An Efficient Utilization and Comparative Analysis of Blackboard Learn and Collaborate in Higher Education Institution

Ibrahim Ahmed Ghasim and Muhammad Arshad*

***Abstract*—The COVID-19 pandemic has enforced higher education institutions to adopt emergency remote teaching (ERT) as a substitution for traditional face-to-face (F2F) classes. A lot of concerns have been raised among education institutions, faculty, and students regarding the effectiveness of this sudden shift to online learning. Various digital platforms and ICT initiatives are accessed by academic authorities, teachers, and researchers around the clock. The Learning Management System (LMS) has emerged as a crucial resource for all institutions of higher learning during the current crisis and has taken center stage in web-based learning. Jazan University switches to an online learning environment after normal classes were suspended. This study aims to statistically investigate the academic activities, utilization, and satisfaction of Blackboard Learn and Collaborate of pre, during, and post-COVID-19 pandemic amongst the faculty members and students at Jazan University, Saudi Arabia. The study's primary findings are a contribution to the online execution of educational information, providing students with the appropriate support from faculty members and teaching assistants, as well as having a backup plan in place for unanticipated problems with the online educational system.**

***Index Terms*—Blackboard, higher education institution, learning management system, pandemic**

I. Introduction

We have never seen such a significant interruption in education before, according to Audrey Azoulay, director-general of UNESCO [1] (2020). The Coronavirus outbreak has caused chaos in the academic calendar around the world. The majority of schools, from elementary to college, have closed their doors, and kids have gone home to their families to self-quarantine. University research programs have been delayed, and convocations and graduations have been postponed, along with some classes, exams, and convocations. In the majority of cases, decision-makers around the world are having difficulty concluding the spring semester. Decisions regarding COVID-19 will alter the course of history for all time, thus they must be well-considered and accurate.

Several areas are affected worldwide and there is a fear of losing this whole ongoing semester or even more in the coming future. Various colleges, universities, and schools [2] have stopped offering in-person instruction. According to the researchers' judgment, it is unlikely that regular instruction will resume very soon. Because social distance is so important at this point, learning possibilities will suffer. Educational institutions are having a difficult time coming up with solutions to this difficult circumstance. These factors let us see the critical necessity for scenario planning in academic institutions. Humanity and cooperation are needed in this situation. Our students, academic staff, communities, societies, and the country as a whole must be urgently safeguarded and saved [3].

Although the word "online learning" is frequently used, it has several different meanings. Online learning is defined as learning that is facilitated via the Internet for this article. It encompasses a broader range of activities than "networked learning," which places more emphasis on interpersonal relationships [4]. It is more limited than "e-Learning" and "digital education", which encompass the entire spectrum of digital tools and resources, not only the Internet, and put a strong emphasis on the development of digital skills. Online education also lacks the inherent claim to improvement that makes the term "Technology-Enhanced Learning" (TEL) problematic [5]. One could argue that "online" is no longer a useful descriptor for students' actual experiences in our post-digital world, particularly in wealthy regions where Internet-connected devices are so widely used and the lines separating learning from other strands of activity in daily life have blurred so much [6, 7]. The same cannot yet be true for "online teaching," which refers to purposeful assistance with others' learning that is conducted through the Internet. Teachers had a clear understanding of the differences between online teaching and their other modes of operation as a result of the quick shutdown of face-to-face educational activities in reaction to the COVID-19 outbreak. From personal experience, many teachers are familiar with the category of working methods known as online teaching [8, 9].

Due to the devastating global pandemic COVID-19 breakout, the majority of the world is under quarantine. As a result, many cities have become ghost towns, and their impacts can also be seen in schools, colleges, and universities. Online education might be considered the crisis-resolution tool in light of all this. Institutions have been forced by the Corona Virus to switch from offline to online modes of pedagogy [10]. The institutions that were previously resistant to change will accept modern technologies as a result of this crisis. This disaster will highlight the advantageous aspects of online education. We can preach to a huge group of pupils at anytime and anywhere in the world with the use of online teaching methods. All institutions must juggle various online

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pedagogical possibilities and attempt to employ technology more effectively. Many institutions all around the world have completely digitalized their operations due to the pressing demand of the moment. In the middle of this turbulence, online learning is emerging as a victor ludorum [11]. The findings of this study supported the hypothesis regarding the impact of the Blackboard platform on learning autonomy, self-efficacy, and mobility. By deepening our comprehension of the factors influencing the use of Blackboard platforms, this article enhances the UTAUT model already in use. Additionally, the outcomes have useful ramifications for decision-makers, practitioners, suppliers of online learning resources, and academic staff who wish to create effective plans for using information technology in education [12]. This comprehensive, empirically supported research describes an in-depth investigation carried out to compare student involvement and performance in two courses in the middle of all the modifications and changes brought on by the COVID-19 epidemic. We examine the effects of abrupt interruption and the move to remote learning in the 2020 spring and 2020 fall terms, which were delivered in convergent (students could choose to attend class in-person or synchronously online) mode [13]. To prevent disruptions to instruction, educational pedagogies were altered during the COVID-19 epidemic. The use of an online peer-to-peer platform in a distance learning Problem-Based Learning (PBL) tutorial is one method. This study [14] attempted to assess how well students performing in PBL tutorials for distance learning performed against students using the traditional face-to-face method. The results of this study showed that students using the DL-PBL tutorials performed worse than students using the traditional FF method. To determine the fundamental cause, more research is required. The performance of students before the pandemic, when face-to-face instruction was used, and after the pandemic, when online instruction was used, was compared in this study. According to preliminary findings, the performance of primary and secondary students was substantially better before the epidemic than it was after. According to secondary data, several pupils who had previously achieved excellent scores were now doing more typically [15]. This study's [16] objective is to statistically examine the effects of such a change on undergraduate students enrolled in the Financial Engineering course's academic performance. About 500 students took the course over four semesters, including the transitional semester that was disrupted by the pandemic, two consecutive online semesters, and the traditional face-to-face classroom. To compare the academic performance of these students, a novel rank percentage measure is proposed and used.

Therefore, at this point, improving the quality of online teaching and learning is essential. After the COVID-19 epidemic, online learning in institutions has increased rapidly. Normal classrooms were transformed overnight into online classrooms, which means that educators had to change their entire pedagogical strategy to address the changing market realities. During these difficult times, academic institution's ability to implement online learning on such a large scale is of greater importance than whether or not online teaching-learning approaches can deliver high-quality education [17, 18].

This study intends to look into how the faculty members and students at Jazan University used Blackboard Learn and Collaborate in the academic semesters of pre, during, and post-COVID-19. In reality, how instructors use the LMS when instructing at home during a lockdown to assist students in the learning process, grade them, and engage them in the subject matter. Through its findings, the study also significantly contributes by showing the differences between various classes' attitudes toward the use of ICT in teaching and learning. Notably, the outcomes will be extremely helpful to the faculty members because they will be in constant contact with the students, be able to comprehend their behaviors, and be able to solve issues with online management. Similarly, to that, it would also give educational institutions useful information about the benefits of ICT-enabled learning, urging them to incorporate them into education as pedagogical reforms. To include ICT knowledge into their text at the primary and secondary levels, they may need to reassess their curriculum. With this modification, HEI students would be better prepared for integrated ICT pedagogy.

An overview of the theoretical framework related to the Learning Management System is explained in the next section, followed by research objectives and methodology in Sections III and IV respectively. Section V describes the results and discussions and lastly, the conclusion and future work are presented in Section VI.

II. Theoretical Concept

The study of online learning is based on several ideas and models, but the researchers determined that Online Collaborative Learning (OCL) was the best model to use for this exploration as illustrated in Fig. 1. To better understand how students and educational institutions accept and use technology for teaching and learning, Online Collaborative Learning (OCL) is being used. The OCL hypothesis was put forth by Linda Harasim [19]. The approach emphasizes the internet as a source of learning through encouraging cooperation and knowledge construction. According to the author, the new philosophy of knowledge acquisition is centered on knowledge construction, internet use, and collaborative learning. referred to as a strategy for reforming formal, informal, and non-formal education. Similar to other authors, Harasim emphasizes the numerous advantages of moving to teaching and learning on the Internet and foresees the development of a sizable educational network based on the idea of e-learning [20].

Fig. 1. Online collaborative learning.

It is thought that OCL can enable three stages of knowledge development:

1) Idea generation: Brainstorming is a part of this step. Divergent ideas are put together in this stage.
2) Comparing, analyzing, and categorizing ideas: Organized debates and arguments are used to compare, evaluate, and group various concepts.
3) Convergence of ideas: At this stage, ideas are synthesized and agreed upon. Assignments are made in the form of essays as well as collaborative pieces of work, and disagreement is encouraged.

Social constructivism is also the foundation of OCL. This is because the students are urged to work together to find solutions to issues through discourse. The primary component of OCL is that a teacher's role is to support the learning process [21]. Other constructivism models emphasize the teacher's role as a proactive facilitator of students' learning. It is difficult to scale up online collaborative learning because of the importance of the teacher's responsibilities. In contrast to connectivism, which focuses primarily on large-scale learning environments, OCL is best suited for smaller learning contexts. OCL, therefore, assumes a crucial role in the search for commonalities among theories of online education. Online education is strongly tied to several theories [22]. However, it is crucial to ascertain whether an integrated or unified theory of online education can be adopted and successfully applied rather than developing numerous theories and attempting to keep up with the main goal of the research. The main goal of this study is:

1) To investigate the academic activities, utilization, and satisfaction of Blackboard Learn and Collaborate with the help of quantitative and qualitative methodologies of the integrated learning management system at Jazan University during the pre, during, and post-COVID-19 pandemic.
2) To contribute some suggestions and recommendations for the success of online mode of teaching and learning during and after a crisis-like situation.

III. Research Methodology

The purpose of the study was to investigate how Blackboard Learn and Collaborate is used in higher education programs as a learning management system. The evaluation of the effects of Blackboard LMS integration on teaching and learning was the study's precise goal. To achieve the goal of this study, a mixed methodology that combines quantitative and qualitative approaches is used.

A. Research Design

Both quantitative and qualitative analysis are used in the study technique, which is beneficial in obtaining data on faculty members, academic activities, and LMS usage.

B. Research Population

The audience for this study was full-time faculty members and students (males and females) of Jazan University. Employees should be computer literate and have an Internet facility to achieve the fundamental aim of the research study.

C. Data Collection

Daily, weekly, and monthly assessment reports from the course lectures are used to compile statistics. The examination of data from various sources is required by the study design to make a compelling argument. To this goal, the daily progress report of lectures from courses and faculty members was used to gather the data for this study. The ability to track student interest, development, and overall performance in e-Learning is provided via reports and analysis from LMS. There are reporting capabilities incorporated into many learning management systems. Some go beyond their default options and offer customizable LMS reports. However, the Blackboard administrator analyzed and created the progress reports on the lectures for the male and female groups of the semester courses during the pre, during, and post-COVID-19 pandemic on a daily, weekly, and monthly basis.

IV. Results and Discussion

This section contains the study findings based on data gathered to examine the use of Blackboard Learn and Collaborate as a learning management system at the university level. To explore the academic activities, utilization, and satisfaction of Blackboard as an LMS on teaching and learning in pre, during, and post-pandemic, the research project was arranged at Jazan University, KSA. Table I illustrates the academic activities era of pre, during, and post-COVID-19 pandemic semesters.

TABLE I: Academic Activities Era of Semesters

Academic Year	Semesters	Activities Era
2019–20	Fall (Sep–Dec)	Pre-COVID-19 Pandemic
	Spring (Jan–May)	Pre-COVID-19 Pandemic till week 13, after that online activities started
	Summer (June–July)	During COVID-19 Pandemic
2020–21	Fall (Sep–Dec)	During COVID-19 Pandemic
	Spring (Jan–May)	During COVID-19 Pandemic
	Summer (June–July)	During COVID-19 Pandemic
2021–22	Fall (Sep–Dec)	Partially Post-COVID-19 Pandemic
	Spring (Jan–May)	Partially Post-COVID-19 Pandemic
	Summer (June–July)	Post-COVID-19 Pandemic
2022–23	Fall (Sep–Dec)	Post-COVID-19 Pandemic
	Spring (Jan–May)	Current Semester
	Summer (June–July)	Next Semester

A. Comparison of Academic Semesters Statistics of 2019-23

Academic analytics is defined as the process of evaluating and analyzing organizational data received from university systems for reporting and decision-making reasons [23]. Academic analytics will help students and faculty track their career and professional paths. This section explains the academic activities analysis and utilization of Blackboard Learn and Collaborate by faculty members as a learning management system at Jazan University, KSA in the pre, during, and post-COVID-19 pandemic.

Fig. 2 illustrates the fall semester academic statistics for the academic years of 2020–21, 2021–22, and 2022–23 of Jazan

University, KSA. The registered students in the fall 2020–21, 2021–22, and 2022–23 semesters are 191,426, 182,724, and 172,608 respectively. The number of instructors, number of courses, and number of sections of the fall 2020–21 semester are higher than the other 2021–22 and 2022–23 fall semesters because the number of registered students is higher in the fall 2020–21 semester. The number of online sections created in the fall 2020–21 semester is higher but the face-to-face sections are created lowest than in the other 2021–22 and 2022–23 fall semesters because the fall 2020–21 semester is the peak time of the COVID-19 pandemic and all academic activities are conducted through online all over the world.

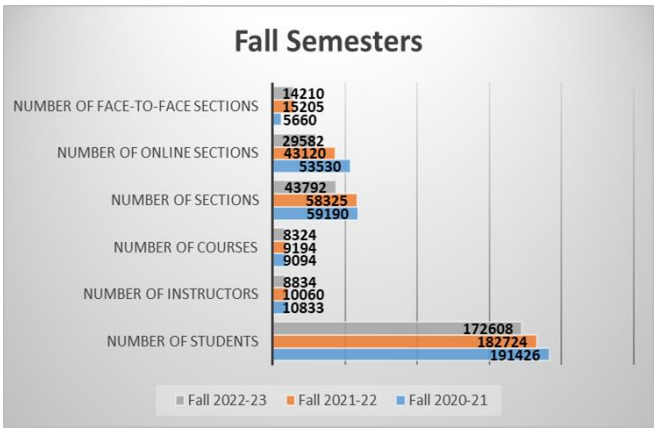

Fig. 2. Fall semesters statistics of academic year of 2020–21, 2021–22, and 2022–23.

Fig. 3 illustrates the spring semester academic statistics for the academic years of 2019–20, 2020–21, and 2021–22 of Jazan University, KSA. The registered students in the fall 2019–20, 2020–21, and 2021–22 semesters are 176,321, 185,592, and 168,446 respectively. The number of instructors, number of courses, and number of sections of spring 2020–21 are higher than the other 2019–20 and 2021–22 fall semesters because the number of registered students is higher in the spring 2020–21 semester. The number of online sections created in the spring 2020–21 semester is higher and the face-to-face sections are created lowest if compared with the other 2019–20 and 2021–22 fall semesters because of the COVID-19 pandemic and most of the classes are conducted in the spring 2020–21 semester through online mode.

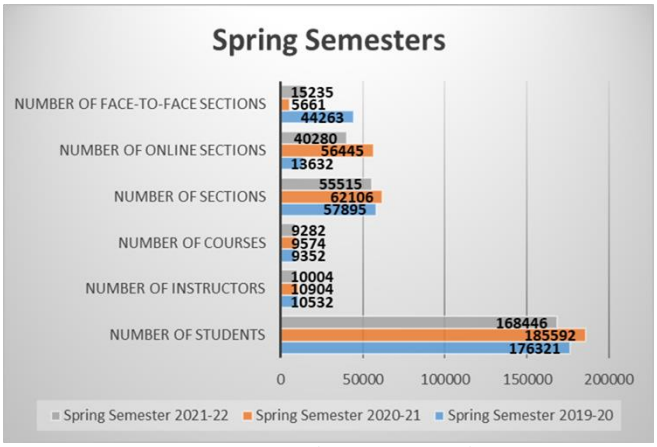

Fig. 3. Spring semesters statistics of academic year of 2019–20, 2020–21, and 2021–22.

Fig. 4 illustrates the summer semester academic statistics for the academic years of 2019–20, 2020–21, and 2021–22 of Jazan University, KSA. The registered students in summer semesters are limited because universities are offering fewer courses and faculty members often use summer to write or conduct research. That's why the registered students in the summer 2019–20, 2020–21, and 2021–22 semesters are very lowest than the other fall and spring semesters i.e. 27,341, 31,526, and 19,396 respectively in Jazan University. The number of instructors and several courses in summer 2021–22 is higher than the other 2019–20 and 2020–21 summer semesters, but the number of sections in summer 2021–22 is lowest than the other 2019–20 and 2020–21 semesters that's means several instructors were assigned more number of sections to teach the courses. The number of online sections created in the summer 2019–20 and 2020–21 semesters is higher but the face-to-face sections are created lowest than in the 2021–22 summer semester because the summer 2019–20 and 2020–21 semesters are the peak period of the COVID-19 pandemic and most of the academic activities are conducted through online in Jazan University.

During the fall 2021–22 and spring 2021–22 semesters, the whole world is trying to come back from the new normal pandemic, and the education sector also started academic activities from online to face-to-face. Finally, in the summer 2021–22 semester the Jazan University campuses are fully open for all students, academic staff, and administrative members, but most of the faculty members were keep continued the academic activities online because of the flexibility, increased course variety, increased collaboration, personalized education, and enhanced time management skills.

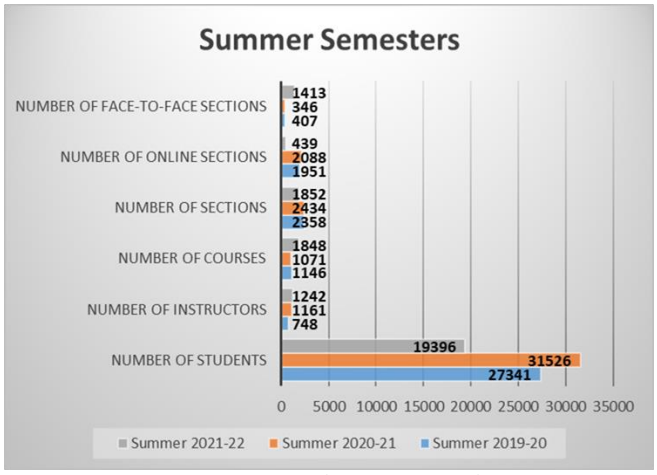

Fig. 4. Summer semesters statistics of academic year of 2019–20, 2020–21, and 2021–22.

B. Comparison of Blackboard Learn Statistics for Academic Year 2019–23

A web-based virtual learning environment and learning management system created by Blackboard Inc. is called Blackboard Learn (formerly known as the Blackboard Learning Management System). The program has course administration, scalable design, open architecture that can be customized, and interface with authentication methods. It could be set up locally, hosted by Blackboard Active Server Page (ASP) Solutions, or made available as Software as a

Service using Amazon Web Services. Its claimed main goals include the development of totally online courses with little to no face-to-face sessions and the inclusion of online components to courses that are typically offered in person.

Fig. 5 illustrates the Blackboard Learn analysis of the fall semesters of 2020–21, 2021–22, and 2022–23. During the fall 2020–21 semester the course documents viewed is 1,007,460 which is higher than the other fall 2021–22 and 2022–23 semesters 518,919 and 196,275 respectively because of the COVID-19 pandemic era and most of the classes are conducted online. While the other statistics e.g. Assessment attempts, discussion, successful login, and total login in the fall 2020–21 semester also higher than the other fall 2021–22 and 2022–23 semesters, that is a validation of the efficient utilization of the Blackboard Learn for academic activities during the COVID-19 pandemic.

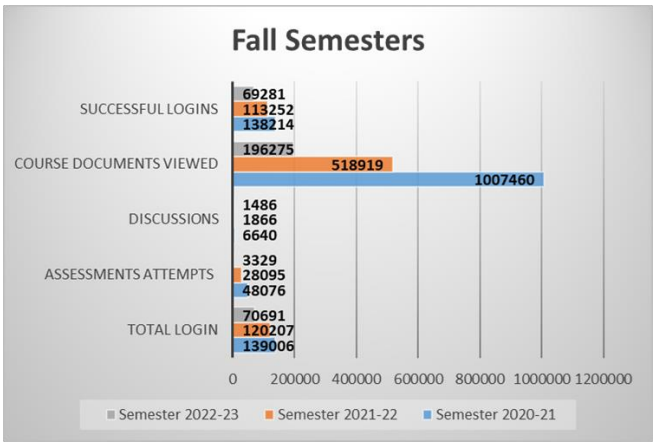

Fig. 5. Blackboard learn statistics of fall semesters.

Fig. 6 illustrates the detailed analysis of the Blackboard Learn analysis for the spring semesters of 2019–20, 2020–21, and 2021–22. The course documents viewed, total logins, and successful logins in the spring 2020–21 semester are at the peak among the other spring 2019–20 and 2021–22 semesters because of the new normal for the whole world. However, the assessment attempts and discussions are not higher in the spring 2020–21 semester, spring 2019–20 semester is at the peak of the assessment attempts and discussions because after the thirteen weeks of the spring 2019–20 semester all academic activities were shifted online mode.

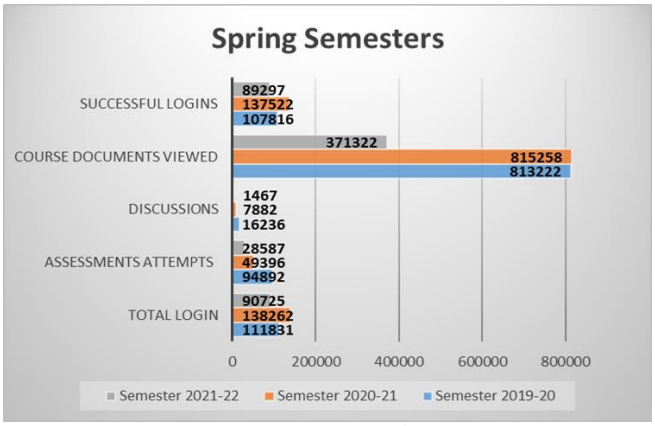

Fig. 6. Blackboard learn statistics of spring semesters.

Fig. 7 illustrates the Blackboard Learn analysis of the summer semesters of 2019–20, 2020–21, and 2021–22. The graph shows summer 2019–20 is at the peak of the course documents viewed, assessment attempts, discussions, and total login. Summer 2019–20 was the starting time of the COVID-19 pandemic that's why the course documents viewed are the highest among the summer 2020–21 and 2021–22 semesters.

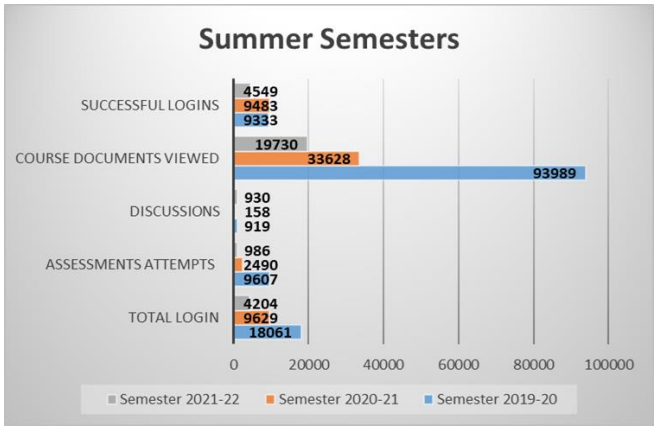

Fig. 7. Blackboard learn statistics of summer semesters.

C. Comparison of Blackboard Collaborate Statistics for Academic Year 2019–23

Blackboard Collaborate is a powerful all-in-one platform that offers you an immersive human experience through your computer, tablet, or mobile device anywhere, any time. A fully interactive web conferencing environment and asynchronous voice authoring capabilities allow for greater engagement so that you're not missing a thing.

Fig. 8 illustrates the Blackboard Collaborate statistics for the fall semesters of 2020–21, 2021–22, and 2022–23. During the fall 2020–21 semester the number of attendees in all online sessions is 258,116 which is higher than the other fall 2021–22 and 2022–23 semesters 177,656 and 21,922 respectively. The graph explains the fall 2022–23 semester is the lowest number of attendees because most of the classes shifted from online to face-to-face mode. Although the other statistics of the fall 2022–23 semester, e.g., total session created, total duration of all sessions, number of recordings, session, and attendees peak are also lowest than the other fall 2020–21 and 2021–22 semesters.

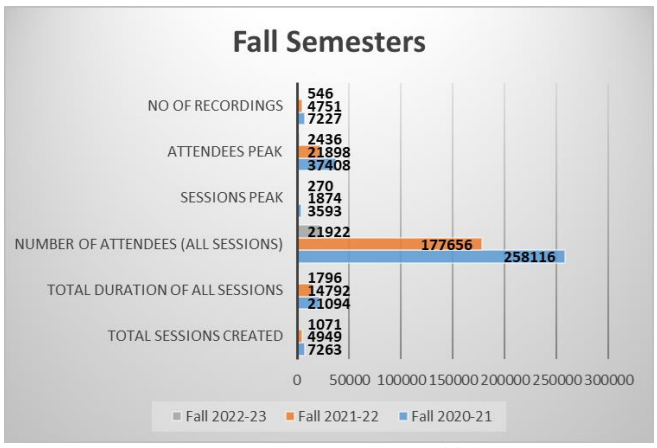

Fig. 8. Blackboard collaborate statistics of fall semesters.

Fig. 9 illustrates the Blackboard Collaborate statistics for

the spring semesters of 2019–20, 2020–21, and 2021–22. The highest values of all the statistics were in the spring 2020–21 semester because of the peak time of the COVID-19 pandemic. Besides the spring 2020–21 semester the second highest values of the statistics e.g. number of attendees, total duration of all sessions, and several recordings, etc. in the spring 2019–20 semester because this semester was not fully conducted face-to-face. After 13 weeks of this semester, all academic activities were moved to online mode due to the COVID-19 pandemic.

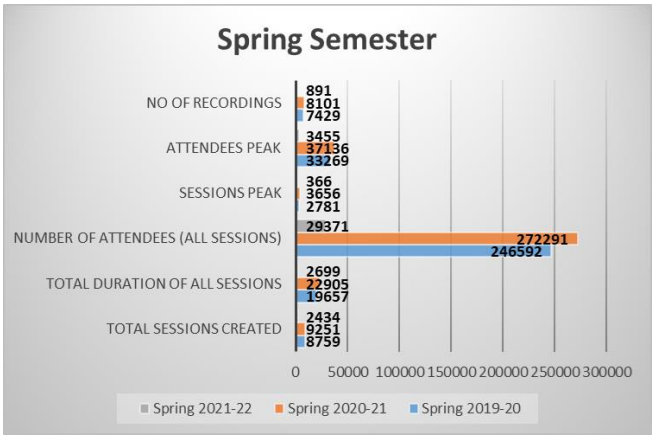

Fig. 9. Blackboard collaborate statistics of spring semesters.

Fig. 10 illustrates the Blackboard Collaborate statistics for the summer semesters of 2019–20, 2020–21, and 2021–22. The graph shows the highest values of online activities were conducted in the summer of 2020–21 and the lowest values of the online activities were conducted in the summer of 2021–22 because most of the academic activities e.g. number of attendees, total duration of all sessions, and several recordings, etc. of summer 2021–22 were conducted face-to-face within the campus.

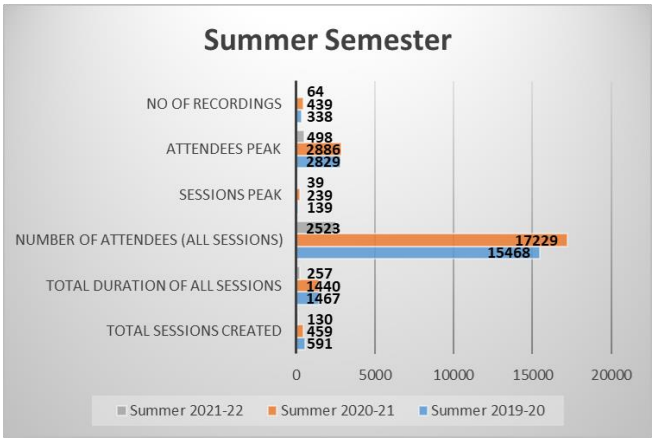

Fig. 10. Blackboard collaborate statistics of summer semesters.

D. Academic Satisfaction with Blackboard Learn and Collaborative

Academic success or "academic achievement" refers to the extent to which a student, teacher, or institution has achieved its short- or long-term educational goals. The academic success of students has a direct impact on the social and economic growth of the nation. The academic performance of the students is crucial in producing the highest caliber graduates who will serve as the nation's leaders and labor force, contributing to its economic and social progress.

The survey questionnaire used in this study asked 11 questions to examine the impact of Blackboard Learn and Collaborate on the academic satisfaction of the teachers during the pre, during, and post-COVID-19 pandemic. The study's target population was full-time academic staff and students at Jazan University. 180 faculty members and 250 students were interviewed for the survey, which all participating teachers were requested to complete and submit. To reduce incorrect population inferences, 20 cases that were found to be incomplete were removed from the dataset. Thus, 176 faculty members and 234 students made up the actual sample. Faculty members and students should be familiar with computers and have access to the Internet to accomplish the research's main objective. Table II shows the number of people who responded to the survey.

TABLE II: PARTICIPANTS OF THE SURVEY

Academic Terms	Overall Faculty Members and Students	Sample Size
2019–20, 2020–21 2021–22, 2022–23	180 and 250	176 and 234

The categories of static Blackboard, dynamic Blackboard, integrative Blackboard, and students' academic success encompassed all of the variables that emerged from the data analysis and satisfaction testing. The usage of integrative Blackboard raises the basic level of comprehension through online and blended classroom discussions and problem-solving. The results demonstrate that integrating Blackboard into the classroom requires teachers to keep their students interested and motivated to study. The research findings demonstrate that teachers may instruct utilizing integrated Blackboard tools while also motivating students to participate in scheduled online sessions. The anticipated elements of an integrated Blackboard are shown in Table III.

TABLE III: UTILIZATION OF INTEGRATIVE BLACKBOARD

Taxonomy	Factors
Integrative Blackboard	Synchronized online sessions Online classrooms managed for discussions and problem-solving Automated face-to-face classroom-based learning Active instructor by integrative Blackboard Protection and privacy issues

Integrative Blackboard online learning is frequently used by teachers because it looks like structured, traditional face-to-face instruction. The level of safety and privacy while utilizing an integrated Blackboard, which is only accessible to teachers with a password, is another concern for the teachers. That reveals the level of privacy on integrative Blackboards.

Fig. 11 illustrates the teachers' satisfaction level with using the Blackboard Learn and Collaborate during the academic years of pre, during, and post-COVID-19 pandemic. According to the study, the majority of teachers were fairly computer literate and skilled, which is useful for the adoption of a Blackboard Learn and Collaborate, especially during the COVID-19 pandemic. According to the majority of academics, the system enables students to follow through on their commitments and work directly on the platform, enabling them to finish instructional tasks promptly and

efficiently. Faculty members who thought the attendance system was the most helpful and responsive also felt that it was beneficial in fostering a more enjoyable learning environment. Faculty members concurred that having the Blackboard Learn and Collaborate education platform in place was the best approach to offer a progressive and safe learning environment throughout the COVID-19 pandemic. The majority of the research results are consistent with students' perceptions of the Blackboard system's overall efficacy as an e-learning system.

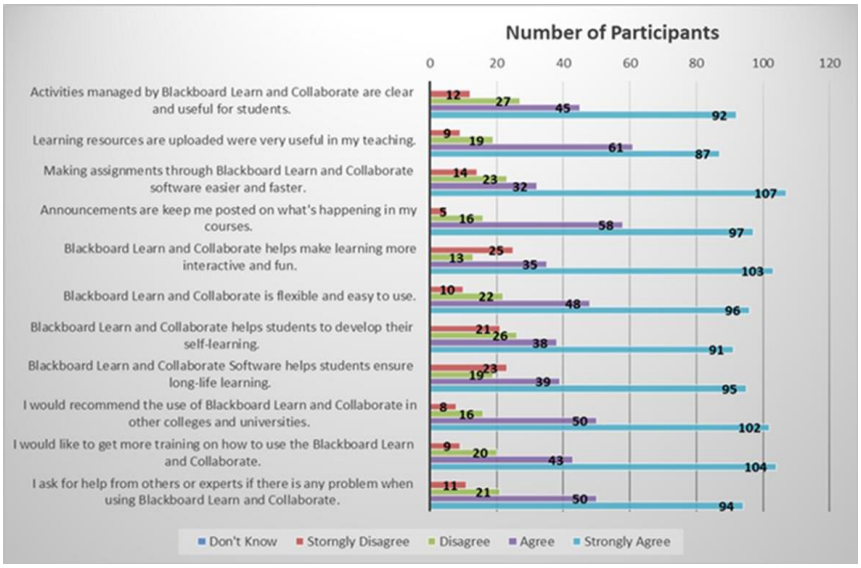

Fig. 11. Teachers' satisfaction level.

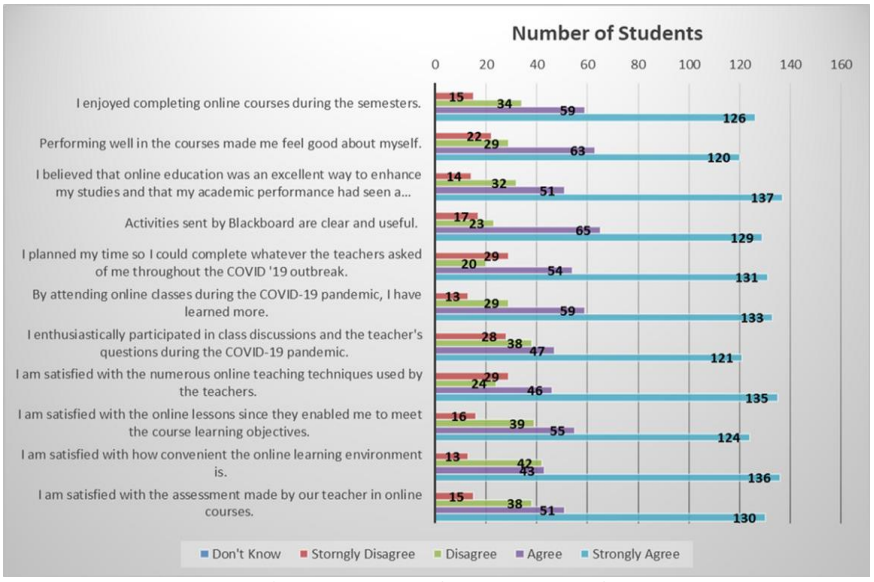

Fig. 12. Students' academic performance and satisfaction level.

The usage of integrative Blackboard raises the basic level of comprehension through online and blended classroom discussions and problem-solving. According to the research, integrating Blackboard means that students stay involved in class and develop into successful learners. The results show that teachers can effectively educate using integrated Blackboard features when it comes to how students use integrated Blackboard. Fig. 12 illustrates the students' academic performance and satisfaction level of the multiple faculties while using Blackboard Learn and Collaborate during the academic years of pre, during, and post-COVID-19 pandemic.

E. Lessons Learned During the COVID-19 Pandemic

The COVID-19 pandemic's once-in-a-lifetime disruption had a significant impact on how courses are taught in the academic community. Although much of the early impact was abrupt, difficult, and disruptive, there were also a few things that forced teachers to think creatively and differently about how to engage students in their classes. Here are some of the most important findings and takeaways from the study's academic activities:

1) Faculty member can interact with kids at any time while online (during COVID-19 Era Office Hours). The 8 to 4 office hours attitude no longer restricted anyone. This could be advantageous for availability but detrimental to preserving a healthy work-life balance.
2) Some exercises had to be changed to accommodate both synchronous online students and students who were present in person. Although this was initially quite difficult, the instructional team soon adapted to the situation and figured out how to make the most of the

limited technological resources. We discovered certain best practices for the learning management system that was previously unknown to us. We can all benefit from these lessons for a very long time.

3) Hands-on activities are severely limited when some students are enrolled in a course in person and others online, but they can still be included in the curriculum with careful consideration.
4) The focus first switched from group activities to solo projects, but we soon learned to effectively organize small group activities in the remote learning environment as needed. Less exposure to team-based projects/activities.
5) Students have a lot of flexibility in a converged classroom. This is one characteristic that was welcomed during the pandemic and is likely to endure long after it has ended. Since they are not concerned with having to go to the lecture site, presenters and other guests are more available and eager to engage.

Concerning the first research question on the well-organized management of the integrated learning management system during the pre, during, and post-COVID-19 pandemic at Jazan University. The findings of the study showed the quantitative and qualitative analysis of the academic activities, Blackboard statistics, students' academic performance, teachers' and student satisfaction level have proved the efficient utilization of Blackboard Learn and Collaborate by faculty members as a learning management system at Jazan University in the pre, during, and post-COVID-19 pandemic. The outcomes give teachers a place to evaluate the Blackboard tools that are best suited to enhancing students' achievement in achieving the desired learning outcomes. The results showed that the majority of professors utilize Blackboard to advertise their courses by utilizing the LMS's primary tools, such as content sharing (course notes, lecture videos, PPT presentations, etc.), electronic assessments, quizzes, assignments, and posting grades.

The second research question is on the suggestions and recommendations for the success of online modes of teaching and learning during and after a crisis-like situation. This study interpreted the viewpoints of teachers and students in higher education, which demonstrated that online learning modalities are flexible and efficient sources of teaching and learning, but they also have some drawbacks. The majority of the teachers and students believed that online learning is a flexible and successful method of teaching and learning since it facilitates distant learning while requiring less administration, accessibility, and time and resources. No matter the time constraint, students can simply access the course materials. Additionally, this flexibility over in-person instruction has been documented in the literature. Additionally, they learn how to be independent learners, a crucial skill for promoting lifelong learning in professional courses.

V. Limitations of the Study

The phrase "new normal" has become one of the most often used ones since the outbreak. The rising usage of online learning resources is the new norm in education. The COVID-19 epidemic has inspired innovative approaches to education. Educational institutions all around the world are looking to online learning platforms to carry on the process of educating pupils. The paradigm of education has changed, and the foundation of this change is online learning. This is the new normal. Today, digital learning has become a vital tool for students and institutions around the globe. The limitations of this study are Interaction, Inefficiency, and Maintaining academic integrity. These limitations are further subdivided in Table IV.

TABLE IV: Limitations of the Study

Taxonomy	Sub-Taxonomy
Interaction	Lack of direct contact with the teacher Lack of direct contact with colleagues Difficulties with collaborating with colleagues Difficulties in accessing traditional academic resources (e.g., libraries, reading rooms)
Inefficiency	Unable to teach skills Lack of student feedback Limited attention span Lack of attentiveness Resource intensive
Maintaining academic integrity	Lack of Discipline Plagiarism Lack of possibility of using other academic activities (e.g., science clubs, sports sections) Lack of possibility to verify student's knowledge/skills reliably (e.g., due to the ease of cheating during tests via the Internet) Poor preparation of academic teachers for e-learning

VI. Conclusions and Future Works

The teaching and learning process is carried out utilizing e-learning and its instruments at the same time that the entire world is battling the invisible enemy of COVID-19, which has killed thousands of people worldwide. One way to slow the spread of COVID-19 is to stay at home, and technology plays a big role in our daily lives. The use of computers, the Internet, and e-learning has been essential to the teaching and learning process. Online learning is a crucial tactic that can enhance course accessibility and flexibility and allow students to carry on learning in unusual conditions.

The advanced education system in Saudi Arabia needs to take extraordinary measures to get over the challenges of meeting the nation's evolving needs and realizing its aspirations. Leaders in higher education must take significant steps to meet the needs of education by enhancing performance for the greatest outcomes. The purpose of the study was to examine how faculty members and students used Blackboard Learn and Collaborate in their online courses and how it affected students' academic performance at Jazan University in Saudi Arabia, particularly pre, during, and after the post-COVID-19 Pandemic. The findings of this research are judged successful for teachers and students in terms of

functional effects. The results also allow teachers to choose the most essential and precise Blackboard applications to maximize students' progress toward reaching the best learning outcomes. This analysis should be utilized to expand the theoretical implications of the creation theory, and it also implies that using Blackboard in educational contexts can be categorized as a creative activity. The findings of this study are disseminated to other institutions of higher learning both domestically and abroad so that they can adopt learning management systems like Blackboard Learn and Collaborate, which will encourage them to gain a competitive edge by enhancing pedagogical strategies and academic outcomes in this competitive market. Finally, this disturbance also had some positive effects. When we return to whatever the new normal will be, many of the imaginative and creative solutions we adopted during the forced disruption are likely to endure.

The expanded scope will consequently also need to focus on administrative and regulatory issues, such as financial issues, cost concerns, upgradeability, licensing and permit issues, and campus maintenance. Putting e-learning into practice is all about learning and moving forward with your education. We must be comfortable using technological tools for education and knowledge expansion. To make the process of learning interesting and fulfilling, teachers will integrate e-learning tools in the classroom and give students access to a variety of educational applications.

Conflict of Interest

The authors declare that they have no conflicts of interest to report regarding the present study.

Author Contributions

Ibrahim Ahmed Ghasim created the conceptualization of the study. Muhammad Arshad completed the formal analysis and methodology design. The implementation of the research and comparative analysis was carried out by Ibrahim Ahmed Ghasim and Muhammad Arshad. It was Ibrahim Ahmed Ghasim's responsibility to supervise and validate. Muhammad Arshad and Ibrahim Ahmed Ghasim reviewed and edited the text. Both authors contributed to the writing of the article, and read and approved the final version of the manuscript.

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