

# The Use of Blackboard by Students During the COVID-19 Pandemic

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## Abstract

By using the Blackboard (BB) system in the education sector, the educational process for both academics and students is facilitated. Two data resources were used to evaluate the use of the BB system by students of Umm Al-Qura University: statistical reports issued by the university and an online questionnaire. A total of 989 students from all colleges and different programmes provided by the university responded to the questionnaire survey. According to our findings, most students did not use the BB before the pandemic. Therefore, the sudden conversion to the BB system required intensive training courses. After the data analysis, the relationship between the use of the BB system before the pandemic and the problems students faced during the lockdown was revealed. The most critical issues raised by the respondents were: (1) "The voice of the lecturer went on and off during BB collaborate class", (2) "internet connection of the lecturer went on and off during BB collaborate class" and (3) "High possibility of IT problems during exams".

**Keywords:** *Blackboard, COVID-19, Students, Umm Al-Qura University*

## 1. Introduction

The reliance on the Blackboard (BB) system has become critical today. The BB system is one of the essential educational systems in our time because the academic sectors in many countries depend on it. The system is distinguished in providing all services related to the smooth running of the educational organisation. The BB system went through several transition phases until it became as it is now. The idea of this system arose at the beginning of 1996 through a group of students at Cornell University, established as a programme provider. It was then developed into an interactive educational system. Given the services available to students in the system, the educational process for the students is facilitated in the most important of them. In it, access to information is arranged and facilitated. The quality of education regarding access to academic content is also contributed to being raised by it at any time. The creation of virtual rooms for exchanging information between students and academics is also contributed by it.

BB was launched at Umm Al-Qura University on November 18, 2018 [1]. Since then, it has been used by only some academics, although not all students have used it. During the second term of the 2019–2020 academic year, a lockdown was imposed on March 9, 2020 because of the Coronavirus disease (COVID-19) outbreak. All faculty members at the university converted to online learning entirely, including all of their classes, assessments and exams.

This research aimed to evaluate the use of BB by students during the pandemic. Different programmes are offered at Umm Al-Qura University: bachelor, master, PhD, diploma and others for 95,726 students [2] in five different divisions: Humanities and Educational Sciences, Religion and Administration, Life Science and Engineering, Medicine and the First Common Year.

## 2. Related Work

The BB system is known as an educational information management tool to help educational institutions monitor the educational progress of students, raising efficiency with available services. The education sector is served by the BB system, facilitating the educational process for academics and students. The BB system has become more common in schools and universities, as it is an e-Learning administration system. In the case of good implementation, the ability to completely change the education process is expected using the BB system [3] [4]. BB architecture is becoming increasingly popular for constructing systems to solve complex problems where different kinds of knowledge and expertise are needed. The process by which solutions are built in BB systems is incremental and is based on the progressive application of a variety of knowledge to solution elements at varying levels of abstraction [5]. Despite using the BB collaborate help to solve the transportation problem for students who could not reach colleges for any reason [6], it also had some disadvantages, such as the inability to use educational materials and IT problems [7].

### 3. Research Design

This research aimed to evaluate BB use by students during the pandemic. The study focused on answering the following questions:

RQ1: What problems did students face while using the BB system during the pandemic?

RQ2: Is there any relationship between these problems and the previous experiences of the students in using the BB system?

RQ3: After passing the pandemic, would students prefer to use BB still?

Data were collected in two ways to answer these questions: i) by reviewing statistical reports published by academics at 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. In these statistical reports [3] [4] [2], the BB use by students and academics was recorded.

#### 3.2 The questionnaire used

An online structured questionnaire was created using Google Forms. It was distributed using the university email system to the students of Umm Al-Qura University. The questionnaire took 10–15 minutes to complete and comprised four sections: the first section indicated the gender, faculty, level and programme of study of the respondent. The second section was about BB use before the pandemic. The third section was about BB use during the pandemic. Finally, the last section was about expected BB use in the future.

The questionnaire was released six weeks after the lockdown and after converting classes to online education with BB use at Umm Al-Qura University. Through this process, we were allowed to collect responses and data from the participants, reflecting 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, descriptive statistics and chi-square tests were used to answer the research questions. Descriptive statistics were used to describe the basic features of the data in the study.

Meanwhile, the chi-square test was used to compare the observed results with the expected ones. This test was used to determine whether the difference between the observed and expected data was due to chance or whether there was a relationship between the studied variables.

### 4. Findings

The findings from the reports and the questionnaire were the following:

#### 4.1 Findings from the reports

It was shown in the reports that only some students and faculty members had used the BB system before the pandemic. Before March 9, 2020, the number of logins to BB was only 4,357 and the number of assessments uploaded was 741 (Figure 1). On the other hand, on March 9, 2020, these numbers increased to 35,559 and 3,383, respectively.

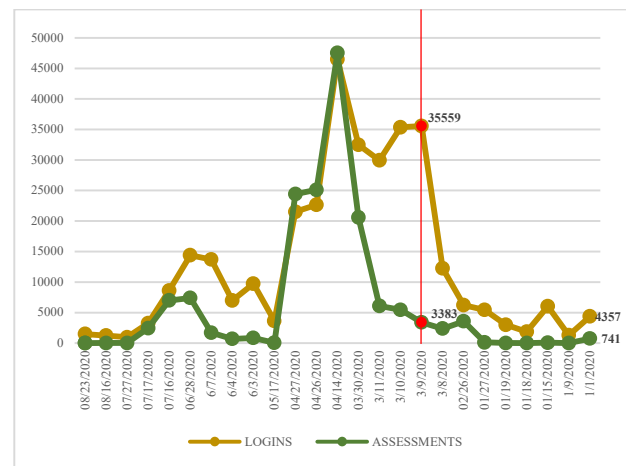


Figure 1: The BB system usage profile of the students before and after the onset of the COVID-19 pandemic.

As most students and academics did not use BB before the pandemic, intensive training online courses were provided to them during the first month of the pandemic (Figure 2). The following topics were covered in the course:

- Accessing BB.
- Uploading assignments
- Accessing BB collaborate class.

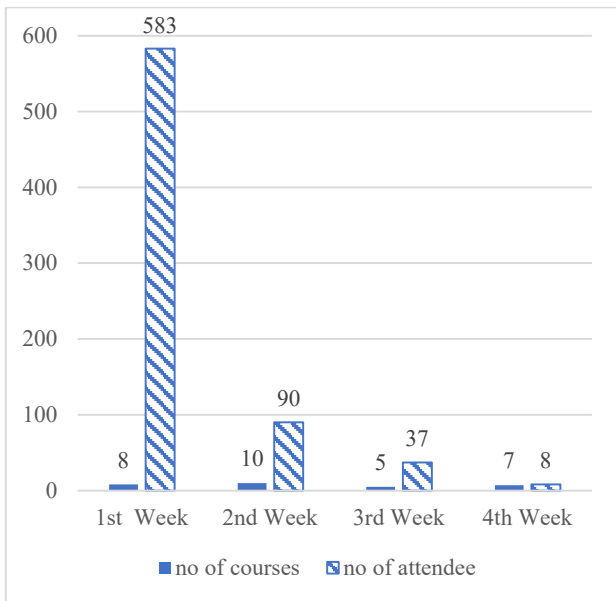


Figure 2: The training plan and the number of attendees in the BB system training course during the first weeks after the onset of the training course.

**4.2 Findings from the questionnaire**

The questionnaire respondents were 989 students. Most were female, as shown in Figure 3.

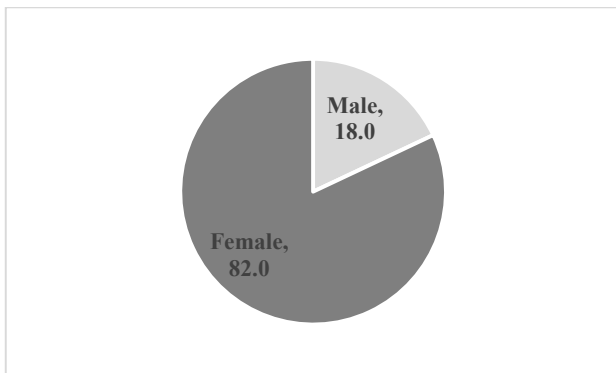


Figure 3: The gender of the respondents of the questionnaire.

The highest response rate was from students at the colleges of Religion and Administration (30% of the responses), as shown in Figure 4. Only 11% of the responses were from students in medical colleges.

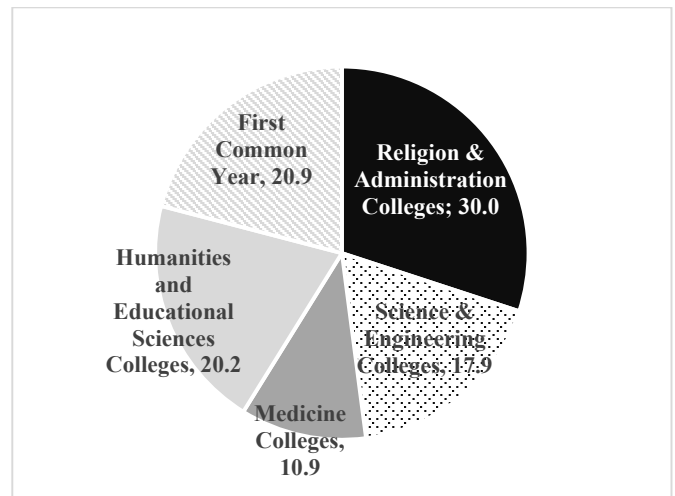


Figure 4: The colleges of the respondents of the questionnaire.

The first-year students primarily answered the questionnaire (37%; Figure 5). Students in their third year of study (18%) were the following, while only 5% of responses were from students from master’s and PhD programmes.

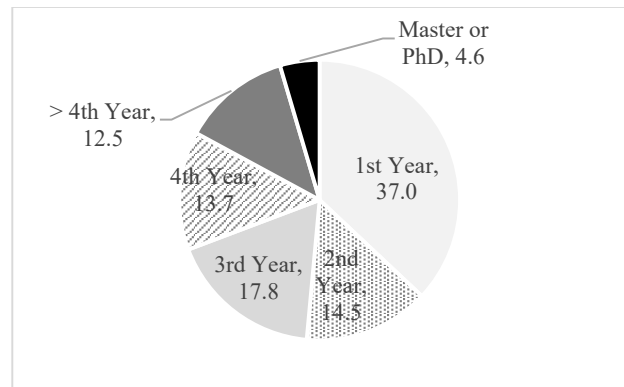


Figure 5: The level of study of the respondents.

A total of 12% of the students who participated in the questionnaire survey took one or two BB system training courses before the pandemic (Figure 6), 6% of them took more than two courses. Nonetheless, 82% never attended a BB training course.

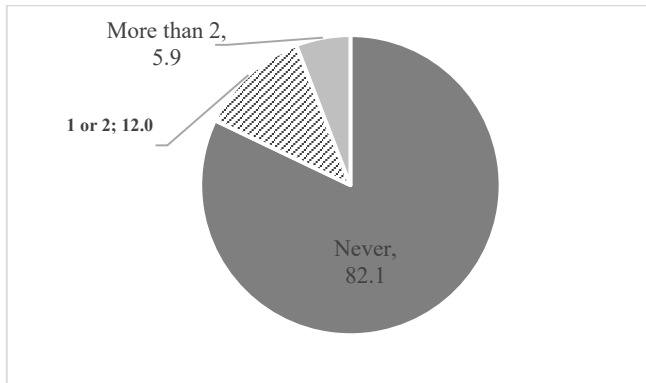


Figure 6: Students who attended training courses before the COVID-19 pandemic.

**4.1 Students experience in using the BB system**

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

Frequency of use of the BB system	Before pandemic		During pandemic	
	Frequency	Percent	Frequency	Percent
Never	408	41.3	95	9.6
Occasionally	490	49.5	236	23.9
Always	91	9.2	658	66.5
<b>Total</b>	<b>989</b>	<b>100.0</b>	<b>989</b>	<b>100.0</b>

Table 1: Experience and frequency of use of the BB system by the students during the COVID-19 pandemic.

The number of students who did not use BB before the pandemic was 41% (Table 1), but this percentage decreased to 9.6% after the pandemic began. Also, only 91 students (9.2%) counted entirely on BB for learning before the pandemic, but the number of students increased to 658 teachers (66.5%).

A total of 95 students (10%) reported that they did not use BB during the pandemic and reported that they used other applications instead, such as WebEx, Zoom, Telegram and Microsoft Teams. Their reasons were either because of IT problems or because many students used BB simultaneously, which caused lagging. The changes in the percentage of students who used the different BB services are shown (Figure 7).

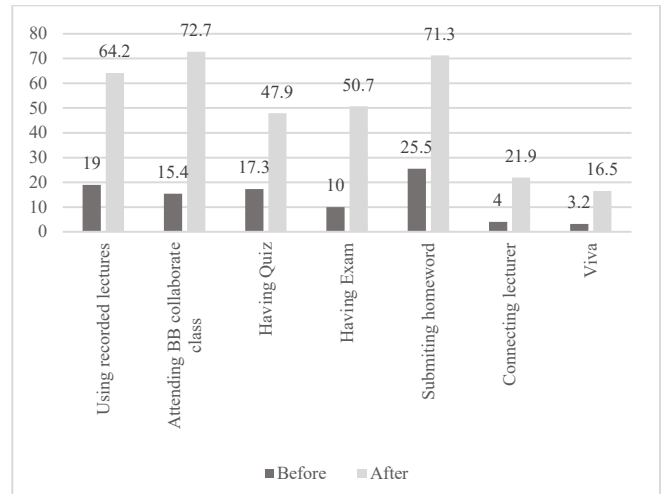


Figure 7: The use of BB services by students before and after the onset of the COVID-19 pandemic.

**4.2 Problems faced by students when using BB**

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

Descriptive Statistics			
Problem	Mean	Rank	Problem Level
I had low experience in the BB system.	1.438	13	L
I had to learn how to use the BB system from online courses in a short time.	1.225	14	L
I had to learn how to use the BB system by asking other people in a short time.	1.449	12	L
The voice of the lecturer went on and off during the BB system collaborative class.	2.283	1	M
Internet connection of the lecturer went on and off during the BB system collaborate class.	2.148	3	M
I missed the interaction with the lecturer during classes.	1.880	7	M
I was repeatedly in and out of	2.200	2	M

the BB system collaborate class because of IT problems.			
It was hard for me to focus.	2.001	5	M
My internet connection was weak.	1.938	6	M
I do not have a PC.	1.475	11	L
I do not have a specific area at home supporting online learning.	1.559	10	L
High possibility of IT problems during exams.	2.015	4	M
Noises in the background.	1.872	8	M
I could not obtain help from IT when problems occurred.	1.626	9	L

Table 2: Problems reported by the students while using BB. (L: low, M: moderate)

None of the problems stated was considered difficult to be solved (high-level; Table 2), and all of the issues were moderate or low. “The voice of the lecturer went on and off during BB collaborate class” was ranked as number one (problem level: moderate), and the reason for that could be because of the significant number of students using the BB system at the same time. At the same time, the number two problem was “I was repeatedly in and out of the BB collaborate class because of IT problems” (problem level: moderate), which would be because of an internet connection weak signal or not solving the technical problems immediately.

On the other hand, “Low experience in BB” was ranked number 13 (problem level: low) and “I have to learn how to use BB from online courses in a short time was rated no.14 (problem level: low) as the least pick problems.

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

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

Chi-square Tests		
Problem	Chi-square	p-value

I had low experience in the BB system.	30.2	*0.000
I had to learn how to use the BB system from online courses in a short time.	13.15	*0.011
I had to learn how to use the BB system by asking other people in a short time.	25.45	*0.000
The voice of the lecturer went on and off during the BB system collaborative class.	13.25	*0.010
Internet connection for the lecturer went on and off during the BB system collaborative class.	10.04	*0.040
I missed the interaction with the lecturer during classes.	1.21	0.877
I was repeatedly in and out of the BB system collaborative class because of IT problems.	8.84	0.065
It was hard for me to focus	2.67	0.614
My internet connection was weak.	1.02	0.907
I do not have a PC.	26.17	*0.000
I do not have a specific area at home supporting online learning.	16.71	*0.002
High possibility of IT problems during exams.	12.28	*0.015
Noises in the background.	4.88	0.300
I could not get help from IT when problems occurred.	8.55	0.073

Table 3: Experience and problems faced by students during the COVID-19 pandemic. (The p-value is for the use of BB before the pandemic. \*Correlation is significant at the p-value ≤ 0.05 level.)

According to the chi-square values, there were moderate relationships between the use of the BB system before the pandemic and the problems during the lockdown (Table 3). The most critical issues were “the voice of the lecturer went on and off during BB collaborate class”, “internet connection for the lecturer went on and off during BB collaborate class,” and “High possibility of IT problems during exams.” Additionally, there were statistical relationships between the use of the BB system before the

pandemic and problems during the lockdown. The most critical issues were “Low experience in BB,” “I have to learn how to use BB from online courses in a short time,” “I have to learn how to use BB by asking other people in a short time,” “I do not have a PC,” and “I do not have a certain area at home supporting online learning,” as not all students suffered from these problems. Finally, there was no relationship between the rest of the issues in the questionnaire and the students using the BB system before the pandemic.

#### 4.4 Use of other applications

Students who used the BB system during the pandemic were asked if they also used other applications in the questionnaire.

	Frequency	Percent
BB was enough, and I did not use another application	512	51.8
BB was good but I used other applications	382	38.6
<b>Total</b>	894	90.4

Table 4: Use of other applications by the students during the COVID-19 pandemic.

A total of 52% of students used the BB system during the lockdown and did not use other applications, as they did not have to (Table 4). At the same time, 38% of them used other applications (Table 5), such as WebEx, which was used by 70% of them.

Application	Frequency	Percent
WebEx	268	0.70
zoom	222	0.58
Google	10	0.03
email	17	0.04
WhatsApp	29	0.08
YouTube	5	0.01

Table 5: Other educational tools and applications used by the students during the COVID-19 pandemic.

#### 4.5 Expectations for using the BB system in the future

After experiencing online learning and using the BB system during the pandemic, students were asked if they intended to keep using the BB system in the future.

How I will use the BB system in the future	Frequency	Percent
I will only use it with traditional teaching methods.	540	54.6
I will use it only with traditional teaching methods.	199	20.1
I will only use the BB system.	155	15.7
<b>Total</b>	894	90.4

Table 6: The expected use of the BB system by the students in the future.

Only 20% of students stated that they preferred not to use the BB system in the future, going back to traditional learning methods (Table 6). Still, 16% of the students would count entirely on the BB system in the future. Finally, between these two groups, 55% of students stated that they would prefer to combine the BB system with traditional learning methods, which would allow them to use the benefits of the two learning methods.

## 5. Discussion

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

### 5.1 First research question

The first question concerned the problems faced by the students while using the BB system during the pandemic. The BB system was used by only some of the students and faculty members before the pandemic, according to our findings (Figure 1). Before March 9, 2020, the number of logins to the BB system was only 4,357 and the number of uploaded assessments was 741. Therefore, one of the urgent problems to be solved is the need to provide intensive training courses for students who have not used the BB system before. Another problem was that the lecturer went on and off during the BB collaboration class, probably because of the massive number of students using the BB system simultaneously. The problem of students repeatedly logging in and out from the BB collaborate classes likely occurred because of the massive number of students using the BB system simultaneously or because of an internet connection weak signal, or even because technical problems were not immediately solved.

### 5.2 Second research question

The second research question was whether there was a relationship between the problems mentioned above and the previous experience of the students using the BB system. The low frequency of the BB system usage by students was

solved by the intensive training online courses provided to them during the first month of the pandemic (Figure 2). Also, according to the chi-square values mentioned in section 4.3, there was a moderate statistical relationship relation between the usage of the BB system by the students before the pandemic and the problems they faced during the lockdown. The most critical issues reported by the students were “the voice of the lecturer went on and off during BB collaborate class,” “internet connection for the lecturer went on and off during BB collaborate class,” and “High possibility of IT problems during exams.”

Also, it was shown in the test that there was a low statistical relationship between the usage of the BB system before the pandemic and the problems faced by the students during the lockdown. The most critical issues reported by the students were their “Low experience in using the BB system”, “I had to learn how to use the BB system from online courses in a short time”, “I had to learn how to use BB by asking other people in a short time”, “I do not have a PC” and “I do not have a specific area at home supporting online learning”, as not all students suffered from these problems.

### 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 future teaching process. The findings imply that, as a consequence of this experiment, most students will prefer using the online BB learning system in the future. As observed among the respondents, 70% of them chose to continue using the BB system in the future.

## 6. Conclusion

The BB system is a tool for educational management and a virtual learning environment, designed to serve as a virtual learning space for displaying resources, sharing work and communicating with each other and it can be beneficial for building community and student participation. Despite some disadvantages and problems while using the BB system, it was an essential solution for the education sector during the COVID-19 pandemic. Students and academics were allowed to continue the teaching process, and the academic year was finished with no delays in using the BB system.

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