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RESEARCH ARTICLE

Students' Perception and Acceptance of e-Learning and e-Evaluation in Higher Education

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ABSTRACT

The COVID-19 pandemic has led to increased use of online resources in educational institutions, making e-learning a necessity. This study aimed to investigate how students from four colleges at Jazan University in Saudi Arabia perceived and accepted e-learning and e-evaluation. Methods: 236 students participated in a cross-sectional study conducted in October 2021. The students completed a well-constructed questionnaire with 22 closed-ended questions divided into five domains. The students rated their answers on a 5-point Likert scale from 1 to 5. To analyze the collected data, the researchers utilized SPSS (v26). Result: Out of the total 236 students who participated in the study, most (30.5%) from the College of Public Health and Tropical Medicine (59.8%) used laptops, while 78% of students had a favorable impression of e-learning. Students' perceptions were focused on whether e-learning and e-evaluation methods helped them understand the study material smoothly and clearly. Among the students, 27% strongly agreed, 25% agreed, 16% were neutral, 11% disagreed, and 11% strongly disagreed. Additionally, 28% of the students strongly agreed, and 34% agreed that exam questions during e-evaluation were appropriate and comprehensive. Although online learning may result in less social contact, a lack of social presence, and difficulties in communication harmonization, e-learning still has some positive effects on students. It is considered a powerful platform, especially during emergencies or for those unable to attend in-person classes to complete their studies. The study has significant implications for higher education institutions, especially during emergencies, where online learning is necessary. Future research can further explore the factors that affect student perceptions and acceptance of e-learning and e-evaluation and how to improve them.

INTRODUCTION

The assessment of academic progress is a critical curriculum component and holds significant importance in the teaching and learning process. Academic evaluation serves as a means of identifying the fulfilled and unfulfilled requirements of a particular program. It is a crucial tool in measuring a student's advancement toward completing their degree.

The introduction of technological advancements in education has brought about various technical challenges regarding the creation, execution, and assessment of electronic evaluations, such as compatibility issues with different devices and connectivity issues (Ahmed and Opoku, 2022). Technological advancements in education have brought about various technical challenges related to technical issues, cheating, digital literacy, and student perceptions. However, these challenges can be mitigated by providing technical support, implementing measures to prevent cheating, providing training and support to students, and educating students on the benefits of electronic evaluations (Sung et al., 2016).

However, studies have shown that electronic evaluation can significantly alleviate the issues present in traditional paper evaluation, which is error-prone due to its reliance on human factors (Anakwe, 2008; Hewson, 2012). While comparing two types of evaluation, regular and electronic, it was found that electronic evaluation reduces a significant burden on teachers and administrators, especially during the process of holding exams, marking, and monitoring grades (Ahmad et al., 2023). Electronic evaluations can be completed much more quickly and efficiently than traditional evaluations. It can be designed to be highly precise and standardized, reducing the potential for error in grading. It eliminates the need for printing, distributing, and collecting traditional evaluations, which can be costly in time, money, and resources. Electronic evaluations can be designed to include a broader range of question types, such as multimedia elements, interactive questions, and simulations, which can make them more engaging and effective than traditional evaluations (Gikandi et al., 2011; Borup et al., 2012). The development of electronic evaluation has passed through four generations, which include computerized tests, computerized adaptive tests, continuous measurement, and smart metering (Gikandi et al., 2011; Tirado-Olivares et al., 2021).

During the pandemic, electronic learning, teaching, and evaluation through the Blackboard platform have become prevalent and reliable tools in Saudi Arabian universities. Blackboard's importance was highlighted during the global crisis caused by the Corona epidemic, which prompted the search for alternative educational solutions in teaching, learning, and evaluation processes, including the use of specialized tools on eLearning management platforms (Khalil et al., 2020; Tanveer et al., 2020). The pandemic has caused a significant surge in the popularity of online and web-based learning platforms, especially during times when traditional educational activities are halted. It allows universities to quickly adapt fully to electronic-based learning and evaluation. Electronic evaluations can positively impact student motivation, learning outcomes, and satisfaction, and they are an effective tool for providing feedback and improving student performance in various educational contexts (Sung et al., 2016; Ahmed and Opoku, 2022).

This emergency was met with efficient responsiveness by Jazan University, which is among the leading universities in Saudi Arabia. The university has used an online electronic interactive program since 2017 (Blackboard Inc.). Following Ministry of Education regulations, Jazan University's administration made a concentrated effort, with the participation of institutional officials, faculty members, and students, to continue the educational process despite unanticipated circumstances. The university administration made the best use of available technology to ensure continuity of education and minimize disruptions. Additionally, the Deanship of e-Learning at Jazan University has already commenced offering lectures and training courses to equip faculty members and students with the necessary knowledge and skills for optimal utilization of distance learning technology during this period (Anakwe, 2008; Alshehri et al., 2019).

Blackboard Inc. has developed the Blackboard Learning System, a web-based database server

and management system for simulated learning. Its modular construction and course design offer flexibility and integrate with authentication protocols and student information systems. The Blackboard Platform is widely successful in education and is increasingly employed for collaborative learning by Saudi universities (El Zawaidy and Zaki, 2014; Aljuaid, 2021). Numerous studies have focused on the importance and effectiveness of e-learning, which is now recognized globally as a highly suitable and widely appreciated teaching method (Liaw and Huang, 2007; Eltayeb et al., 2020). The general acceptance of e-learning can be attributed to several reasons, including ease of use, flexibility, and greater control over the learning environment, among other benefits that cater to learners' needs. This study will fill the existing gap in the literature on student perception and e-learning in Saudi Arabia by providing a more comprehensive and detailed understanding of the factors that influence students' acceptance and satisfaction with e-learning and e-evaluation and by providing recommendations for improving e-learning and e-evaluation practices in higher education institutions in Saudi Arabia.

This study is significant in Saudi Arabia as it will provide insights into the factors influencing students' acceptance and satisfaction with e-learning and e-evaluation in this context. This information can improve e-learning and e-evaluation practices in Saudi Arabia's education system and address students' challenges and concerns when engaging with e-learning materials and assessments (AlKarani and Al Thobaity, 2020; Iffat Rahmatullah, 2021).

Nonetheless, e-learning has limitations, such as social isolation, inadequate student-teacher interaction, and connectivity issues. Therefore, it is imperative to understand students' perceptions and views on virtual teaching, learning, and assessment. It would be fascinating to explore whether students embrace this novel approach, suggest improvements, or prefer traditional learning methods (Stephens and Mottet, 2008; Liaw, 2008; Naik et al., 2016).

This study aimed to assess students' perceptions regarding the sudden transition to complete e-learning and the utilization of e-learning and e-evaluation methods during the COVID-19 pandemic. Furthermore, the study aimed to suggest measures for enhancing the efficiency and effectiveness of the learning process.

METHODOLOGY

In October 2021, a cross-sectional descriptive study was carried out on the students of four colleges, namely the College of Computer Science (CCS), the College of Public Health and Tropical Medicine (CPHTM), the College of Applied Medical Sciences (CAMS), and the College of Nursing (CN) at Jazan University.

We contacted the heads of different departments at selected colleges to ask permission to conduct the study with their students. Once permission was granted, we visited the colleges and explained the purpose of the study, its benefits, and how their data would be used. Participants were informed that their participation was voluntary and they had the right to withdraw from the study without any consequences. We used various online platforms to distribute the questionnaire, such as Google's online survey, email, and WhatsApp groups. The students' email addresses and WhatsApp contacts were obtained with their consent during the visit to the colleges. To ensure that all participants could understand and respond to the questionnaire in English, the researchers confirmed with the participants that they understood English well and were comfortable responding in English.

A group of 246 students participated in a study. A well-designed online questionnaire was distributed through Google's online survey, email, and WhatsApp groups.

However, some participants were excluded from the final analysis due to incomplete or inconsistent responses. The number of discarded surveys was 10, and the final number of participants included in the study was 236. The procedure followed for the study was carefully designed to ensure that all ethical considerations were met and the data collected was reliable and valid.

The questionnaire was available online for students from October 1 to October 15, 2021. It contained 22 closed-ended questions in total, which were grouped into the following areas:

- Demographic data (including the hardware used for learning and gender)
- Tools (questions about easy access to electronic

content)
- Electronic content quality
- Quality of electronic learning and teaching
- Online evaluation

The responses were evaluated using a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). We also tested the reliability of the questionnaire, helped determine the consistency and accuracy of the responses, and increased confidence in the study's findings. To calculate the reliability value of the questionnaire, we used Cronbach's alpha coefficient. Cronbach's alpha is a statistical measure of internal consistency that assesses the extent to which the items in a questionnaire are related to one another. The result of Cronbach's alpha coefficient ranges from 0 to 1, where a value of 1 indicates perfect reliability and a value closer to 0 indicates poor reliability. This study achieved a Cronbach's alpha coefficient of 0.7, considered acceptable for research purposes.

In this study, we used the probability sampling technique of convenience sampling to select participants, and SPSS software version 26 was used for data analysis.

RESULT

In this study, most students (60%) were from CPHTM and CAMS. The majority, 59.8% of participants, used their laptops and tablets during e-learning, while the others used their mobile phones to attend the sessions and for examinations. 78% had a favorable impression of e-learning. Basic information about the participants is given in Table 1.

Table 1: Participants' demographics

Departments	Male	Female	Academic Year			Total Number	Percentage
			2nd	3rd	4th	*N*=236	%
College of computer science	36	23	14	21	24	59	25.0
College of Public Health & Tropical Medicine	48	24	17	23	32	72	30.5
College of Applied medical sciences	38	31	11	34	24	69	29.2
College of Nursing	17	19	9	12	15	36	15.3

The result revealed that most students agreed they had easy access to their course and were provided sufficient information to study via the online portal. As indicated in Table 2, the students strongly agreed (66%) (*p*-value=0.000) that they received adequate university aid by facilitating the use of technology, training, and supervision.

Table 2: Students' perception of e-tools and techniques

Questions	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		Mean ±SD	*p*-Value
Ease in access to study material	2	1%	20	8%	35	15%	95	40%	84	36%	3.69±1.05	0.000
The internet speed is acceptable and I can attend the lecture without interruption	9	4%	27	11%	32	14%	92	39%	76	32%	3.36±1.18	0.000
Sufficient training and information has been provided to use the website for course materials	14	6%	21	9%	25	11%	89	38%	87	37%	3.83±0.96	0.000
There is adequate university assistance	19	8%	28	12%	37	16%	79	33%	73	31%	3.40±1.06	0.000

The students were also asked about their perception of electronic content and the quality of the content. 69% of the students agreed (*p*-value = 0.000) that the online study material uploaded by the instructor was comprehensive and contained exercises and assignments for practice. However, some students (14% neutral, 11% disagree) disagreed that the electronic content was less effective than they got during the traditional classes, as shown in Table 3.

Table 3: Students' Perception of electronic content

Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean ±SD	*p*-Value
Study material uploaded electronically is comprehensive and adequate	15 6%	20 8%	38 16%	76 32%	87 37%	3.70± 1.08	0.000
The information uploaded electronically is equal to that we obtain by the traditional method	18 8%	27 11%	32 14%	97 41%	62 26%	2.94± 1.94	0.003
The electronic content includes exercises and assignments that help me to learn	19 8%	28 12%	41 17%	81 34%	67 28%	3.62± 1.04	0.000

The student's perception of understanding the study material clearly and smoothly via the e-learning / online learning process was also satisfactory. Table 4 shows that the participants agreed with the electronic study process 48%, 54%, and 54%, respectively.

Table 4: E-learning effectiveness

Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean ±SD	*p*-Value
The online learning helped me understand the study material clearly	27 11%	38 16%	59 25%	63 27%	49 21%	2.90±1.35	0.004
Online study material provided me with additional skills.	31 13%	32 14%	46 19%	71 30%	56 24%	3.10±1.32	0.003
Online learning improved my self-reflection skills	28 12%	36 15%	46 19%	65 28%	61 26%	3.38±1.32	0.000

The perception of sending and receiving the study material without interruption or delay and communication between the instructor and students were also significantly satisfactory, as shown in Table 5.

Table 5: Students' perception of interactive methods

Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean ±SD	*p*-Value
Receiving and sending study materials was uninterrupted	21 9%	29 12%	32 14%	67 28%	87 37%	3.25±1.23	0.001
There is continuous electronic communication between students and teacher	18 8%	34 14%	39 17%	71 30%	74 31%	3.73±1.09	0.000

Regarding the electronic examinations and evaluation process, about 75% of the students agreed that online evaluation is a convenient way to assess the knowledge and skills gained during the study period. Students were also satisfied with the examination questions, their appropriateness, and their understanding, as given in Table 6.

Table 6: e-evaluation methods

Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean ±SD	*p*- Value
Online Exam questions are appropriate and comprehensive, and are easy to understand	19 8%	28 12%	41 17%	81 34%	67 28%	3.68±1.17	0.000
I can ask any questions and inquiries during the online evaluation	15 6%	20 8%	38 16%	76 32%	87 37%	3.34±1.34	0.000
The satisfaction with the online evaluation and the result was high	31 13%	32 14%	46 19%	71 30%	56 24%	3.61±1.27	0.000
I believe that online evaluation is convenient wfay to assess my learning	14 6%	21 9%	25 11%	89 38%	87 37%	3.52±1.48	0.000

Students from all departments showed a significant correlation with the interactive techniques, processes, and tools applied during the electronic learning and evaluation process, as shown in Table 7.

Table 7: Correlation of measured items to departments

Measured Items	Departments	N	%	Mean± SD	Std. Error	95% Confidence Interval for Mean	
						Lower value	Upper value
Tools	College of computer science	59	25	3.5±0.8	0.1	3.3	3.6
	College of Public Health and Tropical Medicine	72	31	3.3±0.9	0.1	3.2	3.8
	College of Applied medical sciences	69	29	3.7±0.8	0.1	3.5	3.9
	College of Nursing	36	15	3.7±0.7	0.1	3.4	4.0*
Electronic content	College of computer science	59	25	3.4±1.1	0.1	3.2	3.6
	College of Public Health and Tropical Medicine	72	31	3.2±1.1	0.1	3.1	4.1*
	College of Applied medical sciences	69	29	3.6±0.9	0.1	3.3	3.8
	College of Nursing	36	15	3.6±0.8	0.1	3.3	3.9
Teaching Effectiveness	College of computer science	59	25	3.2±1.1	0.1	2.9	3.4
	College of Public Health and Tropical Medicine	72	31	2.9±1.2	0.2	2.6	3.3
	College of Applied medical sciences	69	29	3.2±1.1	0.2	2.9	3.5
	College of Nursing	36	15	3.1±1.2	0.2	2.7	3.5
Interactive technique	College of computer science	59	25	3.5±1.0	0.1	3.3	4.1*
	College of Public Health and Tropical Medicine	72	31	3.3±1.1	0.2	3	3.6
	College of Applied medical sciences	69	29	3.5±1.0	0.1	3.2	3.7
	College of Nursing	36	15	3.9±0.9	0.2	3.6	4.2*
Remote Exams & Evaluation	College of computer science	59	25	3.6±1.0	0.1	3.4	3.8
	College of Public Health and Tropical Medicine	72	31	3.3±1.2	0.2	3	3.7
	College of Applied medical sciences	69	29	3.5±1.0	0.1	3.2	3.8
	College of Nursing	36	15	3.9±1.0	0.2	3.5	4.2*

DISCUSSION

The Ministry of Education in Saudi Arabia has been promoting information and communication technology (ICT) in education across all levels for quite some time. However, during the pandemic, educational institutions were forced to switch to online technologies for teaching, making e-learning an essential and widespread necessity.

E-learning has supported and frequently replaced traditional classroom and testing methods. Out of 236 students who participated in the study, it was discovered that 39.8% of them used laptops for online education, and 78% had a positive impression of online education that can be compared to another study (Abbasi et al., 2020).

While mobile devices and tablets were the most common devices among students for e-learning, comparable to laptops, our findings are consistent with a study that found that 66% of students used mobile devices for e-learning (Abbasi et al., 2014; Jadir, 2022).

Most students concurred that they face no obstacles in accessing course materials as they find the tools and techniques easy to use. The internet was fast enough for them to attend lectures uninterrupted, enough information was provided to use the website, and sufficient university support was provided for the use of technology. This finding is consistent with another study conducted to assess eLearning's impact on the student learning process (Qureshi et al., 2012).

Approximately 50% of the respondents did not believe that the knowledge acquired through electronic resources is on par with that obtained through conventional methods. Nonetheless, one-third of the participants agreed that electronic scientific material is comprehensive and sufficient, including exercises and assignments that assist them in learning. This is important because face-to-face instruction encourages eye contact, brainstorming at the start and throughout the lesson, and student feedback. Additionally, the literature indicates that students favor in-person instruction over online instruction (Eltayeb et al., 2020).

However, the benefit of distance learning was acknowledged by the students, who reported that it helped them comprehend scientific subjects more clearly, gave them access to additional training and skills, and enhanced their capacity for self-reflection. Students like the instructor's interest in their viewpoints and feel more invested in the course since they have some control over how it is run. Since most students concurred, the sending and receiving educational materials and ongoing cooperation between the teacher and the class over the material supplied electronically were done voluntarily. Additionally, it shows that the instructor is concerned about their learning, which piques their interest in the subject. Most study participants found remote examinations and evaluation methods convenient and satisfactory.

Strong evidence suggests online exams can be more mentally taxing for students than conventional paper-based exams. Students must show they have met the course objectives and dealt with surfing technologies and the more challenging online exam (Prisacari and Danielson, 2017). Remote exams offer a distinct advantage in creating unique exam questions not previously feasible with traditional paper-based exams, enabling a more innovative and authentic assessment. This advantage was leveraged by granting students access to their electronic exam results, which the course instructor administered (Wibowo et al., 2016; Laurila et al., 2017).

Preparation can be difficult and time-consuming when it comes to questioning design, and it can also raise concerns about fairness (Kotwal et al., 2016; Kamal et al., 2020; Jiang et al., 2020). Despite these limitations, online testing improves evaluation by speeding up the process. Planning and carrying out the test with different instruments allows for more flexibility. The tools may include an automated marking system (Thomas and Beresford, 2020), enabling students to obtain feedback more quickly (Alruwais et al., 2018). Additionally, online exams assist schools in connecting with distant students (Kausar et al., 2020). Overall, compared to a paper-based exam, the online exam may yield a comparable level of student performance (Nennig et al., 2020) and may even aid in improving student outcomes (Reddy et al., 2018).

Contrarily, the Department of Applied Medical Sciences students acknowledged several structural issues with electronic tools and techniques correlating all items measured concerning departments.

However, nursing students were dissatisfied with the interactive method, remote exams, and evaluation. This possible issue highlights the necessity for involvement to address the issue; for example, each lecture's objectives and grading policies should be explicit (Hilliard et al., 2020).

On the contrary, the study found no significant correlation among the variables evaluated across all departments, including students from the Department of Applied Medical Sciences. However, these results should encourage us to adopt forward-looking approaches. Improvements to Blackboard training programs, the university's internet network, technical support, and efficiency are needed to achieve better results. Instructors should respond promptly to students' inquiries, provide technical support, fix any issues that prevent faculty from utilizing Blackboard features, and effectively use interactive technology.

Theoretical implications

The research contributes to the theoretical understanding of online learning and e-evaluation. The study provides valuable insights into students' perceptions of e-learning and e-evaluation. The lack of significant correlation among the variables evaluated across all departments highlights the need for further research to identify factors influencing students' perceptions of e-learning and e-evaluation. The findings also suggest that there is a need for improved training programs and technical support to enhance the effectiveness of online learning.

Practical implications

The study provides practical implications for instructors and educational institutions. Instructors need to respond promptly to students' inquiries, provide technical support, and effectively use interactive technology to ensure students have a positive experience with e-learning. Additionally, educational institutions need to improve their Blackboard training programs, internet network, technical support, and efficiency to achieve better results with online learning.

CONCLUSION

This study aimed to examine how students at varying levels perceive online learning. Although online learning is often viewed as having limited social interaction, inadequate social presence, and unsynchronized communication, it undeniably offers numerous advantages for students. Particularly in times of need, online education is a crucial resource for individuals unable to complete their current studies. In conclusion, this study indicates that students' performance and educational outcomes during the pandemic were satisfactory. Jazan University's various college coordinators have also established a collaborative group to improve coordination and exchange knowledge regarding the e-learning process.

Limitations

One of the study's limitations is the sample size, which may only represent some of the student population. The study also relied on self-reported data, which may be subject to bias. Another area for improvement is using a single institution, which limits the generalizability of the findings.

Future research directions

The study suggests several areas for future research, including identifying factors that influence students' perceptions towards e-learning and e-evaluation, the impact of the pandemic on online learning, and the effectiveness of training programs and technical support. Additionally, future studies could explore the use of other evaluation methods to measure students' perceptions and attitudes toward online learning.

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