Attitude and Satisfaction of Undergraduate Nursing Students in Cairo University Toward Usage of Blackboard Learning Management System

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Abstract
Background: Blackboard learning management systems enables higher educational institutions to promote blended learning, give resources for distance learners, and incorporate technology into traditional lecture-based courses. The **Aim:** of present study was to assess attitude and satisfaction of undergraduate nursing students in Cairo University toward usage of blackboard learning management system. **Subject and Method:** An exploratory cross-sectional research design was utilized to fulfil the aim of this study. The study was conducted at faculty of Nursing, Cairo University, Egypt. A stratified random sample of 1000 undergraduate nursing students were included in the study. Data were collected using one tool includes three parts. **Results:** The study revealed a positive attitude and neutral satisfaction among undergraduate nursing students toward blackboard learning management system. **Conclusion:** The study concluded that, students' attitude and satisfaction have a significant impact in the results of teaching and learning. **Recommendations:** It is recommended to perform more training programs to improve usability of Blackboard among students, also this study should be replicated with a larger sample size and in different settings for generalization of results.

Keywords: Blackboard learning management system, Attitude, Satisfaction & Undergraduate nursing students.

Introduction

Higher education institutions are increasingly turning to Online Learning (OL) as a source of supply education **(Castro & Tumibay, 2019)**. Learning Management Systems (LMS) are becoming more common in educational institutions to facilitate OL and make learning available and accessible anywhere in the world and at any time **(Uziak, Oladiran, Lorencowicz & Becker, 2018)**.

Learning management system is a web-based software application that keeps track of learning content, student interaction, assessment tools, and learning progress and activity reports **(Kasim & Khalid, 2016).** Blackboard was initially introduced in 1997 **(Kim & Do, 2016).** This set includes three categories of E-Learning tools: interactive, resources, and assessment tools, which **(El Zawaidy, 2014)** loosely translate to communication and content functions. Its purpose is to develop totally online classes that require little or no face-to-face interaction, as well as to include online aspects into traditional face-to-face courses **(Alhussain, 2017).**

It is critical to incorporate online learning into the nursing curriculum because it gives students the freedom to learn at their own pace and in their own setting. Furthermore, it enables learners to be self-directed while still providing them with accss to the internet and the ability to download resources that are required for their educational needs. It provides students with a variety of learning tools and resources, such as text, audio, and video, as well as e-mail, online discussions, and evaluations. It is an effective tool for improving teaching and learning quality. It's a new approach of delivering education through electronic forms of information that improves the learner's knowledge **(Deci & Ryan, 2015).**

Nothing is known about students' attitude and satisfaction toward using these new devices. Understanding student characteristics, particularly Bb views and behavioural intents, could help with funding selections and distribution for computer mediated communications devices that provide the best financial return **(Elbasuony et al., 2018).**

Significance of the study

World Health Organization declared the severe acute respiratory syndrome coronavirus a pandemic on March 13, 2020, after it met epidemiological requirements and affected over 100,000 people in 100 countries. The most important public health advice was to stay at home and keep safe within it. The globe is facing an unparalleled public health disaster in a worldwide fashion, and nurses, as usual, are on the front lines. In this age of pandemic, the challenges are

even greater, and nurses have the expertise and skills to provide the care required in the various clinical scenarios that are occurring **(Morin, 2020).**

However, the epidemic is causing more than simply health problems. A significant amount of nursing work is also affected. In Egypt, as well as other countries, nursing students' participation in health-care facilities has been halted. The fast closure of schools and institutions around the world has been reported, affecting around 1.570 million pupils in 191 countries. It was critical to select how to continue the education of future nurses, thus a range of education methods, all based on distance or online learning were developed **(Veiga, 2020).**

The decision on how to continue the education of future nurses was crucial, and a variety of education methods were implemented, all of which are based on distant or online learning **(Cilliers & Niekrk, 2017).** The closure of educational activities in Egypt due to the ongoing COVID-19 pandemic resulted in shift from traditional learning to a setup that exclusively involves online learning. Blackboard LMS was introduced at Cairo University in first semester of the academic year 2019/2020. The rationale was to expand access to academic programs, to enrich the quality of teaching, and to continue the educational process during these emergency conditions imposed by the corona pandemic on Egypt and the whole world.

Students received Bb training at the beginning of the academic year and continued throughout the first semester. Students were also constantly told to go to the Bb system since study resources were being uploaded there. As a result, Bb was a key addition to the redesigned curriculum as a learning system. Faculty of Nursing implemented orientation workshops for students. Students were also constantly told to go to the Bb system since study resources were being uploaded there. It will have an impact on changes in curriculum and faculty, as well as program creation. As a result, encouraging students to utilize the Bb and achieving this goal is critical. Therefore, this study aims to assess attitude and satisfaction of undergraduate nursing students in Cairo University toward usage of blackboard learning management system, hence the continual effort to gather users' input on these technologies.

Theoretical framework

The current study's theoretical framework was based on the Technology Acceptance Model (TAM), which explains computer usage behaviour. TAM posits that perceived usefulness and perceived ease of use are critical factors in revealing information systems use **(Davis, 1989).** The following diagram depicts the study's theoretical framework, which is based on the use of the Technology Acceptance Model:
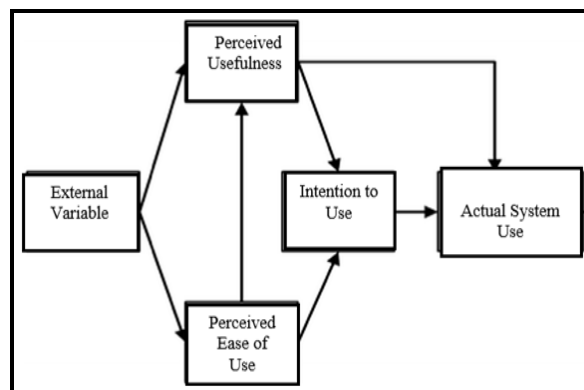

Figure. (1) Technology Acceptance Model

Definition

Undergraduate student: is a student studying at the Faculty of Nursing, Cairo University, registered in one of the four academic levels, who has an account on the electronic platform blackboard, and who passed a nursing course that was studied on the blackboard platform in the first semester and completed the study of another nursing course via the blackboard platform at the end of the academic year 2020/2021's second semester.

Aim of the Study

The aim of this study was to assess the attitude and satisfaction of undergraduate nursing students in Cairo University toward usage of blackboard learning management system.

Subject and Method

Research Questions

The following research questions are constructed to achieve the study's aim:

Q1: what is the attitude of undergraduates' nursing students in Cairo University toward usage of blackboard learning management system?

Q2: what is the satisfaction of undergraduates' nursing students in Cairo University toward usage of blackboard learning management system?

Research Design

To achieve the study's aim, an exploratory cross-sectional design was used. As stated by **(Vijayalakshmi & Sivapragasam, 2019),** a cross-sectional study is a type of observational research that looks at data from a population at a certain point in time. This method is widely employed to infer plausible connections or to collect preliminary data in order to facilitate further research and experimentation.

Setting

The study was conducted at the Faculty of Nursing, Cairo University, Egypt. The faculty was established in the academic year 1964/1965 for the enrolment of female students only as the goal was the preparation

of the professional nurse with outstanding efficiency to work within the health team in various health sectors and educational institutions.

The faculty provides bachelor's degree in general nursing sciences after four years of academic study that include both theoretical courses and practical/ clinical hospital training. Starting from the academic year 1971 an internship year was added as a prerequisite for graduation after successful completion of the four academic years of study. Students must also successfully pass this internship year before graduation. Recently in the year 2001 the faculty started to accept both genders. The Faculty includes 9 academic departments.

Sample

To fulfil the aim of study, nursing student was chosen by stratified sample. A sampling approach in which a population is divided into smaller sub-groups known as strata is referred to as stratified random sampling **(Ahn, Heo & Zhang, 2014)** In stratified random sampling, or stratification, strata are created based on shared qualities or characteristics among individuals, such as income or educational level **(Taherdoost, 2016)**

By using stratified sample the undergraduate nursing students was divided into smaller sub-groups known as strata. Sample size was (1000) undergraduate student out of (2371), 358 students in the 1st level, 255 in the 2nd level, 170 in the 3rd level and 217 in 4th level. The proportionate stratified random sample will be obtained using the following formula: (sample size/population size) x stratum size. The researcher sought a sample of 1,000 undergraduate students using academic level. The table below shows how the study sample is calculated.

Academic Level	1st Level	2nd Level	3rd Level	4th Level	Total
Number of people in stratum	850	604	403	514	2371
Strata sample size	1000/2371 x 850= 358	1000/2371 x 604= 255	1000/2371 x 403= 170	1000/2371 x 514= 217	1000

Inclusion criteria

▪ An undergraduate student who studies at the Faculty of Nursing, Cairo University.
▪ Enrolled in one of the four academic levels.
▪ Registered in a nursing course in the first and second semester of the academic year 2020/2021 and has an active account on the blackboard platform.
▪ Has used Blackboard for at least two months.

Data Collection Tool

Researchers designed data collection tool based on the technology acceptance model after examining related national and international literature. The researchers wanted to assess undergraduate nursing students' attitude and satisfaction about using Bb LMS. Five community health nursing specialists evaluated the tools for content validity. **One tool** was used to collect data:

Tool I: Blackboard electronic questionnaire to assess undergraduate nursing students' attitude and satisfaction with the use of Bb LMS. It is made up of the following three parts:

Part 1: Contains demographic data about the students.

Part 2: Measures the perceived attitude toward blackboard which was created by Liaw, Huang, and **Chen, (2007)**. It includes 30 statements with a 4 points Likert scale.

Part 3: Measures the student's satisfaction scale toward blackboard. It includes 16 statements with a 5 points Likert scale.

Validity and reliability

A team of five expert professors in the field of community health nursing reviewed the study tools. Each one of the experts on the panel was asked to examine the tools for clarity, wording, format, as well as the general look. According on the comments and recommendations of experts, certain items have been added modified and/ or omitted. Cronbach's coefficient alpha test resulted in a value more than 0.8, and test-retest reliability for nominal data was greater than 0.86.

Ethical considerations

The Institutional Research Board of Cairo University's Faculty of Nursing gave their approval. Explaining the objective and scope of the study, as well as emphasizing that participation in the study was voluntary, are all ethical considerations. Data coding was used to ensure anonymity and confidentiality. Furthermore, data will not be used in another study and data collected will be used for the purpose of this research only. Before distribution of the tool, the subjects informed that their answers will not influence their relation with the degree at the university.

Procedure

To perform the study, the Research Ethics Committee at Cairo University's Faculty of Nursing gave their official approval. A formal approval was also acquired from the dean of Cairo University's Faculty of Nursing. The researcher described the study's aim as well as the nursing students' research ethical rights prior to the start of the study. The time it takes to complete the questionnaire is between 5 and 10 minutes.

The study was carried out toward the end of the second semester of the academic year 2020/2021 on the students who passed a nursing course that was

studied on the Blackboard platform in the first semester and completed the study of another nursing course via the blackboard platform at the end of the second semester of the academic year 2020-2021 in at one of the four academic levels at faculty of nursing, Cairo University.

The nursing course was taught in a blended format in the first semester, combining traditional lectures, tutorials, and laboratories with blackboard, which was utilized for all aspects of teaching, including the distribution of teaching materials and communication with students. It was also used by students to submit all aspects of the ongoing assessment (aside from final assessments) (assignments, projects, quizzes and midterm exams). The nursing course was presented in the same manner as the first semester in the second semester.

Data were collected from all of the selected samples using a Google form (electronic questionnaire). The response was to be given by each student individually. The researcher was sent the questionnaires link to the student in the faculty of nursing via the WhatsApp groups for each study level to fill it in their free time to collect data pertinent to the study. The questionnaire was distributed to 1000 university students who met the inclusion criteria. They were invited to complete the questionnaire.

Statistical analysis

The replies were translated into SPSS Statistics version 22 for additional statistical analysis after the data gathering stage was completed. Furthermore, the Mean and Standard Deviation were used to describe quantitative quantities. Percentages were used to describe qualitative factors. The Pearson correlation test was used to evaluate the data. 0.05 was used as the significant level.

Results

Table (1): Distribution of undergraduate nursing students according to their demographic data (n= 1000).

| Items	Frequency	%
Sex:		
Male	405	40.5
Female	595	59.5
Age (years):		
Less than 20	340	34.0
From 20 to less than 22	298	29.8
From 22 to less than 24	267	26.7
24 and more	95	9.5
Mean ± SD	21.23± 1.97	
Academic level:		
First	358	35.8
Second	255	25.5
Third	170	17.0
Fourth	217	21.7
Internet facility at Home		
Yes	841	84.1
No	159	15.9
Experience in dealing with the blackboard (No. of courses):		
One	73	7.3
Two	36	3.6
Three	44	4.4
Four and more	847	84.7
Have you attended training courses for the Blackboard?		
yes	333	33.3
No	667	66.7
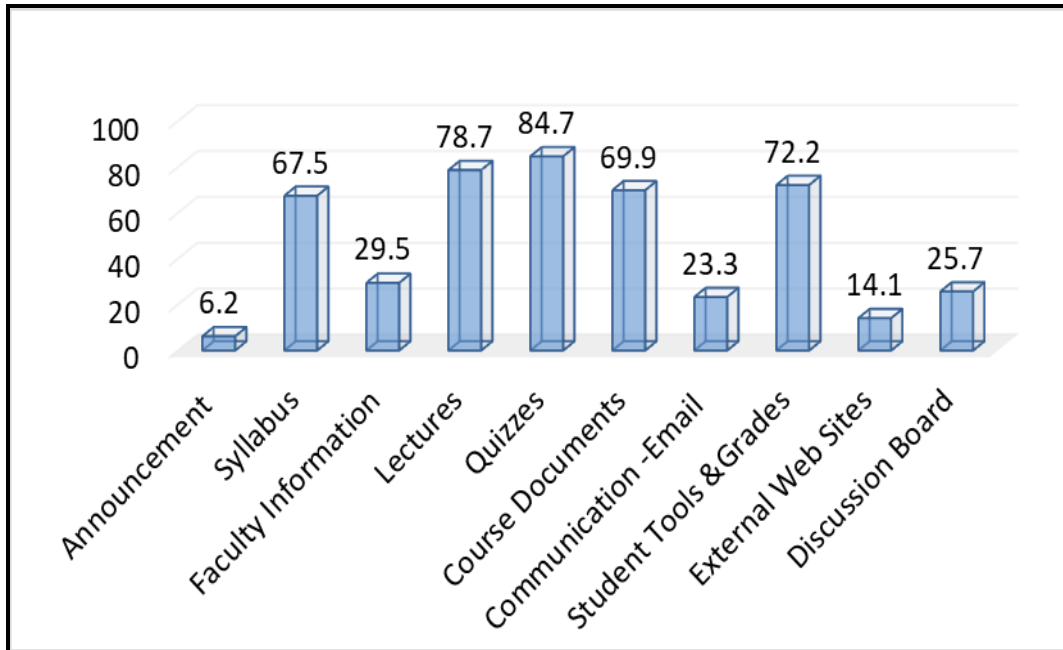
Figure (1): Distribution of undergraduate nursing students according to their usage rating toward Blackboard (n= 1000).
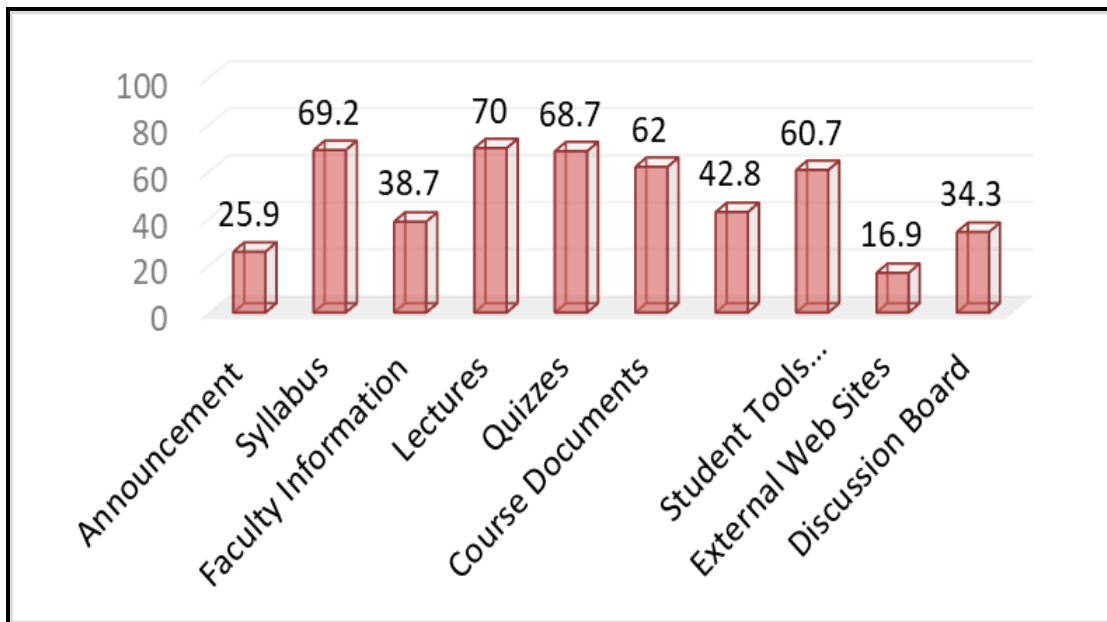

Figure (2): Distribution of undergraduate nursing students according to their Effectiveness' rating toward Blackboard (n= 1000).
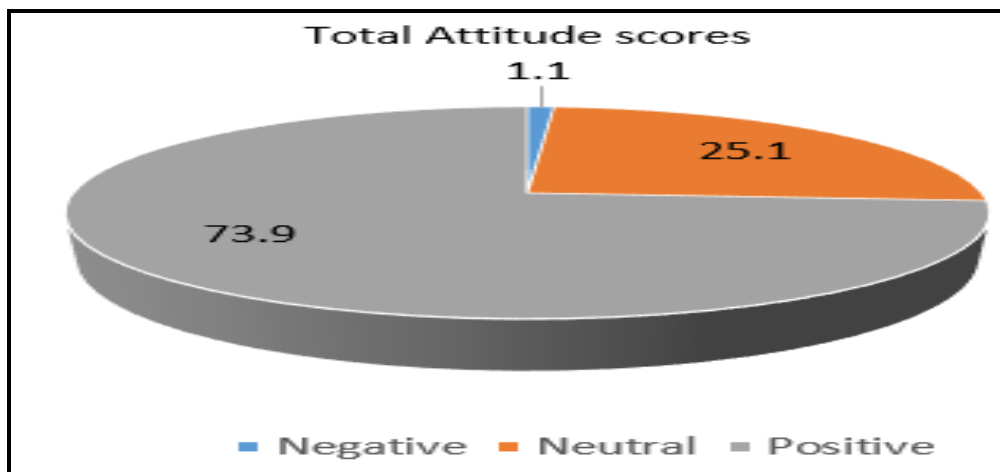
Figure (3): Distribution of undergraduate nursing students according to their total scores of perceived attitude toward blackboard usage (n= 1000).
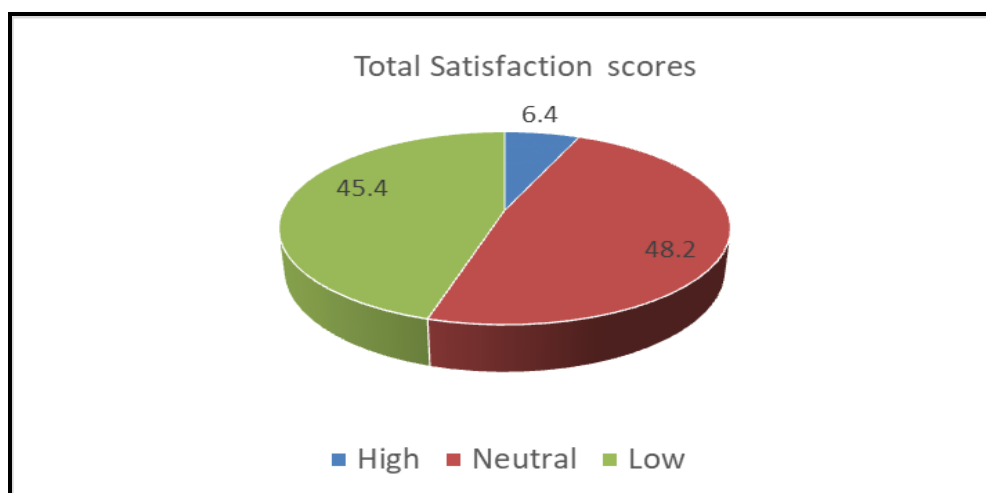

Figure (4): Distribution of undergraduate nursing students according to their total satisfaction scores toward blackboard usage (n= 1000).

Table (2): Correlation between total attitude scores and total satisfaction scores with demographic data of undergraduate students (n=1000).

Demographic data	Total Attitude		Total Satisfaction	
	r	p	r	p
Sex	.048	.162	.000	-.136**
Academic level	.006	-.095**	.957	-.002
Experience in dealing with the blackboard	.000	.121**	.332	.033

*** Correlation is highly significant at the level of ≤.01*   ** Correlation is significant at the level of ≤.05*

Table (1): Shows that, 59.5% of students were female, and 34.0% aged less than 20 years with a mean age of 21.23± 1.97 years, also 35.8% of students were first level. In relation to internet facility at home, 84.1% of students had internet facility at home, while only 15.9% of them haven't internet at home. Regarding the experience in dealing with the blackboard, 84.7% were with four courses and more. 66.7 % of students haven't attended

training courses for the blackboard, while 33.3% of them were attended training courses for blackboard.

Figure (1): Revealed that, 84.7% & 78.7% of students were used blackboard for quizzes and lectures respectively, while only 6.2% of them were used announcement.

Figure (2): Indicates that, blackboard features were effective in lectures, syllabus and quizzes by percentage of 70%, 69.2% and 68.7% respectively.

Figure (3): Revealed that, 73.9% of students had positive attitude scores toward usage of blackboard, while only 1.1% of them had negative attitude scores (1st research question answered). Figure 4 reveals that, 48.2% of students have neutral satisfaction scores toward blackboard usage, while only 6.4% of them have good satisfaction scores (2nd research question answered).

Table (2): As observed in a highly significant negative correlation was found between student's sex and their satisfaction scores, and highly significant negative correlation was found between academic level for students and total attitude scores. Also a highly significant positive correlation was found between student' experience in dealing with the blackboard and their total attitude scores.

Discussion

Regarding demographic characteristics of students, the result of the present study showed that, more than half of students were female, and one third of them aged less than 20 years with a mean age of 21.23 ± 1.97 years, also one third of students were first level. In relation to internet facility at home, more than three quarter of students had internet facility at home, while the minority of them haven't internet at home. Regarding the experience in dealing with the blackboard, the majority were with four courses and more. Two third of students haven't attended training courses for the blackboard, while one third of them were attended training courses for blackboard.

These results supported by **Borboa, Joseph, Spake & Yazdanparast, (2014)** who studied the perceptions and use of learning management system tools and other technologies in higher education on 204 respondents at a private university in Texas, and reported that, 53% were female, most students (80%) were in the 18-22 age range. Almost four out of ten (39%) used a LMS in four or more courses in the semester in which the data were gathered.

On the other hand, these results contradicted with **Elbasuony et al., (2018)**, who studied the undergraduate 80 nursing students' perceived knowledge, attitude and usage of E-learning and Blackboard learning systems in King Khalid University, Kingdom of Saudi Arabia, and found that, the majority of the students are in the age group 21 years with mean age was 20.8. Also 94% of students have internet facility. Also the study done by **Al-Drees, Khalil, Meo & Abdulghani, (2015)** about the utilization of blackboard among 341 undergraduate medical students in King Saud University, and found that, among the participants, 65.7% were male. Among the participants, 39.60% students were second year.

From the researcher's point of view, the gender differences demonstrate that there are more female students enrolled in education than male students, which could be further explained as the university has a higher female intake than male students. Furthermore, the majority of students stated that there is a lack of formal training on how to use Bb. That indicates a need for students' training.

The current study was clarified that, the majority of students were used blackboard for quizzes and lectures, while the minority of them were used announcement. These results were in similarities with the study done by **Baig, Gazzaz & Farouq, (2020)** about the impact of blackboard formative assessment on the final marks and students' perception of its effectiveness on 100 students at the King Abdul-Aziz University, Jeddah, Saudi Arabia and found that, the features of Bb students regularly used were resources such as take online quiz (80 %), while communicate with classmates (10%). Also **Elbasuony et al., (2018)** according to the findings, the majority of students accessed lectures and then took tests, while just a small percentage of students used a discussion forum.

The present study found that, blackboard features were effective in lectures, syllabus and quizzes by more than two third of students. These results supported the study done by **Uziak, Oladiran, Lorencowicz & Becker, (2018)** to assess students' and instructor's perspective on the use of blackboard Platform for delivering an engineering course for 275 students at the University of Botswana, and reported that, regarding to the effectiveness of using blackboard, 87.5% of students appreciated its effectiveness in terms of transferring the information from the syllabus.

In relation to students' attitude toward usage of blackboard, nearly three quarters of students had positive attitude scores toward usage of blackboard, while the minority of them had negative attitude scores. These results supported the study done by **Al-Malki, AbdulKarim & Alallah, (2015)** about teaching staff's and students' initial perceptions and satisfaction with teaching and learning via the blackboard LMS on 433 undergraduate students at King Abdulaziz University, Jeddah, Saudi Arabia, and reported that, the majority of students have positive attitude toward both blackboard learn and collaborate. Also, Turkish study results done by **Ocak & Topal, (2015)** about blended learning in anatomy education: a study investigating medical students 'perceptions, and indicated that medical students perceive the BL environment positively.

On the other hand, these results contradicted with the study done by **Almekhlafy, (2020),** showed that during COVID-19, students' impressions of online

learning via Blackboard were negative. Also the study done by **Alamer, (2020)**, Students' opinions regarding Blackboard at King Khaled University were researched, and it was discovered that students did not have high positive perceptions, which can be linked to the limitations of using Blackboard as a blended learning medium.

Regarding to students satisfaction toward usage of blackboard, the majority of students had neutral satisfaction scores toward blackboard usage, while the minority of them have good satisfaction scores. These results contradicted with the study done by **Alaofi, (2016),** who found that, there is a high level of satisfaction with the blackboard system among the students. Also, the study done by **Albarrak & AlAbdulkarim, (2015)** about students' attitudes and satisfaction toward a blended learning in the health sciences, in total of 51 female undergraduate senior students at King Saud University, and found that, students responded with high satisfaction regarding the blended learning elements.

From the researcher's point of view, the differences between two studies may be due to they were not properly trained on how to use these tools, and they never used them during the course delivery period. This necessitates close attention in both scenarios in order to effectively inspire faculty members and students to use these communication methods.

The current study revealed a highly significant negative correlation was found between student's sex and their satisfaction scores, and highly significant negative correlation was found between academic level for students and total attitude scores. Also a highly significant positive correlation was found between student' experience in dealing with the blackboard and their total attitude scores.

These results contradicted with the study done by **Arthur-Nyarko, Twoli, & Khatete, (2017).** They investigated learner demographics, resource features, and responsiveness to E-learning delivery in 517 Ghanaian students and discovered a substantial positive link between student gender and E-learning satisfaction in selected distance education institutions.

Regarding academic level, the previous results supported the study done by **Almekhlafy, (2020)** who found that, the perceptions of 1st level students toward the blackboard tool were more positive than the perceptions of 2nd level students, 1st level students had higher perceptions than 2nd level students, and 1st level students who had no prior experience with online learning via blackboard had slightly higher perceptions than 2nd level students.

In relation to experience in dealing with the blackboard, the present study supported the study done by **Almekhlafy, (2020)** who found that, prior experience of online learning via Blackboard as a supplementary tool influenced students' perceptions. **Similarly Fageeh & Mekheimer, (2013)** emphasized prior experience of students with blackboard and found that the better experience students had with blackboard, the more knowledge they gained and vice versa.

Conclusion

Students' attitude and satisfaction play an important role in teaching and learning outcomes. Overall, the students' attitude had a significant impact on their use of blackboard as an online learning tool during the COVID-19 outbreak, according to the findings. The findings revealed that undergraduate nursing students have a positive attitude about the blackboard learning management system and are neutrally satisfied with it.

Recommendations

- More training programs can be conducted by experts to improve usability of Blackboard among students.
- The authors of this study recommend to conduct this study with large group of students and with other disciplines or other universities.

Conflicts of Interest
The authors declare no conflict of interest.

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