

Empirical Study of E-Learning Impacts on Students' Academic Achievements In Iraqi Universities In Light of The Covid-19 Pandemic

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Abstract

The provision and implementation of e-learning systems pose significant challenges for numerous universities amid the COVID-19 pandemic. Platforms such as Google Classroom, Zoom, and FCC e-learning systems offer noteworthy features that prove beneficial for educational continuity during this crisis. However, the effective utilization of these e-learning systems hinges on a comprehensive understanding of the adoption factors and the substantial challenges faced by existing systems. Many institutions and higher education universities recognize the evolving value of the Internet in reshaping the learning landscape. There is a realization that traditional classroom courses can be enhanced through interactive web tools, and existing courses can be transitioned to e-learning environments. However, only a handful of academic institutions have successfully embraced e-learning in a manner that fosters widespread and innovative utilization of educational technology throughout the institution. There is an agreement lack around the crucial factors and challenges that form the effective utilization of the e-learning systems within the pandemic of COVID-19. As a result, a clear gap in understanding of the critical aspects and obstacles of e-learning use in this pandemic has been highlighted. As a result, the objective of this research is to examine the primary challenges encountered by existing e-learning systems and identify key elements that facilitate the effective utilization of e-learning systems during the COVID-19 pandemic.

Keywords: COVID-19, e-Learning.

1. Introduction

In our current era of technology, nearly everything undergoes swift development, renewal, and change. Continuously, novel ideas emerge, and fresh electronic applications are unveiled, aiming to simplify human life [1]. One domain significantly impacted by these advancements is information technology education, transitioning from traditional to digitally intelligent methods. The trajectory of educational horizons remains uncertain, with the internet profoundly influencing education, allowing students to learn without temporal or spatial constraints. While the global landscape evolves, Iraq faced challenges in keeping pace with this technological progress due to various reasons [2]. Presently, numerous studies aim to enhance education and elevate Iraq's educational reality, emphasizing the significance of e-learning. This research delves into the history of e-learning globally and specifically in Iraq, identifying obstacles contributing to Iraq's delayed adoption of e-learning in its educational institutions [3]. The COVID-19 pandemic has cast a shadow over the education sector, compelling schools, universities, and educational institutions to shutter their doors as a preventive measure. This closure has significantly impacted students, particularly those preparing for crucial exams like high school assessments. The prolonged nature of the crisis has fuelled concerns within the education community [4]. In response, educational institutions have turned to e-learning, a solution that has been a subject of discussion regarding its integration into the educational process. The industrial revolution, the evolution of "artificial intelligence" technology, the rise of the "Internet of Things," and the information technology revolution have all become integral aspects of human life, directly influencing the educational landscape [5]. The global trend towards integrating technology into education is driven by the industry's need for technically trained professionals and the "X" generation's affinity for smartphone devices and various applications. Providing educational resources for the "tenth generation" through mobile devices serves as a motivation for studying, surpassing traditional methods and equipping students with the knowledge and skills required in the laboratory or market [6]. Although the use of the Internet in education is not a new concept, the term "Learning Management Systems" is now commonplace in most universities. The global "Corona crisis" has accelerated the adoption of e-

learning as a more viable alternative to ensure the continuity of the educational process. Consequently, there has been a significant upswing in the use of video conferencing software such as "Zoom," "Google Meet," "WebXMate," and others on the internet. Figure (1) illustrates an example of the E-learning model [7].

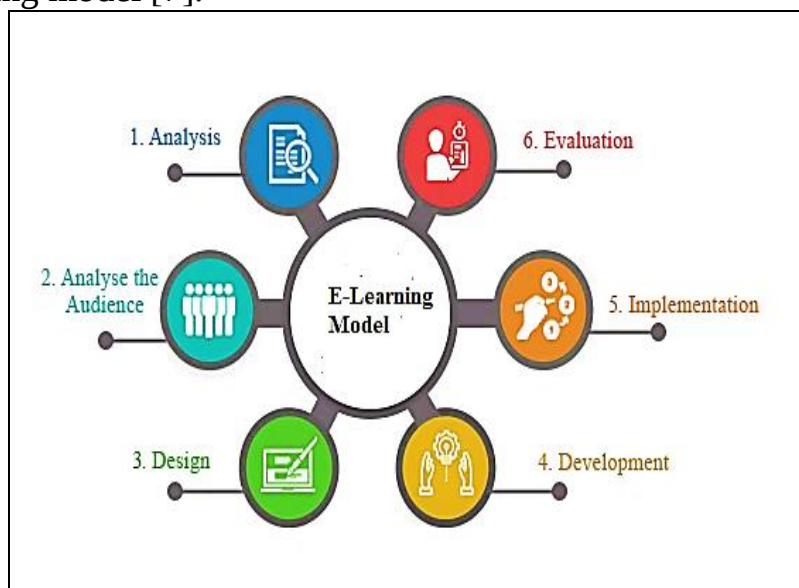


Figure 1: Model of E-learning

The main problem is that developing a learning environment requires huge expenditures for ensuring the high-results performance of learning processes like learning infrastructures and activities. Consequently, universities require to assign a considerable portion of their budgets to the services of learning and developing infrastructure. However, the budgets in Iraqi universities have many limitations for several reasons, one of these reasons that the process of learning is not a profitable business. The management of services and infrastructure for the environment of learning is one of the highly challenging facing universities due to the complexity of aspects of the learning environment to reduce the learning services and necessary infrastructures with no negative impacts on the performance of learning results. From one side, it is noticeable that there are several limitations in aspects of managing the learning environment (strategies of learning, resources of IT, students, and teachers) for achieving maximum performance of learning outcomes. The e-learning approach represents an

effective solution for avoiding different obstacles of the conventional processes of learning. This approach provides flexible content and services in the curriculum of e-learning which leads to an increase in the effectiveness of managing the processes of dynamic learning. From the other side, the accessibility, availability, and centralization of resources will decrease the resources required for the conventional environment of learning that reduces the expenditure of learning resources. Furthermore, the e-learning approach provides auto-management of learning concepts that minimize the administrative errors of the conventional processes of learning through e-services and well-known, teacher, and student activities within the context of learning strategies in universities. The significance of online learning and its substantial impact on advancing the current educational processes is noteworthy. Recognizing this importance, a majority of universities worldwide incorporate this technology seamlessly into their educational frameworks, overcoming the constraints of both space and time. Despite the global surge in technological advancements in education, Iraq remains on the sidelines, witnessing the progress made by other nations in developing and expanding the horizons of their educational systems. In contrast, Iraq persists in adhering to traditional educational methods. Addressing this issue becomes imperative, drawing attention to the necessity for Iraq to embrace the contemporary era we live in and align its educational practices with modernity.

2. Literature Review

Many researchers are focusing on and analysing the factors and characteristics that lead to effective e-learning system implementation. In this paragraph, some previous researchers will be reviewed as shown in Table (1), that have used various types of E-learning.

Table (1): summary of e-learning

N o	Name	Years	Country	Methodology	Description	Factors Affecting
1.	Chatzoglou et al. [8]	2009	Greece	A structured questionnaire and a data questionnaire are designed	Expands the technology acceptance paradigm to look at employee intent for adopting a web-based training procedure.	1- Administrative support 2- Enjoyment. 3- Computer anxiety 4- Orientation towards the goal of learning. 5- Self-efficacy.
2.	Alajmi. M. M et al.,[9]	2010	Kuwait	Entire survey questionnaire.	The use of e-learning is designed for measuring several metrics: faculty members fell into diffusion Roger's innovation.	1- E-learning barriers. 2- Attitudes and skills (self-efficacy). 3- The diffusion of innovation
3.	Akaslan. D and Law. E [10]	2011	Turkey	Questionnaire	It looks at how prepared Turkey's higher education institutions in the field of electrical science are for e-learning. It also investigates two characteristics that are thought to impact faculty members' attitudes about e-learning.	Readiness (first stage): 1- Technology (Stability, Devices, software). 2- The People (The position, Confidence, Experience) 3- Content (Theory, Practice). 4- The Institution (University, College, Section). Acceptance (second Stage): 1- perceived benefit 2- perceived simple utilization. Training (third stage): 1- Teacher. 2- The learner. 3- Attachment. 4- The person.

4.	Porouha n. P and Premcha is wadi [11]	2012	Thailand	Questionnai res	An expanded version of the "Technology Acceptance Model" (TAM) was created to investigate the key components of Thailand's e-learning system.	1- Behavioral intent to utilize the computer (BI); 2 - Perceptible Benefit (PU); 3- Perceived Ease of Use (PEOU); 4- Attitude towards abuse. 5- External variables. 6- utilize the actual system
5.	V. Arkorful and N. Abaido [12]	2014	Iraq	Questionnai res	The use of e-learning in higher education institutions and its efficacy. It also reviews the contributions of many scholars and organizations to the notion of e-learning, presenting the literature and providing an academic framework for the study.	1. Definitions of e-learning as presented by various researchers. 2. The contribution of e-learning to teaching and learning processes in higher education institutions 3. The Benefits and Drawbacks of E-Learning.
6.	Al-Azzawi et al. [13]	2016	Iraq	Questionnai res	Identifying the obstacles that prevent Iraq from effectively implementing e-learning and suggesting viable strategies to overcome these obstacles. The research suggests numerous approaches for fully utilizing e-	1. E-learning technology in developing countries 2- Challenges of applying e-learning

					learning methodologies.	
7.	Ameen and Willis [14]	2017	Iraq	Questionnaires	The study identifies the reasons why Iraq is lagging in implementing online learning and the grades reveal that students want to benefit from them, and the study identifies the potential and challenges of using online learning in the higher education department in Iraqi institutions from the learners' perspective. E-learning as part of a hybrid learning technique	1. hybrid approach to learning 2. using mobile phones rather than relying solely on online learning using computers

9.	Z. Abed Aljasim Muhsin [15]	2019	Iraq	Questionnaires	The purpose of this study was to determine the impact of e-learning on socializing among Iraqi students.	1. Knowledge can be effectively transferred from the lecturer to the students via eLMS 2. Knowledge Management (KM).
10.	M. Radif and Nora A. M [16]	2019	Iraq	Questionnaires	This is the first study of its type in Iraq, and it intends to investigate teachers' educational needs for e-learning in computer science at the secondary school level.	1. Identify and investigate the perceptions of secondary school teachers of computer science towards the use of e-learning methods
11.	Natela Doghon adze.et.al [17]	2020	All country	Questionnaires	This study is to assess our readiness for involuntary learning, caused by an extreme case of coronavirus, and to transition to distance learning in all countries.	1. Distance learning, e-learning in COVID-19, 2. Technical readiness, 3. Psychological readiness. 4. Educational readiness

3. Research Methodology

This study's approach consists of four main stages:

1. **Data collection phase:** Using a questionnaire to collect data from Iraqi institutions, the researcher collects and analyzes the management and financial issues of learning settings.
2. **Design and Analysis phase:** The researcher gathers the most appropriate e-learning solutions from specialists based on the quantitative data to avoid the management and financial difficulties of the learning environment in Iraqi institutions.

3. **Development of this model:** The suggested E-learning model was created using the results of the qualitative technique as well as the studied E-learning variables from related studies.

4. **Validation of this model:** Through an interview with e-learning specialists, the researchers confirm that the proposed model is of high quality, easy to use, and beneficial. As shown in Figure(2).

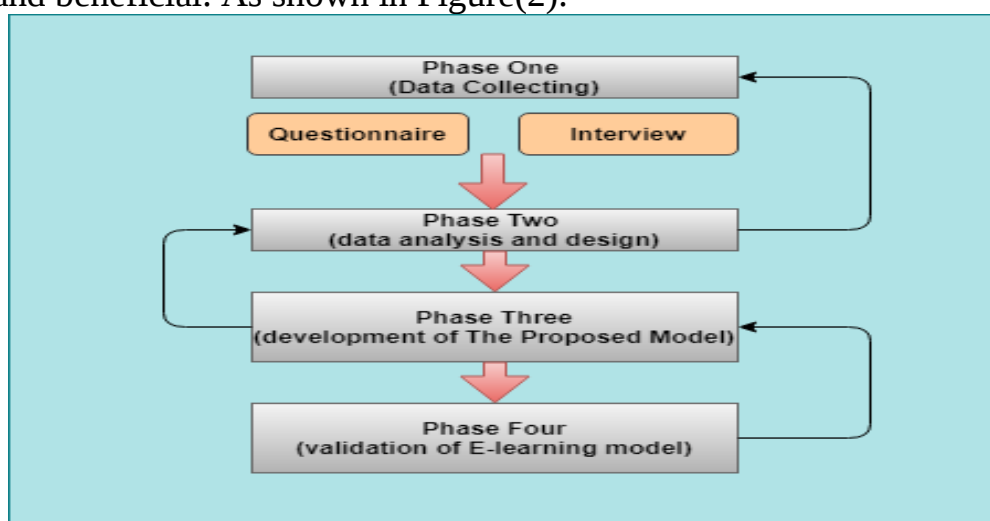


Figure (2): Modelling of E-Learning Proposal System

The e-learning model that has been proposed was analysed depended on the results of previous studies and was developed where (Related Works, Questionnaire, Interview) were analysed, and through it, the model was proposed and developed as shown in Figure (3). The proposed system for e-learning relies on four main parts, it will be clarified as:

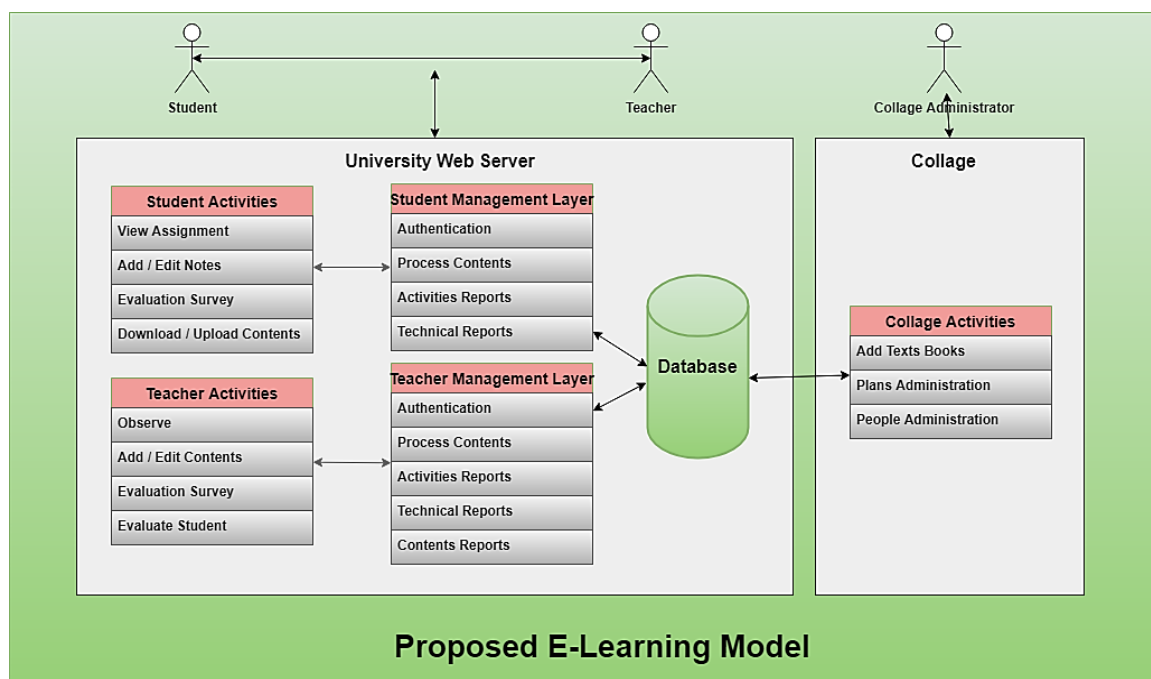


Fig.3: The Proposal System of E-Learning

Firstly (College): the college in charge of administrative tasks such as

1. Creates learning plans,
2. Uploads learning materials, such as electronic textbooks, and manages student and instructor accounts.
3. The college's actions will guarantee that the electronic learning procedures are consistent with the university's learning plans and goals.
4. On the other hand, colleges may track the actions of students and professors, which aids in the evaluation of learning processes.

Secondly (Teachers): Teachers are in charge of a variety of tasks, particularly in light of the Corona epidemic, and we have never used e-learning before; Providing assignments for evaluating students' learning outcomes such as tests and assignments,

1. Making learning materials, such as course materials, supporting references, and workshops, available to students.
2. Students' actions should be monitored to encourage bad student learning practices. Teachers' actions will operate automatically to increase the effective management of teaching efforts, minimizing teaching stress and time, and assuring correct learning processes like automatic exam evaluation.

3. Educators must use assessment surveys to assess the management of e-learning activities such as colleges and methodological effectiveness.

4. Knowing the effectiveness of instructors' use of electronic learning technologies such as Google Classroom, Zoom, and others, as well as the effectiveness of students' usage of these techniques.

Thirdly (Information Technology (IT) Resources): Three main IT resources are available to reduce learning process expenses and improve learning effort management performance:

1. The use of the Internet as a communication platform and the availability and accessibility of information reduce the costs of developing learning materials using traditional techniques such as computer laboratories, classroom materials, and paper expenses.

2. Utilizing a central web server of Iraq Universities, administer services, information, and activities through service and management agreement levels.

Finally (Database): Using a central database to efficiently handle the gathering of information between the server and user sides, which avoids data redundancy. As a result, IT resources will save expenses and improve management in the conventional learning environment.

4. Experimental Result

1. Case Study for e-Learning Model

We have targeted middle technical University as its great history and it always tries to renew its infrastructure and keep up with, in addition to that, its permanent attempts to build and maintain continuous education, relying on a different method for example Moodle. The effectiveness of e-learning has proven In Light of the Covid-19 Pandemic Because most students and teachers responded to this idea by using several methods such as Google Classroom, Zoom, and others, as well as the students' interaction by sending their homework and surprise tests to them, and statistics were taken according to a set of questions for students and teachers, as well as questions that bring them together, Cand it has been shown through the tables (2),(3) and (4) below that there is a high rate of acceptance by both parties.

Table 2: Results of the Teacher questionnaire

Question Number	Question	Analysis of the Results	Agreed	Disagreed
1.	Does your department provide you with free internet access?	This outcome is disheartening as we inhabit a world where the internet holds sway across various facets of life. Students now require constant internet connectivity to access e-learning platforms, facilitating the sharing of educational resources, ideas, participation in courses, responding to queries, and engaging in discussions.	78%	49%
2.	Is your department equipped with contemporary learning tools such as smart boards, data projectors, and other modern resources?	The university has initiated the incorporation of intelligent teaching approaches into the educational process, albeit at a gradual pace. We firmly believe that every student deserves the opportunity to learn in a smart and contemporary manner.	93%	17%
3.	In your opinion, is the utilization of e-learning platforms perceived as straightforward or challenging?	The outcome hinges on the student's familiarity with e-learning platforms and the extent of their knowledge. This result is deemed satisfactory.	30%	90%
4.	Do you prefer a smartphone or computer in the usage of e-learning platforms?	We propose offering e-learning platforms that are compatible with both smartphones and computers, ensuring the flexibility of learning.	55%	68%

Table 3: Result of the student questionnaire

Question Number	Question	Analysis of the Results	Agreed	Disagreed
1.	Does e-learning capable of raising students' educational levels and increasing their chances of success?	This outcome is highly positive, underscoring the teaching staff's recognition of the significance of e-learning in advancing the educational process. It propels the educational system toward excellence, consequently enhancing success rates among students.	93%	7%
2.	Do e-learning assisting pupils in adjusting to the learning process?	This highlights the significance of e-learning and its perceived utility from the teachers' perspective. It is crucial to instill ample confidence in our students, encouraging them to rely on their own capabilities. Through self-reliance, students can develop the skills to effectively manage their time for learning.	96%	4%
3.	Do students with special needs or those who reside in rural regions have access to e-learning platforms?	This positive outcome reflects the teachers' understanding of students with special needs or those residing in remote areas. It underscores how e-learning platforms can effectively address the challenges faced by these students.	81%	19%
4.	Is e-learning making it easier for teachers to pursue student learning?	Students exhibit diverse cognitive abilities, and with e-learning, they have the flexibility to revisit the course multiple times, ensuring a thorough understanding of the lessons. They can reach	95%	5%

		out to their supervisors only when encountering challenging situations. Consequently, teachers can monitor their students' progress and focus on addressing specific areas of weakness, thereby reinforcing their learning.		
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Table 4: Results of both teachers' and students' questionnaires.

Question Number	Question	Analysis of the Results	Agreed	Disagreed
1.	Do you prefer e-learning or traditional learning techniques?	This percentage can be deemed satisfactory, reflecting its alignment with the personal opinions of the respondents.	95%	12%
2.	Do you think e-learning is a good method to learn?	This is optimistic as it surpasses the majority of respondents, suggesting that e-learning is perceived as an effective learning method by a significant portion of them.	70%	44%
3.	What impact does the English language have on the comprehension and use of e-learning systems?	Proficiency in the English language is crucial for utilizing e-learning systems. Therefore, universities should offer complimentary English language courses to all students and faculty members.	92%	32%
4.	Do you have any experience with e-learning seminars or workshops?	This outcome is disheartening as it signifies a lack of effort in raising awareness about the significance of e-learning within universities. To alter this situation, proactive measures should be taken, such as organizing activities and seminars that emphasize the importance of e-learning. Additionally, providing adequate training for both teaching staff and students is essential to	52%	68%

		guide them on the correct path.		
5.	Do you think Iraq is far behind the rest of the world in terms of e-learning adoption?	With the emergence of the Internet, the influence of development has reached our reality, urging our country to align with the technological advancements seen in the rest of the world. Therefore, comprehensive e-learning initiatives should be implemented, encompassing all Iraqi universities.	90%	27%

5. Conclusions

The development of e-learning and its use all over the world made Iraq very weak in terms of technology and development network and multimedia technologies for e-learning management systems, but when the COVID-19 pandemic occurred, there was an urgent need for e-learning and as a result, this topic is considered a new one for a teacher and the student, both of them faced many problems, especially in universities Iraq, because there is a delay in implementing e-learning due to the lack of technical awareness, political challenges, and the country's economic conditions, as well as, most importantly, the weakness of Internet networks that contribute significantly to the process of e-learning. Because of not the availability of sufficient studies to examine the Iraqi University students' perceptions of adapting to e-learning and its impact on the student's academic performance. The importance of this study lies in contributing to the research by presenting an experimental study that examines the Iraqi student's perception of the effects of e-learning on his academic performance by looking at factors such as their experiences, digital readiness, etc. The conceptual model will be designed to record student perceptions using the primary research methodology to collect data and apply e-learning and its effects in Iraqi universities. Moreover, the result of the conceptual model used to present the pilot study using data analysis software. Finally, the research form will reveal the relationship between the Iraqi student's perceptions of e-learning and his academic performance to justify

the benefits and challenges of using e-learning in Iraqi universities. The success of the application of e-learning in the universities of Iraq through the experimental study will lead to the development of the level of e-learning in Iraq, especially to there are several universities that have tried to use electronic education in previous years and it is necessary to make the student and the professor help to activate the e-learning process at a distance.

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الدراسة التجريبية لتأثير التعلم الإلكتروني على إنجازات الطلاب في الجامعات العراقية في ظل جائحة كوفيد-19

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مستخلص البحث:

توفير وتنفيذ أنظمة التعلم الإلكتروني يشكل تحديات كبيرة بالنسبة للعديد من الجامعات في ظل جائحة كوفيد-19. تقدم منصات مثل "Google Classroom" و "Zoom" وأنظمة التعلم الإلكتروني للهيئة الاتحادية للاتصالات ميزات ملحوظة تثبت فائدتها لاستمرارية التعليم خلال هذه الأزمة. ومع ذلك، تتوقف الاستفادة الفعالة من هذه الأنظمة على فهم شامل لعوامل الاعتماد والتحديات الكبيرة التي تواجه الأنظمة الحالية. يدرك العديد من المؤسسات والجامعات للتعليم العالي قيمة الإنترنت المتطورة في إعادة تشكيل المشهد التعليمي. هناك إدراك بأن الدورات الصفية التقليدية يمكن تعزيزها من خلال أدوات الويب التفاعلية، ويمكن تحويل الدورات الحالية إلى بيئات التعلم الإلكتروني. ومع ذلك، فقط عدد قليل من المؤسسات الأكاديمية اعتمدت التعلم الإلكتروني بنجاح بطريقة تعزز استخدام التكنولوجيا التعليمية على نطاق واسع ومبتكر في جميع أنحاء المؤسسة. يتم التوافق على نقصان حول العوامل الحاسمة والتحديات التي تشكل الاستفادة الفعالة من أنظمة التعلم الإلكتروني ضمن جائحة كوفيد-19. ونتيجة لذلك، تم تسليط الضوء على فجوة واضحة في فهم الجوانب الحرجة والعقبات لاستخدام التعلم الإلكتروني في هذه الجائحة. ونتيجة لذلك، هدف هذا البحث هو دراسة التحديات الرئيسية التي تواجهها أنظمة التعلم الإلكتروني الحالية وتحديد العناصر الرئيسية التي تسهل الاستفادة الفعالة من أنظمة التعلم الإلكتروني خلال جائحة كوفيد-19. الكلمات الرئيسية: كوفيد-19، التعلم الإلكتروني.

1. المقدمة : في عصرنا الحالي للتكنولوجيا، يتطور كل شيء بسرعة، ويتجدد، ويتغير. باستمرار، تطلق الأفكار الجديدة، وتكشف التطبيقات الإلكترونية الجديدة، بهدف تبسيط حياة الإنسان [1]. أحد المجالات التي تأثرت بشكل كبير بهذه التطورات هو التعليم في تكنولوجيا المعلومات، حيث ينتقل من الأساليب التقليدية إلى الأساليب الذكية رقمياً. تبقى مسارات الآفاق التعليمية غير مؤكدة، مع تأثير الإنترنت بشكل عميق على التعليم، مما يسمح للطلاب بالتعلم دون قيود زمنية أو مكانية.