differences, as shown in Table (8).

**Table 8: Results of the Scheffé's Test**

Faculty Type		Science & Information Technology	Business Management	Engineering	Medicine & Medical Sciences	Educational Sciences
	Mean	3.53	3.39	3.38	3.26	3.21
Science & Information Technology	3.53	-	.14	.15	.27*	-.32*
Business Management	3.39		-	.01	.13	.18*
Engineering	3.38			-	.12	.17*
Medicine & Medical Sciences	3.26				-	.05
Educational Sciences	3.21					-

As shown in Table (8), the differences are between the Faculty of Science and Information Technology on the one hand, and between the Faculty of Medicine & Medical Sciences and Educational Sciences on the other hand, where the differences are in favor of Science and Information Technology. The differences between the Faculty of Business Administration and the Faculty of Educational Sciences are also in favor of the Faculty of Business Administration. However, the differences between the Faculty of Engineering and the Faculty of Educational Sciences are in favor of the Faculty of Educational Sciences. This result is attributed to the fact that the infrastructure and scientific expertise of the teaching staff within each of the Faculty of Science and Information Technology, the Faculty of Business Administration, and the Faculty of Educational

Sciences in terms of available software, the Internet, and the faculty cadres trained in the optimal use of e-learning has a positive impact on the attitudes of the students of those universities towards e-learning. This result is consistent with (Mazki&Abdelrahim, 2016).

### Results Related to the Fourth Research Question

#### What methods can be adopted for e-learning in applied courses?

The qualitative analysis of the respondents' responses to the open-ended question using the fixed comparison method reveals a wide range of methods that could be adopted for e-learning in applied courses. Due to the difficulty of dealing with the entire methods and the fact that the frequency rate is low for many of them, attention has been paid to factors that have a frequency rate of (70%) or more. These methods are also the most frequent in the respondents' responses. Table (9) shows the methods that can be adopted for e-learning in applied courses in descending order.

**Table 9: Methods that Can Be Adopted for E-learning in Applied Courses**

No.	Method	Frequency
1	Communicating with the student through the camera and live video broadcast.	%97
2	Making projects for the subject by the students.	% 96
3	Using virtual simulation applications and websites and educational videos.	93%
4	Using the method of asking questions.	89%
5	Finding good opportunities for interaction and discussion.	83%
6	Downloading practical applications working for a rough understanding of the practical scene.	79%
7	Conducting short weekly exams and continuous evaluations.	75%
8	Making videos from reality.	%73
9	Allocating office hours for students.	%70

As shown in Table (9), the method of "Communicating with the student through the camera and live videobroadcast" is ranked first with a percentage of (97%) of the total. The method of "making projects for the subject by the students", however, is ranked second at a rate of (96%). The method of "Using virtual simulation applications and websites and educational videos" is ranked third with a percentage of (93%). The method of "using the method of asking questions" is ranked fourth with a rate of (89%). The method of "Finding good opportunities for interaction and discussion" is ranked fifth with a rate of (83%), while the method with the sixth rank is "Downloading practical applications working for a rough understanding of the practical scene" with a rate of (79%). Then, the method of "Conducting short weekly exams and continuous evaluation exams" is ranked seventh with a rate of (75%). Moreover, the method of "Making videos from reality" is ranked eighth with a rate of (73%), while the method of "allocating office hours for students" is ranked ninth and last with a rate of (70%).

This result is due to the fact that e-learning provides the possibility of presenting scientific material in different ways and methods. This diversity in the methods on which e-learning relies allows the provision of receiving the scientific material in a manner that suits the student. Some lecturers, for example, are suitable for the visual method, such as communicating with the student through the camera, broadcasting live video, and videos filmed from reality. Some tutors are suitable for the audio method, such as using the method of asking questions, while some of them are suitable for the practical method, such as downloading practical applications that work on an approximate understanding of the practical scene, and making projects for the subject by students. This result is consistent with the results of (Hawass, 2021), asserting that the advantage of e-learning is the

possibility of reviewing a large number of information in various and different ways and methods that suit learning styles.

### Results related to the Fifth Research Question

What are the pros and cons of e-learning for applied courses from the perspective of Jordanian university students?

The qualitative analysis of the respondent's responses to the open-ended question using the fixed comparison method shows a wide range of pros and cons of e-learning for applied courses from the perspective of Jordanian university students. Due to the difficulty of dealing with the entire methods and the fact that the frequency rate is low for most of them, attention has been paid to factors that have a frequency rate of (70%) or more. Table (10) illustrates the pros and cons of e-learning for applied courses from the perspective of Jordanian university students arranged in descending order.

**Table 10: The Pros and Cons of E-learning for Applied Courses from the Perspective of Jordanian University Students Arranged in Descending Order**

Pros	Cons
Easy to return the lecture at any time. Save effort on the student. Ease of communication and expression. Low cost and money saving. Ease of learning without having to leave the house. Reducing transportation costs for students and parents. Dealing with websites and programs is easier thanks to the continuity of the application. Easy to re-watch the lecture several times	Difficulty transferring the effect of education to reality. Absenteeism of the student during the explanation. If the information is not received, it cannot be returned or asked about and interpreted due to time constraints. The student's reliance on cheating methods while submitting exams reduces the student's understanding of his subjects. The student does not receive the information correctly. Reliance on permanent home internet. Difficulty and injustice in recording attendance and absence if the internet is cut off for minutes and when attendance is monitored, it is considered absent. The student's lack of mastery of the practical skill and its acquisition. It does not provide the opportunity to participate and the absence of interaction, as some students are given no devices or internet . Occasional power outages make it hard to do practical activities and exercises. Alienation from colleagues and teachers and lack of seriousness. Inability to self-experiment, meet the results, and visualize the application well.

As shown in Table (10), this result is due to the awareness of university students of the advantages of e-learning, as it helps students to return to the lecture at any time and watch the lecture several times. Also, students at the undergraduate level may need, during their studies, to return or review some lessons or educational content that is permanently available without restrictions, alongside ease of communication and expression through instant forums such as dialogue rooms that provide opportunities to benefit from opinions and suggestions, ease of learning without the need to leave

the house, reduce the cost of transportation for students and parents, saving effort by dealing with websites and programs more easily, such as educational platforms.

Importantly, e-learning also allows students to resort to more than one source, select what suits them in an attempt to obtain or verify their information and knowledge, and transfer them from a regular educational environment to a more positive and interactive learning environment in various aspects. University students' fear of the negative aspects of e-learning and the multiplicity of challenges and difficulties they face are reflected in the problems of power outages at times, separation from colleagues and teachers and lack of seriousness, the student's dependence on cheating methods while presenting exams, which reduces the student's understanding of his subjects, and the student's lack of mastery of practical skill and its acquisition leads to the fact that university students' attitudes in Jordanian universities have become worse and negative.

This result is in line with (Hawass, 2021), which asserts that the advantages of e-learning are many, including shortening time and reducing effort, making education more interesting and enjoyable, teaching a large number of students without time and space restrictions, stimulating self-education, and reviewing a large number of information in various and different ways and methods that suit learning styles. Hawass (2021), once again, demonstrates the disadvantages and obstacles of e-learning represented by the weakness of human interaction between the teacher and the student, the insufficient availability of e-learning requirements, and the problem of frequent power outages, which is a major obstacle to the application of e-learning.

## 11. Recommendations

Given the said results, this research recommends activating e-learning techniques in the field of teaching university courses, urging to change the academic environment into an electronic environment through its material and moral components, encouraging faculty members to use e-learning in teaching, developing students' awareness about the use of e-learning in university teaching and its impact on knowledge achievement and skills development, and Holding training courses in e-learning for faculty members in the field of designing e-courses.

## 12. CONCLUSION

This research identifies students' attitudes toward e-learning in Jordanian universities. The descriptive-analytical approach is used to achieve the research objectives. The findings indicate that the students' attitudes towards e-learning are of a medium level, while there were statistically significant differences at the significance level ( $\alpha \leq 0.05$ ) in students' attitudes towards e-learning due to gender, academic year, and faculty. Also, the results show that Jordanian university students prefer face-to-face learning in the first degree, then blended learning in the second degree, and then electronic learning in the third degree.

## REFERENCES

- Abu Dawabeh, H. (2012). *The attitude towards extremism and its relationship to the psychological needs of Al-Azhar University students*. Unpublished Master's thesis. Gaza, Palestine.
- Al-Atrebi, S. (2019). *E-learning strategy and education tools*, Cairo, Al-Araby for publishing and distribution.
- Al-Buhairi, M. (2008). *Educational controls for the application of e-learning in Egyptian universities. The Third Arab Scientific Conference* (Education and Contemporary Society Issues), Faculty of Education, Sohag University
- Al-Hayla, M & Marie, T. (2014). *Education technology between theory and practice*. Amman: Dar Al Masirah

- Al-Khazaleh, F. (2014). *Communication and education technology*. Amman: Dar Amjad for publication and distribution
- Al-King, A. (2021). The attitudes of students of the Faculty of Education at the University of Hama towards e-learning and its relationship to the motivation of academic achievement in light of the Corona pandemic. *Hama University Journal*, 13(4), 27-51
- Al-Mahamadi, G. (2018). Evaluating the reality of using the e-learning system in the distance education program at King Abdulaziz University from the student's point of view. *Journal of the College of Basic Education for Educational and Human Sciences*, 39(6), 196-177.
- Al-Mallah, T. (2017). *The Internet between communication technology and rapid learning*, Alexandria: University Book House
- Al-Rashidi, M. (2013). *Attitudes of students of the Faculty of Basic Education in Kuwait towards the use of electronic presentation technology by faculty members in the light of some variables*. Unpublished Master's Thesis. Middle East University
- Alsadi, M, Momani, k, Daradkah,A, Alomari, M, & Awais, B(2024). The impact Of E-Learning On Learning Out Comes At The Jordanian Universities. *A Systematic Review. Revista De Gestão Social E Ambiental*, 18(10), 1-17
- Al-Saud, K. (2010). *Education technology and its effectiveness*, Amman: Publishing house Amjad
- Al-Shannaq, Q & Doumi, A. (2010) Teachers and students' attitudes towards the use of e-learning in secondary schools. *Damascus University Journal*, 26(2), 33-54.
- Amasha, A. (2014). Designing a training program based on the integration between media broadcast technologies (broadcasting) and social services networks and its effectiveness in developing some skills of using educational applications for the web among general education teachers and their attitudes towards it. *The Arab Society for Educational Technology, Journal of Studies and Research*, 1(1), 493-554
- Asoro, O. & Osunade, O. (2020). Attitude of Nigerian Students to Online Learning during the COVID-19 Pandemic. *eLearn*1(12),1-9.
- Awad, M & Helles, M. (2015). Attitudes towards distance learning technology and its relationship to some variables among graduate students in Palestinian universities. *Al-Aqsa University Journal*, 19(1), 219-256
- Badhe, P., Badhe, Y., & Patil, K. (2020). Comparison of Distance learning with traditional Classroom in Medical College Students in COVID-19 lockdown period in India. *Future of Medical Education Journal*, 10(4), 42-45.
- Bennet, D., Chiang, C., & Malani, A. (2015). Learning during a crisis: The SARS epidemic in Taiwan. *Journal of Developmental Economics*, 1(12), 1-18.
- Clayton, I. (2010). *The relationship between Computer-assisted instruction in reading and mathematics achievement and selected student variables*. Published Ph.D. Thesis. The University of Southern Mississippi.
- Daradkah, A., Alotaibi, T., Badarneh, H., Momani, K., Hamadin, K., Alqudah, R., AL-Momani, M., Al-Ibrahim, A., Ashour, M., Almadwadeh, N. & Mahmoud, A. (2023a). Proposed vision of the transformation of the Arab Universities into smart digital universities. *Information Sciences Letters*, 12(9), 2355- 2374.
- Daradkah, A., Alotaibi, T., Mahmoud, A., Awais, B., Al-Qudah, M., AL Shannaq, R., AL-Momani, M., AL\_Ruheel, A., Albadarneh, A., Alqsaireen, E., Alkenani, R., Badarneh, H. & Mahmoud, S. (2023b). Proposed model for integration and cooperation between university, industry, and government in Arab countries: Innovation Triple Helix Model. *Applied Mathematics & Information Sciences*, 17(6), 1109- 1144.
- Daradkah, A., Mahmoud, A., AL-Momani, M., Al-nemrat, A., Badarneh, H., Hamadin, K., Almadwadeh, N., Alqudah, R., Ashour, M., AlKhatib, F., Mahmoud, S. (2023c). Degree of the requirements for

- improving human capital management in Arab universities as a gateway to achieving sustainable development. *Information Sciences Letters*, 12(10), 2617- 2640.
- Fayyad, A & Hassoun, R. (2009). E-learning and traditional education. *Baghdad College Journal of Economic Sciences*, 1(19) 2, 1-26.
- Gambari, A., Shittu, A. Ogunlade, O. & Osunlade, O. (2017). Effectiveness of blended learning and e-learning modes of instruction on the performance of undergraduates in Kwara State, Nigeria. *Malaysian Online Journal of Educational Sciences*, 5(1), 25-37.
- Hawass, F. (2021). E-learning: the pros and cons. *The Arab Journal of Humanities and Arabic Sciences*, 13(1), 889-900.
- Kandil Ingeç, Sebnem (2015) Investigation of Students Attitudes Towards E-Learning in Terms of Different Variables-A Case Study in a Technical and Vocational High School for Girls. *Educational Research and Reviews*, 1(10).81-91.
- Karrer, T. (2007). Understanding E-learning. *Journal of electronic teaching and Learning*, 4 (3), 70-123
- Khalifa, M. (2020). *E-learning within the framework of the information and knowledge society, Alexandria: Dar Al-Fikr Al-Jami`*
- Khamis, A. (2011). *Teaching and learning technology. Dar Al-Sahab for Publishing and Distribution, Cairo, Egypt.*
- Lal, Z & Al Jundi, A. (2010). The attitude towards e-learning among secondary school teachers in Jeddah, Saudi Arabia. *Umm Al-Qura University Journal of Educational and Psychological Sciences*, 2(2), 23-55
- Mansoor, A. (2003). *Learning and its theories. Iraq: Directorate of University Books and Publications, Tishreen University Publications, Latakia*
- Mazki, J & Abdelrahim, N. (2016). Attitudes of students of Al-Madinah International University in Malaysia towards the effectiveness of the e-learning system. *Journal of the Generation of Humanities and Social Sciences*, 3(15), 11-24.
- Qutami, Y & Adass, A. (2002). *General Psychology*, Amman: Dar Al-Fikr for printing and publishing
- Rivera-Mamani, G. F., Roque-Guizada, C. E., Estrada-Araoz, E. G., Roman-Paredes, N. O., Palma-Chambilla, J. R., Flores-Flores, F. R., ... Zavalaga-Paredes, C. J. (2023). *E-Learning as an Educational Strategy in University: A Systematic Review. Revista De Gestão Social E Ambiental*, 18(3), e04549. <https://doi.org/10.24857/rgsa.v18n3-03>.
- Roth, J., Pierce, M., & Brewer, S. (2020). Performance and Satisfaction of Resident and Distance Students in Videoconference Courses. *Journal of Criminal Justice Education*, 12(1), 1-15.
- Sidky, H. (2010). *Attitudes in Social Psychology*, Cairo: Dar Al-Kitab Al-Arabi
- Suleiman, A & Daradkah, A (2014). Quality standards for e-learning at Taif University in light of contemporary global experiences: a prospective study, *Journal of Culture and development*, 14(77), 45 - 140
- Yousef, O. (2020). Students' attitudes towards e-learning in light of the Coronavirus pandemic: an applied study on a sample of students from the College of Communication and Media at King Abdulaziz University in Jeddah. *Al-Hikma Journal for Media and Communication Studies*, 1(21), 11-37.