Evaluation of Blackboard Use by Faculty Members at Umm Al-Qura University During the COVID-19 Pandemic

Deena Alghamdi

Umm Al-Qura University
Makkah, Kingdom of Saudi Arabia

Abstract
Blackboard provides a collaborative environment for teaching in terms of assessment and communication and can improve learning outcomes. To evaluate the Blackboard use of faculty members at Umm Al-Qura University, data were collected from two channels: statistical reports issued by the university and an online questionnaire. The questionnaire survey respondents were 187 faculty members from all colleges in the university. The findings show that most faculty members did not use Blackboard before the pandemic; therefore, the sudden conversion to the use of Blackboard required intensive training courses. In addition, accompanying Blackboard use with other applications such as WebEx is preferable, especially for administrative tasks such as departmental board meetings and seminars.

Keywords:
Blackboard, COVID-19, faculty member, Umm Al-Qura University

1. Introduction

Information technology has rapidly developed and revolutionised some aspects of life, such as teaching and learning practices in educational settings. In higher education, e-learning systems such as Blackboard (BB) have increased significantly in quantity and quality over the years, as a previous study has revealed [1]. Blackboard Inc., working in concert with more than 2,600 client institutions and technology partners, develops, licences, and supports enterprise software applications for the education market. One of the important services provided by BB is Blackboard Collaborate, which is a convenient, simple, and reliable web conferencing solution designed for training and education. BB was launched at Umm Al-Qura University on 18 November 2018 [2]. Since then, it has been used by some faculty members. During the second term of the academic year 2019–2020, a lockdown was imposed on 9 March 2020 because of the coronavirus disease (COVID-19) outbreak. All faculty members at the university converted to online learning entirely, including all classes, assessments, and exams.

The purpose of this research was to evaluate faculty members' use of BB during the pandemic. At Umm Al-Qura University, 4987 faculty members [3] work in five different divisions: Humanities and Educational Sciences, Religion and Administration, Life Science and Engineering, Medicine, and the First Common Year.

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2. Related Works

BB's suite of applications has been designed to deliver a flexible and customisable e-education system.

A previous study [2] in 2007 was conducted in Saudi universities that used BB at that time. The results showed that only six universities, or 43% of Saudi universities, used online course management systems such as BB, namely King Saud University, King Fahad University, King Abdul-Aziz University, King Khaled University, King Faisal University, and Umm Al-Qura University. Umm Al-Qura University did not offer online courses at that time but had a licence to use BB. The technical barriers were the main reasons BB was not used in 2007, as mentioned in the study. The slow spread of the use of BB is mainly because of the obstacles that faculty members face in using it, according to a previous study [3] conducted in 2014 at some Saudi universities, including King Saud University, King Khaled University, and Taif University. The faculty members reported that they found BB easy to use but still needed to learn more about it. Of the faculty members, 41% had problems with the use of BB because of their inexperience with technology in general and with BB in particular. Therefore, to improve the use of BB in Saudi universities, training courses must be provided first for both students and faculty members. In addition, 29% of faculty members had problems with administrative tasks that were not fully supported by BB.

In e-education, BB offers several online educational advantages such as addressing teacher shortages by using virtual classrooms and video meetings. Blackboard Collaborate is useful when students are absent, as recorded lectures can be reviewed according to the student's level of understanding [5]. As for the disadvantages of BB, some students prefer traditional classroom lectures because they feel more secure interacting with their teachers face-to-face [5]. Other problems with the use of BB include the inability to use educational materials over the Internet, slow network

connectivity [6], and writing mathematical equations. In addition, if one of the objectives of the lectures is to provide students with many skills such as those that require a complex combination of physical movement and psychological processes, these skills are difficult to teach in BB [1].

3. Research Design

The purpose of this research was to evaluate the BB use of faculty members during the pandemic. The study focused on answering the following questions:

RQ1: What are the problems that academics faced while using BB during the pandemic?

RQ2: Is there any relationship between these problems and academics' previous experiences in using BB?

RQ3: How would this experience influence the teaching process in the future?

To answer these questions, data were collected in two ways: i) by reviewing statistical reports published by Umm Al-Qura University and ii) by conducting an online questionnaire survey.

3.1 Statistical reports

Many online reports have been issued by the different divisions and departments at Umm Al-Qura University, such as the Deanship of Information Technology and the Deanship of e-Learning and Distance Education. These statistical reports [7] [8] [9] recorded the BB use of faculty members.

3.2 The questionnaire used

An online structured questionnaire was created using Google Forms. It was distributed to and completed by eligible participants. The respondents to the questionnaire survey were faculty members of Umm Al-Qura University. The questionnaire took 10 to 15 minutes to complete and was comprised of four sections: the first section indicated the respondent's age, gender, and faculty name. The second section was about BB use before the pandemic, while the third section was about BB use during the pandemic. Finally, the last section was about expectations for BB use in the future.

The questionnaire was released 6 weeks after the start of the lockdown and after the conversion to online education with BB use at Umm Al-Qura University, which allowed us to collect responses and data from the participants that reflected their situation at that time.

After collecting the responses, the data were entered into a computer and processed using the Statistical Package for the Social Sciences (SPSS V.20). SPSS is a widely used programme for statistical analysis in the social sciences. It is also used by market researchers, health researchers, survey companies, governments, education researchers, marketing organisations, data miners, and others. Moreover, to find answers to research questions, descriptive statistics and chi-square tests have been used. Descriptive statistics are used to describe the basic features of the data in a study. Meanwhile, the chi-square test is a statistical test used to compare observed results with expected results. The purpose of this test is to determine whether the difference between the observed and expected data is due to chance or to a relationship between the variables being studied.

4. Findings

Here are the findings from the reports and questionnaire:

4.1 Findings from the reports

The reports showed that BB was used by some faculty members before the pandemic. As shown in Figure 1, before 9 March, the maximum number of Blackboard Collaborate class sessions in a day can reach only 337, the maximum number of attendees in a day not exceeded 1907, and the maximum number of recordings in a day was only 26. However, these numbers increased to 21512, 38447, and 810, respectively, on 9 March. The use of BB remained high during the term until the end of the term in May for a few weeks and increased again by the beginning of the next term in June until it ends in August.

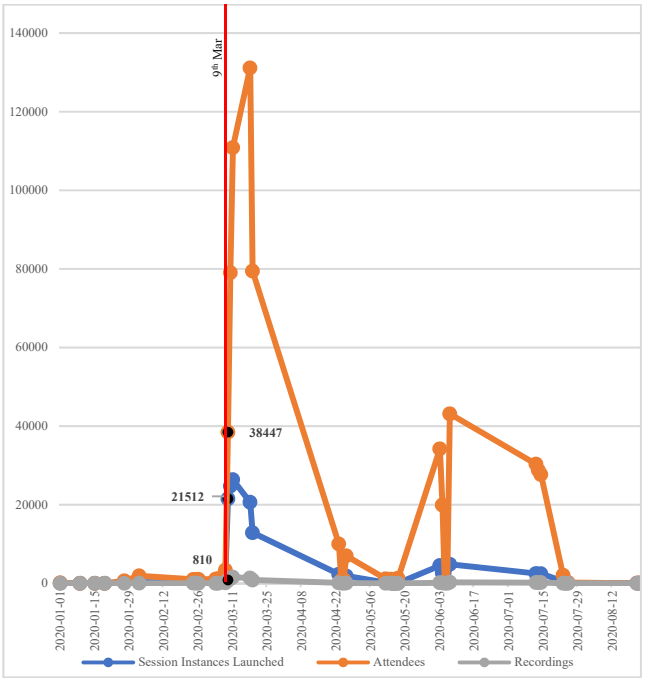

Figure 1: The use of Blackboard Collaborate in classes.

In addition, Figure 2 shows that the use of other services

provided by BB followed the same pattern where before 9 March, the number of logins to BB was only 4357, the number of assessments uploaded was 741, and the number of course documents used was 17383, whereas on 9 March, these numbers increased to 35559, 3383, and 76134, respectively.

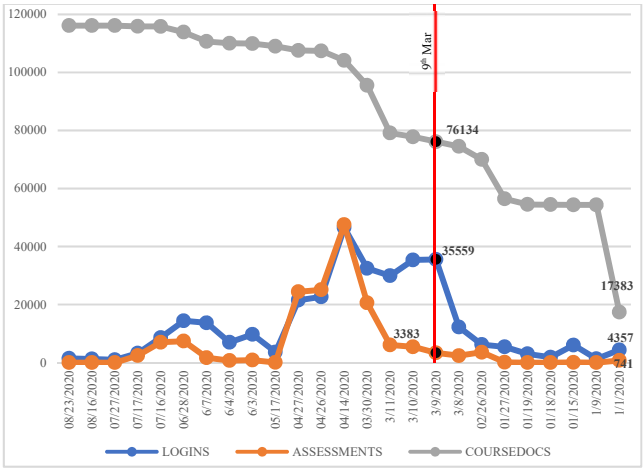

Figure 2: The use of other BB services.

As BB was not used by all faculty members before the pandemic, intensive training online courses were provided to them during the first month of the pandemic. In addition, the use of Cisco WebEx Meeting, which is one of the most popular video conferencing services in the world and offers highly secure integrated audio, video, and shared content from the Cisco WebEx cloud, was also suggested. One of the reports suggested that faculty members use it along with BB for administrative meetings (permanent committees, departmental boards, and advisory bodies) and student meetings (office hours, events, and seminars). The training plan also included courses on the use of WebEx. As shown in Figure 3, the plan was divided into (A) BB and WebEx courses for faculty members who were teaching only and (B) WebEx-only courses for faculty members who held administrative positions.

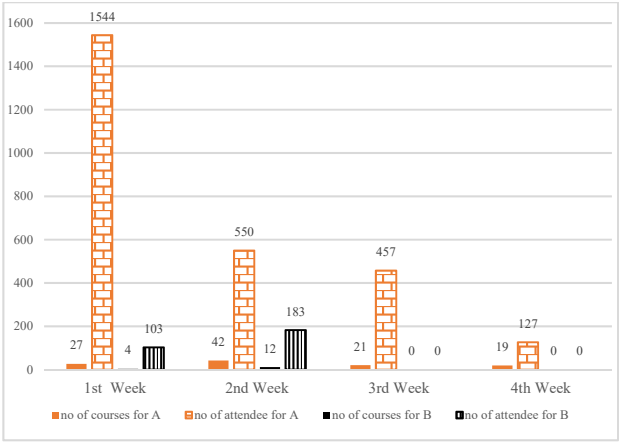

Figure 3: Training plan.

4.2 Findings from the questionnaire

The questionnaire respondents were 187 faculty members, most of whom were females as shown in Figure 4.

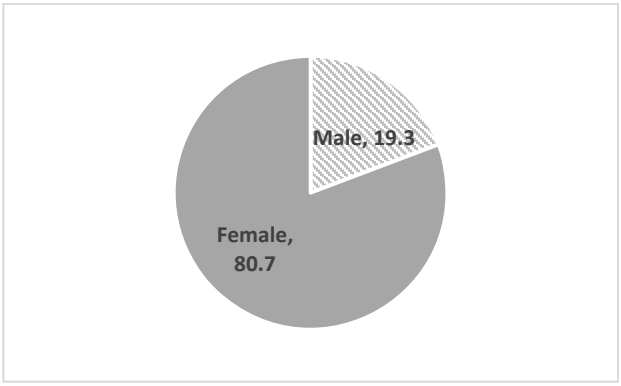

Figure 4: The percentages of responses from male and female respondents.

The highest response rate was from academics from the colleges of Humanities and Educational Sciences (36% of the responses), as shown in Figure 5, whereas only 1% of the responses were from academics in medical colleges.

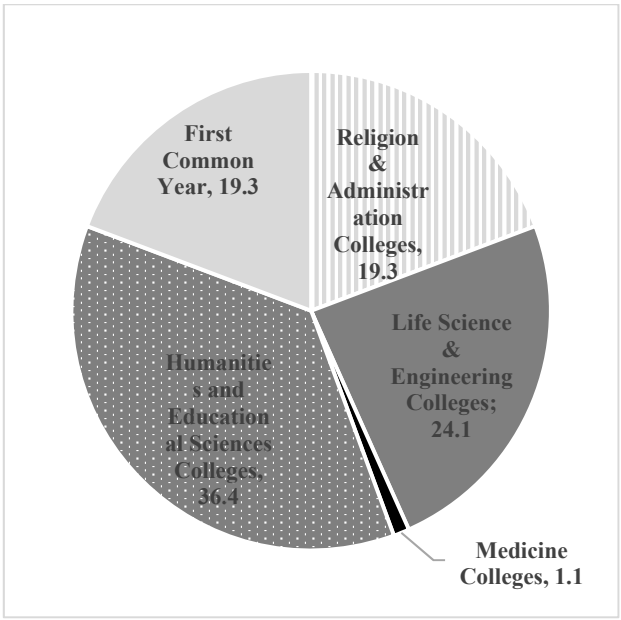

Figure 5: Response rates in different colleges.

Figure 6 shows that 41% of the faculty members who participated in the questionnaire survey took one or two BB training courses before the pandemic, 16% took more than two courses, and 43% never attended a BB training course.

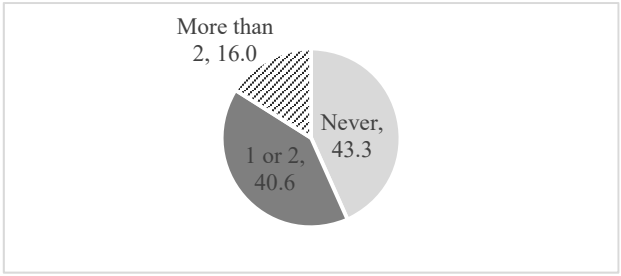

Figure 6: Training courses taken before the pandemic.

4.1 Academics' experience of using BB

In the questionnaire, academics were asked about their use of BB before and during the pandemic.

Use of BB	Before the pandemic		During the pandemic	
	Frequency	Percent	Frequency	Percent
Never	102	54.5	17	9.1
Occasionally	75	40.1	0	0
Always	10	5.3	170	90.9
Total	187	100.0	187	100.0

Table 1: Experience of using BB.

As shown in Table 1, 55% of the academics did not use BB before the pandemic, but this percentage decreased to 9.1% during the pandemic. In addition, only 10 academics (5.3%) relied entirely on BB as a teaching tool before the pandemic. However, during the pandemic, this number increased to 170 teachers (90.9%). Seventeen academics (9%) reported that they did not use BB during the pandemic and instead used other applications such as WebEx, Zoom, Telegram, and Microsoft Teams. Their reason was either because these applications suited their administrative tasks or IT problems occur because BB was used by many students at the same time which cause lagging.

Figure 7 presents the changes in the percentage of the academics who used the different BB services.

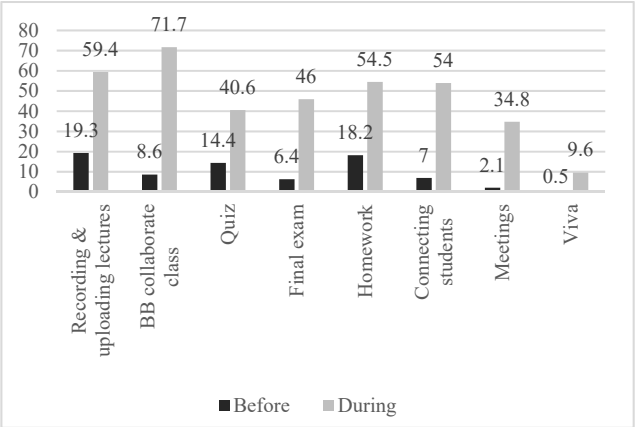

Figure 7: The different BB services used.

4.2 Problems with the use of BB

Academics were asked in the questionnaire about the different problems they might have had while using BB.

Descriptive Statistics			
Problem	**Mean**	**Rank**	**Problem level**
Low experience level in BB	1.500	14	L
I have to learn how to use BB from online courses in a short time	1.441	18	L
I have to learn how to use BB by asking other people in a short time	1.565	12	L
My voice goes on and off during Blackboard Collaborate classes	1.876	8	M

The Internet connection goes on and off during Blackboard Collaborate classes	1.718	11	M
I miss interacting with my students during classes	2.006	6	M
Students repeatedly log in and out from Blackboard Collaborate classes because of IT problems	2.282	1	M
I cannot tell if students are focusing	2.194	3	M
I cannot be sure if students themselves or someone else is attending the class/exam	1.829	9	M
My Internet connection is weak	1.500	15	L
I do not have a PC	1.118	23	L
I do not have a certain area at home that is conducive for online teaching	1.312	22	L
Record lectures on BB	1.447	17	L
Create exams on BB	1.494	16	L
Correct exams on BB	1.329	21	L
Correct homework on BB	1.441	19	L
More effort in creating exam questions to avoid cheating	1.888	7	L
High possibility of cheating on exams	2.253	2	L
High possibility of IT problems during exams	2.165	4	L
Students have low experience levels in BB	2.100	5	M
Noises in the background	1.771	10	M
Cannot get help from an IT support team when problems occur	1.382	20	L
Adding a student for substitute exams	1.518	13	L

Table 2: Problems while using BB. (L: low, M: moderate)

As shown in Table 2, none of the problems was considered a high-level problem, as they were either moderate or low. 'Students repeatedly log in and out from Blackboard Collaborate classes because of IT problems' is ranked No. 1 (problem level: moderate), probably because of the huge number of students using BB at the same time. The No. 2 problem was 'High possibility of cheating on exams' (problem level: moderate), which is a natural consequence of online teaching, where students cannot be monitored during exams.

On the other hand, 'I do not have a certain area at home that is conducive for online teaching' ranked No. 22 (problem level: low), and 'I do not have a PC' ranked No. 23 (problem level: low) as the least identified problems, which indicates that academics have PCs and certain workstations at home designated for online teaching.

4.3 Relationship between previous experience with BB and problems encountered during the use of BB

Chi-square tests were used to determine whether a relationship exists between the academics' experience of using BB before the pandemic and the problems they had while using it during the pandemic.

Chi-square Tests		
Problem	**Chi-square**	**P-value**
Low experience level in BB	3.54	0.472
I have to learn how to use BB from online courses in a short time	2.26	0.687
I have to learn how to use BB by asking other people in a short time	5.08	0.279
My voice goes on and off during Blackboard Collaborate classes	4.78	0.310
The Internet connection goes on and off during Blackboard Collaborate classes	3.40	0.940
I miss interacting with my students during classes	2.29	0.682
Students repeatedly log in and out from Blackboard Collaborate classes because of IT problems	1.81	0.770
I cannot tell if students are focusing	3.88	0.423
I cannot be sure if students themselves or someone else is attending the class/exam	2.29	0.682
My Internet connection is weak	1.43	0.838
I do not have a PC	8.58	0.072

I do not have a certain area at home that is conducive for online teaching	2.38	0.666
Record lectures on BB	6.77	0.148
Create exams on BB	4.98	0.290
Correct exams on BB	5.76	0.218
Correct homework on BB	0.477	0.976
More effort in creating exam questions to avoid cheating	3.97	0.409
High possibility of cheating on exams	1.72	0.786
High possibility of IT problems during exams	1.58	0.812
Students low experience level in BB	3.18	0.528
Noises in the background	4.52	0.340
Cannot get help from an IT support team when problems occur	9.47	0.051
Adding a student for substitute exams	1.26	0.869

Table 3: Experience and problems. (The p-value is for the use of BB before the pandemic.)

As shown in Table 3, the results of the chi-square tests were not statistically significant, which indicates that no relationship exists between the experience of using BB before the pandemic and the problems during the use of BB.

4.4 Use of other applications

In the questionnaire, academics who used BB during the pandemic were asked if they also used other applications.

	Frequency	Percentage
BB was enough, and I did not use other applications	111	59.4
BB was good, but I used other applications	59	31.6
Total	170	90.9

Table 4: Use of other applications.

As shown in Table 4, 59% of the academics used BB during the pandemic and did not use other applications, as they did not have to, and 32% used the other applications presented in Table 5, of whom 46% used WebEx.

Application	Frequency	Percentage
WebEx	27	0.46
Zoom	20	0.34
Google	3	0.05
Email	6	0.10
WhatsApp	18	0.31

Table 5: Supported applications.

4.5 Expectations for using BB in the future

After experiencing online learning and using BB during the pandemic, academics have been asked about their usage of BB in the future:

Use of BB in the future	Frequency	Percent
I will use it with traditional teaching methods	154	82.4
I will use only traditional teaching methods	7	3.7
I will use BB only	9	4.8
Total	170	90.9

Table 6: Use of BB in the future.

As shown in Table 6, only 4% of the academics expressed that they will not use BB in the future when they teach and that they prefer to go back to the use of the traditional methods of teaching. However, 5% will rely entirely on BB for teaching in the future. Between these two groups, 82% of the academics reported that they will combine BB with the traditional methods of teaching, which will allow them to benefit from the use of the two teaching tools.

5. Discussion

As previously mentioned, the study focused on answering three questions.

5.1 First research question

The first question concerned the problems faced by academics while using BB during the pandemic. According to the findings of this study, before the pandemic BB was used by only some of the faculty members.

As presented in Figure 1, before 9 March, the maximum number of Blackboard Collaborate class sessions was 330, and the maximum number of attendees reached 3000. Therefore, one of the problems is the urgent need to provide intensive training courses for faculty members who have not used BB before. Another problem is that students repeatedly log in and out from Blackboard Collaborate classes, probably because of the huge number of students using BB at the same time. The problem of the high

possibility of cheating on exams is a natural consequence of online teaching, where students cannot be monitored during exams. Faculty members can partially solve this problem by choosing exam questions that hardly allow cheating.

5.2 Second research question

The second research question is about whether a relationship exists between the above-mentioned problems and the academics' previous experience of using BB. The problem of the low frequency of BB use by faculty members was solved by the intensive training online courses provided to them during the first month of the pandemic (Figure *3*). Meanwhile, the chi-square test mentioned in section 4.3 revealed that no relationship exists between the experience of using BB before the pandemic and the second and third problems mentioned in the previous section.

5.3 Third research question

The third question concerned the influence of the shift to online learning and the use of BB during the pandemic on the teaching process in the future. The findings imply that this experiment encouraged most of the academics to try new teaching methods such as the use of online applications. The present data show that 87% of the participating academics will continue using BB in the future. However, it is preferable to use other applications such as WebEx for administrative tasks and seminars.

6. Conclusion

BB provides an environment for teaching, assessment, and communication and has the capacity to improve learning outcomes. It will help academics exceed their goals for teaching and learning through its ease of use and open architecture. Umm Al-Qura University offers many applications with different features but with the same ease of access and assistance capability for all students and academics. However, it is important to prepare all the end users of these applications, students and academics, and to train them in using these applications and their different features. By doing so, students and academics can benefit from both traditional and online learning to improve their learning experiences.

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Deena Alghamdi received a degree in B.Sc. in Computer Science from King Abdulaziz University (KSA) in 2004, a degree in M.Sc. in Computer Security from Birmingham University (UK) in 2010, and a degree in D.Phil. in Computer Security and Human-Computer Interaction from Oxford University (UK) in 2018. She is currently an assistant professor at Umm Al-Qura University (UQU-KSA). Her research interests include computer user practices and computer security and privacy. She was the deputy of the Banking and Financial Markets Department at UQU from 2019 to 2021. Currently, she is the general supervisor of the Documents and Archives Center at UQU.