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Moving from Face to Face to Virtual Learning Using Blackboard: Faculty and Students' Perceptions

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

The COVID-19 pandemic led to the suspension of all institutional educational activities in Saudi Arabia, resulting in an abrupt move from traditional face-to-face learning to online learning. This study investigates how online learning using Blackboard in medical colleges is changing the learning methods after COVID-19 in Saudi Arabia. It seeks to explore the faculty and students' perceptions regarding the move and the effectiveness of online learning through the e-learning platform "Blackboard" at Fakeeh College for Medical Sciences (FCMS). A quantitative study was conducted to a sample of 419 participants, comprising faculty staff members and students. The selection criteria were students from first year to the final year in their second semester using online learning. They answered the questionnaires online through the Blackboard, and all information was collected for analysis and interpretation. The results indicated challenges experienced, time management, and preferences. Most faculty and students in medical colleges preferred online learning through Blackboard as it presents the future of medical education. However, online learning through Blackboard should be monitored and continuously evaluated to eliminate the current challenges and ensure effectiveness in the teaching and learning processes. This study recognizes the importance of technology in enhancing teaching and learning in medical education curricula.

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1. INTRODUCTION

For years, education systems in Saudi Arabia have relied upon face-to-face learning. Physical classrooms were used as platforms where instructors passed the knowledge to their students and provide prompt feedback to students [1]. However, a classroom setting is no longer accessible due to the COVID-19 global pandemic. As a result, online learning is the suitable teaching method now as takes place across distance and not through face-to-face interaction [2].

Learning systems were disrupted by the COVID-19 global pandemic. Moreover, the coronavirus disturbed the normal functions of the medical facilities as well as other aspects of peoples' lives. Learning institutions with approximately 1.2 billion students were forced to close down. The act aimed to comply with the World Health Organization recommendation of keeping distance to prevent the spread of the virus. In Saudi Arabia and other parts of the world, learning was conducted through face-to-face interaction and was abruptly stopped due to the COVID-19 pandemic [1]. The faculty staff members and the students had to continue with learning and the face to face learning method was shifted to online learning using different learning management systems such as Blackboard.

Blackboard is an e-learning platform used for virtual learning. It allows for all communication through chats, discussions, or emails between the faculty staff members and the students. Although online learning has been part of several changes that occurred in the education sector, its development must be analyzed for effective change management. The medical education sector should analyze the change in learning methods from face to face to use on online Blackboard.

Blackboard is a widely used tool in online learning which is perceived as a formal way. A learning platform is entirely web-based. It is an easy way of communication between faculty staff members and students, and it has a huge storage place for storing learning information. Additionally, it has an administrative tool that supports the work of both the faculty staff members and students.

Online learning exceeds distance, and every student can participate in the sessions with internet access. Students have experienced satisfaction with the virtual learning and most faculties have had varying perceptions on the Blackboard use as a new tool [3]. The use of Blackboard has encouraged the higher education institutions to replace the face to face learning with the virtual learning. In addition, Blackboard allow effective communication between faculty staff members and students through chats, emails, and discussions. The faculty staff members can upload the learning materials on the Blackboard and students can attend the online session on the scheduled time [4]. Research has shown that the implementation of online learning has motivated and enhanced the cognitive development of students [5].

According to Hill and Fitzgerald, [6], this mode of learning has a positive impact on the students learning experience and it is marked by its convenience and flexibility, which allows students to balance studies with work and family responsibility. Because it involves working the course materials at their own set time, higher thinking skills can be developed. Blackboard has been effective because it allows equal participation and hinders a small group of students from dominating the discussions. This is because each student has ample time to research the learning materials and formulate answers. Use of Blackboard has affected student's engagement, social interactions, and personal responsibility in handling assignments [6].

The FCMS has subscribed to Blackboard (an international, virtual-learning environment and course management system), used by universities, worldwide, which supports the teaching and learning environment, helps every student, and promotes independence. The FCMS began using Blackboard in 2017. The platform provides web conferencing, enterprise instant messaging, and voice-authoring capabilities, supporting collaborations between faculty and students. The Blackboard management system provides accessibility to instructional materials associated with each course, both on- and off- campus. The Blackboard generates reports displaying all users activities inside content areas showing each percentage of access and content with the respective faculty staff members. By the start of academic year 2018-2019, 100% of courses

were using Blackboard. The utilization of Blackboard should be monitored and continuously evaluated to eliminate any challenges and ensure effectiveness of the teaching and learning processes.

1.1 Research Aim

Evaluate the perceptions of the students and faculty staff members about the Virtual Learning Environment (VLE) at the Fakeeh College for Medical Sciences (FCMS), for further improvement of the learning and teaching processes.

1.2 Research Objectives

1. Measure students' satisfaction with VLE using Blackboard.
2. Measure faculty staff members' perception towards the VLE using BlackBoard.

2. RESEARCH METHODOLOGY

2.1 Research Design

A cross sectional descriptive study was conducted to evaluate the VLE using the Blackboard at the FCMS regarding students and faculty staff members' perceptions.

2.2 Sample and Population

Convenient sample of the undergraduate students (across all years from, first year to the final year) from 4 programs (Bachelor of Science in Nursing program, Medical Laboratory Sciences Program, Bachelor of Medicine, Bachelor of surgery program and Doctor of Pharmacy program) were involved (n=371). The faculty staff members from the 4 programs were involved (n=48).

2.3 Data Collection

Two online questionnaires were distributed to students and faculty staff members using Google forms.

(a) Self-administered questionnaire to assess students' perception about VLE using Blackboard

The questionnaire consists of 4 constructs with 26 items. The questionnaire was designed using a 5-point Likert response scale ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire was tested for construct validity and reliability using exploratory factor analysis (EFA).

(b) Self-administered questionnaire to assess faculty staff members' perception about VLE using Blackboard.

The questionnaire consists of 6 constructs with 26 items. The questionnaire was designed using a 5-point Likert response scale ranging from 1 (strongly disagree) to 5 (strongly agree).

2.4 Statistical Analysis

The data were analyzed using SPSS software Version 25. Data were presented as frequencies of each item. Missing data were treated by replacing with a mean of missing variables. EFA was conducted using principal component analysis.

3. RESULTS

The students' questionnaire response rate was average 59%. The principal component analysis with varimax rotation was performed to identify and interpret the number of factors. The results revealed that the 26 items of the questionnaire resulted in 4 factors (as shown in Table 1) with an eigenvalue >1.00. The 4 factors that emerged from the factor analysis accounted for 79.18%% of the total variance.

Internal consistency of the items was measured using Cronbach's alpha coefficient. The overall Cronbach's alpha for the total items was 0.973. This result indicates adequate internal consistency (reliability).

Table 2 shows that most of the students (89.8%) agreed that effective discussion was provided virtually using the Blackboard. In addition, 89.2% of the students satisfied with the role of the instructors in coordinating the virtual learning activities. Furthermore, most of students agreed that instructors created interactive learning environments. Additionally, most of the students emphasized that the interaction and discussion with instructors throughout Blackboard were useful. 86% of the students confirmed that the learning materials were available and uploaded on the Blackboard on time.

Table 1. Rotated component matrix

Items	1	2	3	4	Factor labelling
8- Instructor uses different kinds of instructional materials.	0.815				
9- Instructor could create learning environments according to the various learning styles of students.	0.800				
6- Effective discussion environment is provided.	0.765				
7- I share information and collaborate with other students	0.764				
11- Instructor could coordinate the learning activities.	0.736				F1
10- Students are engaged in interactive activities (presentation, group discussion, assignments)	0.726				Active Learning
5- Instructor prepares activities that enriches group work.	0.622				
18- The interaction and discussion with instructors and students throughout blackboard are useful.	0.412				
17- The learning materials are available on time.	0.336				
26- I would recommend online learning experience as a method of study to others.	0.860				F2 Evaluation of the online learning experience and the learner interface (Blackboard)
25- According to my experience I would take another online course if relevant to my learning needs.	0.842				
24- Learning outcome can be met by online learning.	0.840				
21- The Blackboard is free from technical problems.	0.814				
22- It is easy to access the Internet needed for my studies.	0.743				
23- It is possible to communicate with my colleagues and instructors electronically.	0.713				
20- The Blackboard is user-friendly.	0.679				
19- The Blackboard supported different tools (video, text, audio, multimedia, etc.)	0.649				
16- The Blackboard is easy to use.	0.329				
13- The assessment conducted through blackboard are organized and structured.		0.693			F3 Evaluation of assessment methods and Feedback
15- Instructor provides prompt feedback for students		0.636			
14- Instructor identifies clear criteria for evaluating students' performances.		0.593			
12- Instructor uses different assessments methods (quizzes, assignments, projects)		0.427			
3- It is possible to interact with the instructor in multiple ways.			0.795		F4 Evaluation of Student-Faculty Contact
1-The instructor encourages communication between him/her and the students.			0.749		
2-The instructor responds clearly and promptly to my questions.			0.722		
4- The instructor encourages my participation.			0.639		

Table 2. Frequency of students' satisfaction regarding factor 1(Active Learning): (n=371)

Items	Disagree	Neutral	Agree
8- Instructor uses different kinds of instructional materials.	2.4%	11.6%	86%
9- Instructor could create learning environments according to the various learning styles of students.	3.8%	9.7%	86.5%
6- Effective discussion environment is provided.	1.9%	8.4%	89.8%
7- I share information and collaborate with other Students	1.9%	9.2%	88.9%
11- Instructor could coordinate the learning activities.	2.2%	8.6%	89.2%
10- Students are engaged in interactive activities (Presentation, group discussion, assignments)	1.9%	8.6%	89.5%
5- Instructor prepares activities that enriches group work.	3.5%	8.9%	87.6%
18- The interaction and discussion with instructors and students throughout blackboard are useful.	5.7%	7.8%	86.5%
17- The learning materials are available on time.	4.3%	9.7%	86%

Table 3. Frequency of students' satisfaction regarding factor 2 [Online learning experience and the learner interface (Blackboard)]): (n=371)

Items	Disagree	Neutral	Agree
26- I would recommend online learning experience as a method of study to others.	15.6%	12.9%	71.4%
25- According to my experience I would take another online course if relevant to my learning needs.	11.1%	11.3%	77.6%
24- Learning outcome can be met by online learning.	10.2%	11.9%	77.9%
21- The Blackboard is free from technical problems.	16.4%	10.2%	73.3%
22- It is easy to access the Internet needed for my studies.	6.5%	11.6%	81.9%
23- It is possible to communicate with my colleagues and instructors electronically.	5.7%	8.1%	86.3%
20- The Blackboard is user-friendly.	5.1%	9.2%	85.7%
19- The Blackboard supported different tools (video, text, audio, multimedia, etc.)	4.3%	7.3%	88.4%
16- The Blackboard is easy to use.	4.3%	9.7%	86%

Table 4. Frequency of students' satisfaction regarding factor 3 (assessment methods and Feedback): (n=371)

Items	Disagree	Neutral	Agree
13- The assessment conducted through Blackboard are organized and structured.	5.9%	8.9%	85.2%
15- Instructor provides prompt feedback for Students	4%	9.4%	86.5%
14- Instructor identifies clear criteria for evaluating students' performances.	3%	9.4%	87.6%
12- Instructor uses different assessments methods (quizzes, assignments, projects)	2.2%	7%	90.8%

Table 3 shows that most of the students (88.4%) agreed that the Blackboard supported different tools (video, text, audio, multimedia. This can enhance the engagement of the students by covering different learning styles. In addition, 86.3% of the students agreed that they could communicate easily with their colleagues and instructors electronically using Blackboard. 16.4% of the students stated that Blackboard had some technical problems.

Table 4 shows that 90.8% of the students emphasized that the instructor used different assessments methods (quizzes, assignments, projects) through Blackboard. 78.6% of the students confirmed that their instructors identified clear criteria for evaluating students' performances. Additionally, 86.5% of the students confirmed that they receive prompt feedback after assessment.

Table 5 shows that most of the students agreed that the instructors encouraged students' participations during the sessions and fostered the communication between students and instructors.

Table 6 shows that the questionnaire items consisted of six factors and 26 items. Regarding Factor 1 (Evaluation of Blackboard system Quality), 97.9%, of the staff members agreed that the Blackboard is user-friendly. In addition, 95.8%, of the staff agreed that the Blackboard enables the staff to accomplish task quicker, easy to navigate, and provides high-speed information access, Furthermore, 93.8% of the staff agreed that the Blackboard has attractive features.

Table 5. Frequency of students' satisfaction regarding factor 4 (Student-Faculty Contact): (n=371)

Items	Disagree	Neutral	Agree
3- It is possible to interact with the instructor in multiple ways.	3.8%	7.5%	88.7%
1-The instructor encourages communication between him/her and the students.	2%	5.4%	91.6%
2-The instructor responds clearly and promptly to my questions.	3.8%	6.5%	89.8%
4- The instructor encourages my participation.	2.2%	7.8%	90%

Table 6. Frequency of faculty staff members' satisfaction of the VLE using Blackboard (n=48)

	Items	Disagree	Neutral	Agree
A. Evaluation of Blackboard system Quality				
1	The Blackboard is user-friendly.	**0%**	**2.1%**	**97.9%**
2	The Blackboard has attractive features that appeal to me.	**0%**	**6.3%**	**93.8%**
3	The Blackboard enables me to accomplish task quicker.	**0%**	**4.2%**	**95.8%**
4	The Blackboard is easy to navigate.	**0%**	**4.2%**	**95.8%**
5	The Blackboard provides high-speed information access.	**2.1%**	**2.1%**	**95.8%**
B. Evaluation of Blackboard IT team				
6	The Blackboard IT team is prompt in responding to my queries.	**0%**	**6.3%**	**93.8%**
7	The Blackboard IT team is available in case I have a technical problem.	**0%**	**2.1%**	**97.9%**
8	The Blackboard IT team is willing to help whenever I need support.	**0%**	**6.3%**	**93.8%**
9	The Blackboard IT team gives users individual attention.	**0%**	**4.2%**	**95.8%**
C. Evaluation of interaction with students via Blackboard				
10	My students are actively involved in their online learning.	**0%**	**18.8%**	**81.3%**
11	I do not have any problems controlling my students in the online environment.	**0%**	**20.8%**	**79.2%**
12	My students are very active in communicating with me regarding online course matters.	**4.2%**	**10.4%**	**85.4%**
13	My online students are more enthusiastic about their learning than their traditional counterparts.	**10.4%**	**27.1%**	**62.5%**
14	I am satisfied with the use of communication tools in the Blackboard (e.g., chat rooms, threaded discussions, etc.).	**0%**	**12.5%**	**87.5%**
D. Evaluation of resources management				
15	I have a higher workload when teaching an online course as compared to the traditional one.	**20.8%**	**39.6%**	**39.6%**

	Items	Disagree	Neutral	Agree
16	I have to be more creative in terms of the resources used for the online course.	**0%**	**4.2%**	**95.8%**
17	My students use a wider range of resources in the online setting than in the traditional one.	**6.3%**	**14.6%**	**79.2%**
E. Evaluation of Blackboard user satisfaction				
18	I am more satisfied with teaching online as compared to other delivery methods.	**4.2%**	**27.1%**	**68.8%**
19	I am content with the presentation of my courses using Blackboard.	**0%**	**10.4%**	**89.6%**
20	I would recommend the use of Blackboard more often for other courses as well.	**0%**	**20.8%**	**79.2%**
21	I look forward to teaching my next online course.	**0%**	**18.8%**	**81.3%**
F. Evaluation of the virtual teaching benefits				
22	The virtual teaching is time-saving.	**0%**	**8.3%**	**91.7%**
3	The virtual teaching enhances my teaching skills.	**4.2%**	**12.5%**	**83.3%**
24	The virtual teaching helps me improve my job performance.	**4.2%**	**4.2%**	**91.7%**
25	The virtual teaching contributes to my career success.	**0%**	**12.5%**	**87.5%**
26	The flexibility provided by the online environment is important to me.	**0%**	**4.2%**	**95.8%**

Concerning Factor 2 (Evaluation of Blackboard IT team), 97.9% of the staff agreed that the Blackboard IT team is available in case there is any technical problem. In addition, 95.8% of the staff agreed that the Blackboard IT team gave users individual attention. Regarding Factor 3 (Evaluation of interaction with students via Blackboard), 87.5%% of the staff satisfied with the use of communication tools in the Blackboard (e.g., chat rooms, threaded discussions, etc.). In addition, 85.4% of the staff emphasized that their students were very active in communicating with them throughput Blackboard. However, 10.4% of the staff emphasized that the students were less enthusiastic about virtual learning.

Concerning Factor 4 (Evaluation of resources management), 95.8% of the staff agreed that they have to be more creative in terms of the resources used for the online course, and only 39.6% of the staff emphasized that they have a higher workload when teaching an online course as compared to the traditional one. Regarding Factor 5 (Evaluation of Blackboard user satisfaction), 89.6% of the staff satisfied with the presentation of their courses using Blackboard and 81.3% of the staff were looking forward to teaching their next online course.

Finally, regarding Factor 6 (Evaluation of the virtual teaching benefits), 95.8% of the staff enjoyed the flexibility provided by the online environment. Additionally, 91.7% of the staff agreed that the virtual teaching is time-saving and it helps them improve their job performance.

4. DISCUSSION

E- Learning is being widely adopted to deliver educational elements of different courses during COVID-19 crisis. As the students and faculty staff members are the main stakeholders of the institution so, the students' and faculty staff members' satisfaction and perceptions towards the VLE is important factor to estimate the effectiveness of this approach. The purpose of this study was to assess the students' and faculty staff members' satisfaction with VLE using Blackboard.

To assess students' perception towards VLE with a high degree of trust, it is essential to ensure the proper psychometric properties. So, in this study, the psychometric properties of students' instrument were measured. The overall Cronbach's alpha for the total items of students' questionnaire was 0.973. This result indicates adequate internal consistency (reliability).

In addition to that the analysis of the results revealed that the 26 items of the questionnaire resulted in 4 factors which are Active Learning, Evaluation of the online learning experience and the learner interface (Blackboard), Evaluation of assessment methods and Feedback Evaluation of Student-Faculty Contact. These findings were consistent with previously conducted study at University of Bisha to measure the students' perceptions and attitudes towards Blended learning where the internal consistency

(reliability) of the used questionnaires was 0.79 [7]. Taken together, the findings in the current study indicate that the used questionnaire has a high reliability and acceptable evidence of construct validity.

The current study findings revealed that most of the students agreed that effective discussion was provided virtually using the Blackboard. In addition, most of the students satisfied with the role of the instructors in coordinating the virtual learning activities. These findings were inconsistent with a study conducted on Polish medical students where they reported that they are less active during e-learning than during traditional classes [8]. These findings highlighted the importance of students' awareness and orientation about VLE, for that students at FCMS have annual orientation about using Blackboard and interactive teaching strategies through Blackboard that made students more satisfied about Blackboard activities.

It was noticeable also that most of the students agreed that the Blackboard supported different tools (video, text, audio, multimedia). This can enhance the engagement of the students by covering different learning styles. In addition, most of the students agreed that they could communicate easily with their colleagues and instructors electronically using Blackboard, these findings were comparable with a study conducted at Taif University to investigate benefits of Blackboard as perceived by learners and this study revealed that students prefer learning via different tools using Blackboard [9]. This high percent of students' satisfaction reflects that different tools offered through Blackboard are suitable for different students learning styles.

Moreover, the current study showed that most of the students emphasized that the faculty staff members used different assessments methods (quizzes, assignments, projects) through Blackboard and identify clear criteria for evaluating students' performances with prompt feedback after assessment. These findings were contradictory to a study conducted in Mississippi State University where students' perceptions of the quality of online education were examined and showed that students had some factors that contributed to student' negative experiences like delayed feedback from instructor; unavailable technical support from instructor, lack of self- regulation and self-motivation, sense of isolation, monotonous instructional methods, and poorly-designed course content (Yang and Cornelius 2004). These finding reflected structured orientation program given to FCMS staff that enhance their capabilities in using Blackboard and this indirectly improve the student satisfaction about the delivery of the online courses.

Regarding faculty staff members' satisfaction of the VLE using Blackboard, the current study showed that most of the staff were satisfied with the four factors of the questionnaire which are Evaluation of Blackboard system Quality, Evaluation of Blackboard IT team, Evaluation of interaction with students via Blackboard and Evaluation of resources management and theses results were consistent with the study results of the University of South Africa where the results showed that VLE helped to develop the staff digital skills and motivated them to design online learning courses (MOLOTSİ 2020).This reflects the proper structure orientation and hands on training given to FCMS staff to enable them using Blackboard in proper way and enhance their digital skills.

5. CONCLUSION

The COVID-19 pandemic led to the suspension of all educational activities in Saudi institutions and Worldwide, resulting in an abrupt move from traditional face-to-face learning to online learning. This study investigates how virtual learning using Blackboard in medical colleges is changing the teaching and learning processes after COVID-19 in Saudi Arabia. The current study results showed that both students and faculty staff members were satisfied about VLE using Blackboard. The high percent of satisfaction results from proper and structured orientation program conducted for students and staff at FCMS.

CONSENT

As per international standard or university standard, Participants' written consent has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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