

Faculty Satisfaction Regarding Using Blackboard as an Online Teaching Method during Covid-19 Pandemic

Wafaa Aljohani^{1,2*}

¹Department of Medical Surgical Nursing, Faculty of Nursing, King Abdulaziz University, Jeddah, 21551, Saudi Arabia

²Nursing Program, Batterji Medical College, 21442, Jeddah, Saudi Arabia

ABSTRACT

Background: The entire world was grappled under the fear of COVID-19 pandemic which immensely impacted the educational sector. Lockdowns forced to educational institutions to adapt changes and abruptly switch to emergency online teaching learning method. Various online learning management systems were being used during the remote transition to maintain continuity of education.

Methods: The current study was conducted using descriptive cross-sectional survey model. It was used to assess the perceptions of various faculties at a private medical institution (Batterjee medical college) in the kingdom of Saudi Arabia regarding using a Learning Management System (LMS), particularly blackboard during the period of COVID-19 pandemic.

Results: The results of the current study disclosed that only 37.3% of the participants were highly satisfied with this module, whereas, 62.7% were moderately satisfied. It also reports satisfaction with online module showed significant inverse correlation between age, experience years (where $p=0.0001$) and qualification of staff (where $p=0.036$). Overall, high percentage of faculty members felt that their workload was amplified and were always under pressure of deadlines. The main concerns identified by faculty were students' engagement and their personal time.

Conclusion: This research revealed the perceptions of faculty at private medical institution who taught the course in both the ways i.e. traditional and online. Faculty perceived that online module was successful during the pandemic but cannot be a replacement of traditional face to face teaching and learning. The research done recommends usage of blackboard learning management system post pandemic as it had positive impact on student achievement and enhanced the ease of communication between the faculty and the peers.

Key words: E-learning, Faculty's perception, Blackboard usage, Online teaching

HOW TO CITE THIS ARTICLE: Wafaa Aljohani, Faculty Satisfaction Regarding Using Blackboard as an Online Teaching Method during Covid-19 Pandemic, J Res Med Dent Sci, 2022, 10 (9):155-165.

Corresponding author: Wafaa Aljohani

e-mail ✉: wfaljohani@kau.edu.sa

Received: 25-August-2022, Manuscript No. JRMDS-22-73594;

Editor assigned: 27-August-2022, **PreQC No.** JRMDS-22-73594(PQ);

Reviewed: 05-September-2022, QC No. JRMDS-22-73594(Q);

Revised: 08-September-2022, Manuscript No. JRMDS-22-73594(R);

Published: 15-September-2022

INTRODUCTION

The COVID-19 pandemic was declared an emergency due to the unexpected mortality rate and was deemed a global threat to humans. The most prominent and serious complication observed among the critically ill patients of COVID-19 is Acute respiratory distress syndrome (ARDS) [1]. The other fatal symptoms following ARDS, further deteriorating the COVID-19 patients are metabolic acidosis, dysregulated coagulation cascade, septic

shock, ultimately leading to multiple organ failure [2]. The underlying core mechanism responsible for ARDS causing fatalities was assumed to be the "cytokine storm" aka "cytokine storm syndrome" (CSS) [3]. Till date, there is a lack of consensus about the data pertaining to the avalanche of the cytokines. In this review, we referred COVID-19 associated cytokine storm and briefly summarized the possibilities of overcoming this storm using specialized pro-resolving lipid mediators.

Covid-19 virus structure and pathobiology

The havoc caused by the current COVID-19 pandemic has left several lives miserable, with high degree mortality, it is also associated with physical, emotional and mental anxiety [4]. The outbreak of pneumonia of unknown etiology was first reported in Wuhan City, in China in early December 2019 [2]. The disease caused acute respiratory illness, was identified as viral infection from swab samples collected. Subsequently, named as Severe

Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) by the international committee on taxonomy of viruses (ICTV) [5]. However, this disease was later named as COVID-19 by the World Health Organization (WHO). COVID-19 is highly transmissible and has affected more than 510 million people worldwide and caused more than 6.22 million deaths all over the world. Consequently, looking at the severity and unpredictability COVID-19 pandemic was declared a global threat to public health [6].

Coronaviruses are a group of enveloped viruses that belong to the order Nidovirales, family Coronaviridae and subfamily Coronaviridae. Among these coronaviruses the current pandemic causing SARS-CoV-2 virus belongs to the genus Beta coronavirus (β CoV) [7]. The genome of SARS-CoV-2 is approximately 29.9 kb, is a single-stranded positive-sense RNA (+ssRNA) molecule of 29,903 bases along with 12 open reading frames (ORFs) that encode 9860 amino acids and 27 proteins [8]. The SARS-CoV-2 are spherical viruses composed of the RNA genome, enclosed by a lipid membrane, also comprises of four integral proteins, namely the spike glycoprotein, nucleocapsid protein, membrane protein, and envelope protein [9]. The spike glycoprotein (S proteins) is club like homotrimeric club like outward projections that impart unique structure to the virus [10]. The structural organization of the SARS-CoV-2 depicted in figure 1 can be summarized as: 5'-leader-UTR-replicase-S (Spike)-E (Envelope)-M (Membrane)-N (Nucleocapsid)-3' UTR-poly (A) tail comprising of accessory proteins encoded by accessory genes interspersed with the structural proteins in the structural genes located within the region preceding 3' end of the genome [11,12]. The other structural features of SARS-CoV-2 consists of 5'- leader sequence- ORF1/ab-S-ORF3a-E-M-ORF6a-

ORF7a-ORF7b-ORF8-N-ORF10-3' from left to right. The distinguishing feature of SARS-CoV-2 from other β CoV viruses is that it lacks the hemagglutinin-esterase gene. Open Reading Frame 1a and ab (ORF1ab) (~21,291 nt) correlated to ORF1A and ORF1B genes, cover two-thirds of the genome, release pp1a and pp1ab viral replicase polyproteins, which potentially encodes 16 nonstructural proteins (nsps) [13].

The SARS-CoV-2 virus causes contagious airborne disease transmitted via respiratory droplets, fomites and aerosols [14]. SARS-CoV-2 viruses invade and bind to the host receptors. Human angiotensin converting enzyme 2 (ACE2) receptors are located in the cells of lung, heart, ileum, intestine, liver, vascular endothelium, kidney, testis and bladder. ACE2 receptor was identified as a functional entry receptor for SARS-CoV-2 virus that facilitates cell recognition and binding [15]. S(Spike) protein of the virus, is a trimeric glycoprotein with two subunits--S1 subunit essential for binding to the host cell receptor, contains functional domains such as N-terminal domain (NTD), receptor binding motif (RBM) along with receptor binding domain (RBD). Whereas, S2 subunit is critical for the membrane fusion, contains a fusion peptide (FP), heptad repeat 1 (HR1) and 2 (HR2) domains, a transmembrane (TM) and a cytoplasmic tail (CT) [16]. The receptor-RBD complex formation leads to stabilization of the RBD in its standing-up state which then triggers conformational changes in the S complex, releasing S1 subunit and activating S2 unit [17]. Host cell proteases such as furin, cathepsin B/L and transmembrane serine protease 2 (TMPRSS2) are essential for activating the S protein essential for cellular entry [18]. Furthermore, the S protein is cleaved between the S1 and S2 subunits at the furin (S1/S2) cleavage site and at an additional cleavage site

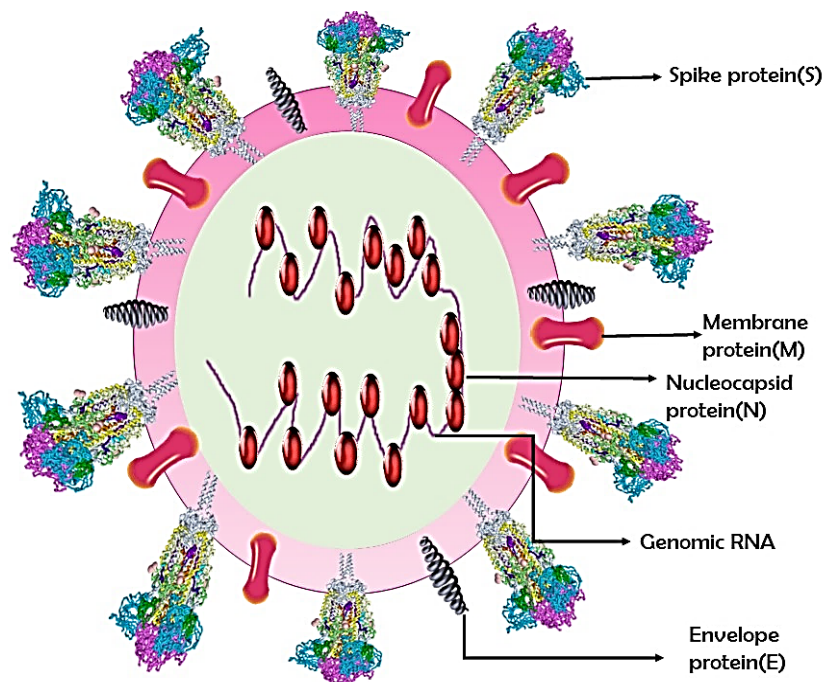


Figure 1: Schematic representation of the structure of SARS-CoV-2. SARS-CoV-2 has spike protein (S), membrane protein (M) and envelope protein (E). Also contains nucleocapsid protein (N) on the viral RNA.

located on the S2 subunit called as S2' cleavage site [19]. Proteolysis of S2' is required for membrane fusion [20]. Syncytia are the multinuclear giant cells, formed from SARS-CoV-2 infected cells, these spike-driven syncytia are crucial for viral -cell and cell-cell transmission of the disease [21]. Once the nucleocapsid of the virion is deposited into the cytoplasm of the host cell, the virus releases its positive-sense ssRNA which penetrates the nucleus to undergo replication [22]. Viral replication and transcription complex (RTC) is crucial for virus replication. Expression of the novel viral proteins are essential for continuous SARS-CoV-2 viral evolution [22]. SARS-CoV-2 exhibits broad cell tropism that confirms the potential risk of infection to the lungs specifically effecting type II alveolar epithelial cells and ciliated cells, epithelial cells of the intestine and the neuronal cells, causing neural inflammation and intestinal symptoms [23].

The outbreak of the pandemic Covid-19 steered towards unprecedented rise in mortality and morbidity globally, that has left the health care system stressed out the most. After the infectious COVID-19 was declared pandemic, by WHO on 8 March 2020, governments' worldwide started taking precautionary measures with full or partial lockdowns. The pandemic badly affected tourism sector as travel across the world was standstill due to closure of air traffic, other means of transport were also halted and the governments ordered people to practice social isolation and physical distancing measures which left people restrained to their homes [24]. Business establishments were shut causing financial insecurity, most of the people were asked to work from home or lost their livelihood leading to employment insecurity. People were crippled from all over with no access to health, rehabilitation and social care services [25].

The disastrous covid-19 pandemic inflicted an inexpressible impact on educational sector also [26]. The current situation where the world is grappled under the fear of COVID-19, the ministry of education (MOE) in Saudi Arabia ordered closure of educational institutions at all levels until further notice and directed them to offer online/virtual teaching [27]. This paved way for a paradigm transition from traditional face to face classroom learning pedagogy to a virtual online module of teaching and learning overnight [28]. Students, CTA's and the faculty members were asked to embrace the digital mode of education and experience the sum mum bonum of the novel online teaching-learning pedagogy [29]. This move was positively perceived and most welcomed so as to decrease infections, as there was no detailed information about the lethality of the SARS-CoV2 (COVID-19) virus and its treatment was unavailable. Also, continuing the physical mode of education would further increase anxiety, fear and susceptibility of contracting the disease among the professionals and students [30].

To ensure continuity of education during this disastrous period many e-learning platforms and Learning Management Systems (LMS). LMS, is technological

platform that is extensively used during the pandemic. It is a highly sophisticated platform that allows integration of teaching modules and serves as a tool for efficient coordinated communication tool among various participants during the sessions [31]. Various platforms that were used by institutions to deliver content of virtual teaching learning module included Zoom, Google meet, MS Teams, Blackboard etc., [32]. Among these, Blackboard LMS is the most widely used e-learning platform in KSA [33]. Designed and developed by Blackboard Inc. to provide services that would cater the needs of educational institutions adapting technology as a platform of e-learning [34]. Especially during the pandemic, Blackboard learning management systems has been the most reliable platform due to several user benefits associated. Blackboard Learning can be used both as synchronous and asynchronous learning management platform. It can be used for varied purposes like for assignments, plagiarism checking, grading students, uploading course related content, holding group discussions. This has increased the flexibility and ease of work both for teachers and students. The efficacy of using blackboard LMS depends on how well its tools 'are used [35].

The health care professions are always poised, as they (physicians, nurses, pharmacists etc.,) are among the frontline workers dealing with patients' directly and working towards their cure. The care for patients 'begins right in their schools, wherein the future health care professionals' are trained via simulation laboratory sessions, direct contact with patients in clinics throughout their course period. The faculty, students' along with the clinical teaching assistants, are required to attend their clinical teaching sessions in the hospitals affiliated to their universities, as part of their teaching schedules on day-to day basis. All the students are allocated to different wards where they observe the renowned, treating professionals and learn from them, at the end of the day they have to debrief their observations which is very crucial. This shows the importance of clinical competence in such esteemed professions during their sophomore, junior, and senior years of study. The health specialty courses such as medicine, dental, nursing and pharmacy normally deemed "face-to-face" teaching-learning substantially significant. Several universities were experimenting by integrating online mode of teaching and learning, even before the pandemic broke. However, the integration is slow in certain educational disciplines such as the health profession. Consequently, the digitalization of these specialties was rather considered unnecessary and the process was slow. Also, the advantages and disadvantages surrounding these teaching methods couldn't be sufficiently weighed as it was a sudden transition taken by governments of several countries to curtail the virus spread and save lives.

The Blackboard Collaborate Ultra's virtual classrooms were considered as most useful tool for online teaching learning module [36]. Online module ensured high attendance rate however participation and engagement

of students was limited, also class etiquette was missing [37]. The other advantages of using it are easy availability, ease of accessibility, involvement of large number of students, appropriate use of time, can access content at their own pace. However, the disadvantages/limitations of online learning platforms include: anxiety, lack of interest, distraction, lack of social interaction, internet instability [38]. Satisfaction of faculty and students and other stakeholders involved is extremely crucial to gauge the success of the online module, also to learn about the perceptions of the various stakeholders towards the online pedagogy. Satisfaction and academic achievement are amongst the “five characteristic pillars” assessing the quality of educational pedagogies [39]. Therefore, investigation of learners’ and teachers’ perceptions about online pedagogy can provide guidance towards successful implementation and the improvement of the online education modules.

Research questions

Are the faculty well trained and well equipped to teach and assess online using LMS?

Does there exist any statistically significant variations between age, gender, specialization, experience, and faculty satisfaction with the virtual learning module using BB LMS?

What are the challenges and concerns met by faculty teaching a course virtually during pandemic?

METHODOLOGY

Study design

The study devised and conducted was cross-sectional descriptive study from 2019 to 2020 amongst the faculty members involved in teaching (undergraduate and postgraduate) health specialty courses (majoring in Medicine, Pharmacy, Dentistry, applied medical Sciences, Nursing) at Batterjee medical college facility, Jeddah KSA harboring all these courses under one banner.

Participants

All the teaching faculties of various departments and specializations at BMC, Jeddah were invited to participate. The survey link was sent out via email to the faculties at staff@bmc.edu.sa. The participants were required to click the link sent via organizational email, which directed them to the consent form and the survey. Voluntary participation in the research survey was ensured, and information regarding anonymity of the collected data was stated to the participants. Surveys were opened from March 2020 until June 2020. A reminder was sent to all the eligible participants just before the closure of the study.

Ethics

The ethical approval for the project was granted by Batterjee medical college Research Ethics Committee (RES-2020-0076). The research was carried in accordance with the Helsinki Declaration.

Questionnaire

The questionnaire/tool used consists of two sections. First section designed to gather socio-demographic data, while the second section includes the questionnaire assessing faculty satisfaction regarding using blackboard as an online teaching method during Covid-19 pandemic. The second part has a total of 20 questions, distributed between five subdivisions that are about feedback on the following items: Learning Materials, Students’ Engagement and Management, Technical Concerns (Issues) and Accessibility, Workload, and Feedback and Evaluation. All study participants could choose numbers between 1-5 ranges which represent responses between strong disagreement to strong agreement. The questionnaires’ internal consistency was calculated using Cronbach’s Alpha coefficient (α), the overall consistency was reported high, with value of 0.867 which proves the validity of the questionnaire for its application.

Statistical analysis

Data obtained from the online survey using Google Docs was in the csv format and were exported to Excel initially and later they were transferred to SPSS (version 23, IBM, Chicago, USA) for analysis. Sociodemographic data was analyzed using Descriptive statistics and presented in the form of central tendency including mean, standard deviation, median. Pearson’s chi-squared test was employed to assess the correlation between demographics variables and scales variables. Moreover, Cronbach’s alpha, α was used to assess the reliability of the scale. Spearman’s correlation coefficient, (ρ), was employed to calculate the association between various study variables. Spearman’s correlation ranges between -1 to 1, with values near 1 indicating similarity (+) indicating similar and direct correlation in ranks for the two variables and values near -1 where (-) indicating dissimilar and inverse correlational ranks between the variables. Additionally, the p-value < 0.05 was considered statistically significant (S), p-value ≥ 0.05 was regarded statistically insignificant (NS). Bar graphs were also used to illustrate relevant results from obtained data.

RESULTS

Demographic characteristics of participants

The number of faculty members who voluntarily participated in the study and filled the survey forms was 67. As shown in Table 1, about 40.3% of the participants were females (n =27) while 59.7% (n=40) were males. Regarding age, there were 4 people (6%) between 20-30 years, 32 people (47.8%) between 31 and 40 years, 31 people (46.3%) between 41 and 50 years old. Furthermore, with respect to the years of teaching experience, there were 11 teachers (16.5%) with less than 4 year of experience, 12 teachers (17.5%) with 5–9 years of experience, 14 teachers (20.9%) with 10–14 years of experience, 10 teachers (14.9%) with 15–19 years of experience, 20 teachers (29.9%) with >19 years of experience. The distribution of faculty according to their position is presented in Table 1.

Experience the online teaching module

This study analyzes the preparedness of the faculty members towards online teaching strategy. It is interesting to note that nearly 50.7% of the faculty are for the first time using blackboard/e-learning platform. The also showed that approximately 49.3% of the faculty reported previous experience in online instruction method prior to COVID-19. Among the experienced users, 76.1% faculty confirmed that they attended workshop/training related to online teaching modalities prior to using it, whereas 23.9% didn't receive any training related to online teaching sessions as presented in Table 1.

Concerning gender, there was no significant difference among the participants compared ($n=67$, chi-squared test, $p > 0.05$). However, statistically significant inverse correlation was observed between satisfaction score and socio demographic parameters like age, experience years ($p=0.0001$) and qualification of staff ($p=0.036$) as shown in Table 2.

Table 1: Participants' characteristics, including their online teaching experience.

Variables	Frequency(N).	Percent(%)
Age		
20-<30 years	4	6
30-<40years	32	47.8
40-<50 years	31	46.3
Experience		
Less than 4 years	11	16.4
5-9 years	12	17.9
10-14 years	14	20.9
15-19 years	10	14.9
More than 19 years	20	29.9
position		
Clinical instructor	4	6
Lecturer	9	13.4
Assistant professor	31	46.3
Associate professor	16	23.9
Professor	7	10.4
Gender		
Male	40	59.7
Female	27	40.3
Exposure to blackboard or another online platform		
Yes	33	49.3
no first time	34	50.7
Do you attend any workshop regarding on line teaching previously?		
Yes	51	76.1
No	16	23.9

Table 2: Correlation matrix between faculty members' satisfaction Scales to Blackboard System and their Sociodemographic Characteristics (age, experience and qualification). correlation coefficient(r)* represents significant $p < 0.05$; ** represents highly significant $p < 0.001$.

Parameters	Satisfaction score	
	(r)	P
Age	-0.485**	0.0001
Experience	-0.635**	0.0001
Qualification	-0.257*	0.036

The findings obtained are elucidated below according to scales/items of the surveys.

Faculty perception regarding learning materials, and the online class preparation

The first Scale of the questionnaire was designed to appropriately assess faculty's perception towards learning materials and online class preparation, they were required to gauge their responses using five point Likert scale, however the responses were further classified as low level in a range of 1-2.59, Moderate level 2.6- 3.39, and high level 3.4- 5 [40] as depicted in Table 3. The majority of the participants consented that they need to be more creative while creating online material to successfully carry out the virtual classes. Moreover, they perceived that online courses require more effort in comparison to the face-to-face learning teaching method. Online learning thus can be regarded as a tool to cope with the emergency situations such as COVID-19.

Faculty perception about students' engagement and management

Faculties level of agreement related to items about students' engagement and were rated using 5-point Likert scale as illustrated in the table 4. Majority of the faculty i.e. 45 out of 67 (67.2%) disapproved the concept that online instruction improved student-faculty interactions and student engagement. Nevertheless, nearly 64.2% expressed their dubiety that online instruction enhanced student engagement and their interactions with peers. However, 49 out of 67 (73.1%) were contended with the usage of variety of communication tools available on blackboard like chat rooms, threaded discussions etc., Faculties response to whether online instruction was better from a student perspective received varied result. 22 out of 67 (32.8%) faculty felt students were happy and enthusiastic about online mode of education, 20.9% faculty responded that students were moderately happy, while 46.3% felt that students were quiet displeased with the online teaching/ learning pedagogy. Faculty perceived managing students was quiet a task with online mode, as they had no control over students' attendances. 46.3% of them felt they were difficult to manage, while 44.8% of them felt that students could be easily managed in online mode in comparison to the traditional classes.

Faculty concerns about technical issues and accessibility

Technical issues and accessibility were regarded as the extremely challenging hurdle related to the online teaching learning method. Faculties were asked to express their concerns regarding technical issues using a 5-point Likert scale. The participants 73.1% and 79.1% of them expressed high level of satisfaction with the institution's technical support and the internet connectivity speed respectively. Moreover, 79.1% of them expressed the ease of usage of technology in delivering content, uploading material etc., The scores represented overall satisfaction about technical accessibility as illustrated in Table 5.

Table 3: Responses of faculty to questions regarding learning materials during online teaching learning method during the pandemic COVID-19.

Learning Materials	High n(%)	Moderate n(%)	Low n(%)
I have to be more creative in terms of the resources used for the online course	55(82.1)	4(6.0)	8(11.9)
Additional materials should be given to students more than with face to face teaching	45(67.2)	10(14.9)	12(17.9)
I can access the online course material online at any Time	65(97)	0(0.0)	2(3.0)
I prepare for an online course on a weekly basis longer than for face to face courses	39(58.2)	18(26.9)	10(14.9)
Students can understand the courses contents easily	28(41.8)	6(9.0)	33(49.3)

Table 4: Responses of faculty to questions related to student's engagement and management during online instruction method during COVID-19 pandemic.

Students' Engagement and Management	High n(%)	Moderate n(%)	Low n(%)
Using online teaching allows for better student to faculty, participation, engagement and interaction more than in traditional face to face classes	18(26.9)	4(6.0)	45(67.2)
Using online teaching encourage student to student engagement and interaction more than in traditional face to face classes.	16(23.9)	8(11.9)	43(64.2)
Using communication tools in the online platform is useful (e.g., chat rooms, threaded discussions, etc.)	49(73.1)	14(20.9)	4(6.0)
Students are enthusiastic and happy about the online teaching method	22(32.8)	14(20.9)	31(46.3)
Managing students during online courses is easy compared to face to face classes	30(44.8)	6(9.0)	31(46.3)

Table 5: Responses of faculty to questions about Technical Concerns (Issues) and Accessibility during online instruction method during COVID-19 pandemic.

Technical Concerns (Issues) and Accessibility	High n(%)	Moderate n(%)	Low n(%)
Technical support is always available	49(73.1)	12(17.9)	6(9.0)
Internet connection is good enough for teaching and commencing online exams	53(79.1)	12(17.9)	2(3.0)
Uploading materials such as videos, images are easy and manageable	53(79.1)	4(6.0)	10(14.9)

Table 6: Responses of faculty to questions related to workload during online instruction method during COVID-19 pandemic.

Workload	High n(%)	Moderate n(%)	Low n(%)
Online teaching workload is higher compared to the traditional face to face teaching method	34(50.7)	19(28.4)	14(20.9)
My personal time is affected by working remotely due to open working hours	41(61.2)	10(14.9)	16(23.9)

Faculty perception regarding workload

Higher workload with online teaching method was the most important point counted as a limitation to online teaching learning method. Approximately, 50.7% of the participants expressed their dissatisfaction due to higher workload. Moreover, 61.2% participants opined that their personal time was squandered due to open working hours as shown in Table 6. Higher workload, deadlines, sudden transition, unnecessary disruptions were raising concerns about physical and mental anxiety and stress among faculty.

Faculty perception related to feedback and evaluation methods

Timely feedback and appropriate evaluation methods are strategic points that evaluate the effectiveness of online teaching learning methods. Evidence from earlier studies proves that students' performance seems to be enhanced upon timely feedback. Hence, it can be concluded that timely feedback is critical both for students and the instructors to achieve their learning goals, and enhance their teaching abilities online. Faculties gauged their response about feedback and evaluation using a 5-point Likert scale depicted in table. 38.8% of instructors highly opined that they could promptly provide students with individualized feedback on their performance in the course. However, 44.8% found it moderately significant and 16.4% were

negligent. This suggests that the instructors must be made aware of the significance of timely feedback upon students' performance to preserve high-level quality standards related to the online learning and teaching module. Most importantly, the participants when asked to record their perception about differences in online teaching and learning practical and the theoretical courses, 80.6% instructors responded that this mode is least useful in practical oriented courses while 71.6% responded that it is very useful in theoretical courses. More than half, i.e., 58.2% faculty opined that online mode had negative impact on the overall student evaluation when compared to traditional method. Regarding the probability of using blackboard as platform to deliver online teaching / learning pedagogy, post pandemic reopening of educational institutions, majority of faculty i.e., nearly 61.2% answered that they highly recommend blackboard as learning management system to support online learning, 35.8% expressed moderate response in recommending blackboard and nearly 3% least interested (Table 7). The overall scores of satisfaction dimensions along with their respective Mean \pm SD of the online pedagogy during the COVID 19 pandemic among faculties at a private institution in KSA are shown in Table 8 and Figures 1 and Figure 2.

Table 7: Responses of faculty to questions related to feedback and evaluation methods during online pedagogy during the COVID-19 pandemic.

Feedback and Evaluation Methods	High n(%)	Moderate n(%)	Low n(%)
With online teaching I can give students a proper feedback on their performance in the course	26(38.8)	30(44.8)	11(16.4)
Online teaching is effective for practical evaluation	3(4.5)	10(14.9)	54(80.6)
Online teaching is effective for theoretical courses evaluation	48(71.6)	13(19.4)	6(9.0)
Using online teaching impact students' courses evaluation survey negatively compared to the traditional face to face teaching	39(58.2)	16(23.9)	12(17.9)
I recommend using blackboard platform for online teaching in the future	41(61.2)	24(35.8)	2(3.0)

Table 8: describes the overall faculties' satisfaction level as high, moderate and low to scales such as learning materials, students' engagement and management, technical concerns (issues) and accessibility, workload, feedback and evaluation methods.

Dimensions	Faculties' Satisfaction level				
	High n(%)	Moderate n(%)	Low n(%)	Mean ± SD	Range
Learning Materials(25)*	53(79.1)	12(17.9)	2(3.0)	18.59±3.06	7-23
Students' Engagement and Management(25)*	22(32.8)	12(17.9)	33(49.3)	14.18±3.92	5-20
Technical Concerns (Issues) and Accessibility(15)*	49(73.1)	16(23.9)	2(3.0)	11.83±2.14	6-15
Workload(10)*	47(70.1)	6(9.0)	14(20.9)	6.97±2.26	2-10
Feedback and Evaluation Methods(25)*	33(49.3)	32(47.8)	2(3.0)	16 ±1.78	11-19
Faculties' Satisfaction Regarding Online Teaching during the Covid 19 Pandemic in KSA(100)*	25(37.3)	42(62.7)	0(0)	67.58±6.22	53-79

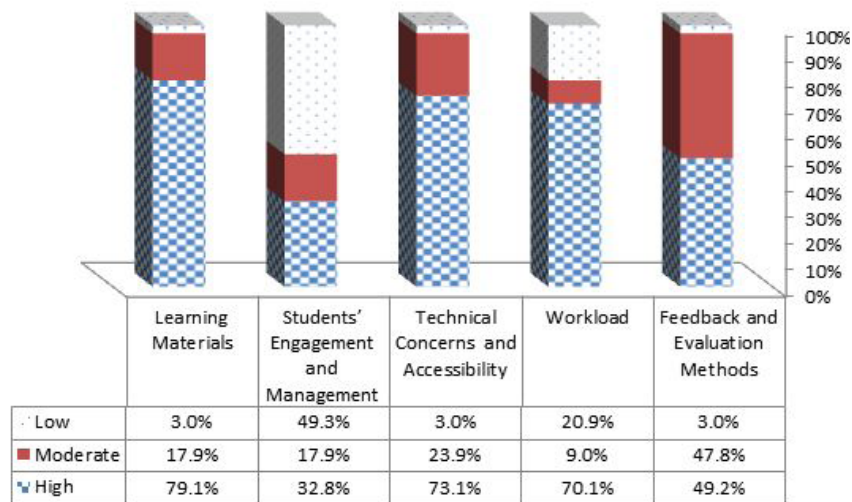


Figure 1: Illustrates satisfaction levels of faculty over the different subscales of the questionnaire.

Overall satisfaction of faculty members

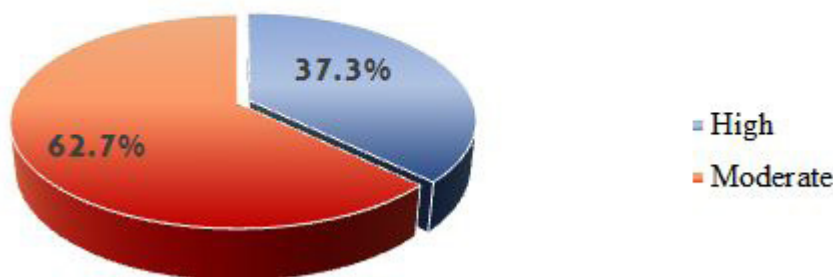


Figure 2: Depicts overall satisfaction levels of faculty towards online teaching learning module.

DISCUSSION

The world is witnessing revolutionizing changes in every field owing to the COVID-19 pandemic [41]. This is true

even for the educational sector which is transitioning rapidly to catch up with the pace of mutating variants, trying to maintain continuity of education through online teaching learning pedagogies [42]. This study

investigated the perceptions of faculty members embracing the virtual teaching learning module via usage of blackboard learning management system, including their preparedness for delivery of content online, their difficulties on personal and professional front, technical issues throughout the pandemic. It also focuses on the strengths and weaknesses experienced by the faculty and provided valuable insights about the satisfaction of faculty members with the teaching quality using BB. Participants in this study were the faculty members holding varied academic ranks at a private medical institution in Jeddah, Saudi Arabia. There exists limited evidence about faculty perceptions and their satisfaction in private institutions in Saudi Arabia, trying to adapt to the emergency declared online module. This study adds to existing literature and can be regarded as a guide to plan and improvise the online teaching learning module and help for its future preparedness.

The traditional face-face/classroom teaching module was abruptly transitioned to the online mode to ensure continuity of education and overcome the disruption created in the system by the COVID-19 pandemic [43]. All classes at BMC were transitioned to online mode using BB during mid-semester of academic year 20-21. The present study shows that Blackboard was the main learning management system(LMS) utilized for conducting most of the teaching learning activities. Measuring stakeholders' satisfaction about this transition is important, especially of the faculty and students. There is immense research done on student satisfaction about online transition, with little research done on faculty perception. Faculty satisfaction is substantial parameter to be measured as it impacts online course outcomes along with student achievement significantly [44]. Hence this study was done to measure faculty perceptions towards online mode. The overall results of the current study showed that faculty members were highly satisfied and had positive experience imbibing online teaching learning module during pandemic and felt the transition as easy, these were comparable to the results reported by Chierichetti, et al. [45]. The transition was rapid and the management had no time to weigh the pros and cons of the system. Moreover, the time for proper planning, and appropriate training was limited. However, results from this study showed that 76.1% of the faculty members had received prior training, whilst 23.9% didn't have any prior training. The reported results were coherent with the findings from the study of Almahasees, et al. [46,47]. Preparation for online classes demands a longer time than for traditional lectures. This was clear from the results of the current study, as most of the faculty (58.6%) reported that they spent additional hours on course preparation involving online pedagogy than usual hours for required spent in traditional teaching. These findings are similar to the findings from the study done by Rasmitadila, et al. [48].

Student and faculty satisfaction were proportional to the flexibility, ease of access to the materials provided, and convenience etc., offered by online classes [49,50].

In the current study nearly 82% faculty opined that they need to be more creative about resources being provided, 67.2% of them felt additional resources must be provided to the students. 97% were highly satisfied with the ease of availability of learning materials. These results concur with the results reported in similar studies done by Pokhrel, et al. [51].

Interactions and engagement are considered as prominent pillars of successful educational modules. The analysis of the current study showed that faculty perceptions of students' engagement declined due to transition to the online pedagogy. The results revealed the lacunae between students and faculty, and, between peers created by poor participation, devoid interactions, and insufficient team work. They found that these directly influence the achievement of the students. The results of the current research are consistent with recent studies done by Motte-Signoret et al. [52]; Gonzalez and Moore 2020. However, the positive factor impacting online module is use of varied communication tools like WhatsApp. Moreover, chat rooms, threaded discussions, available on blackboard were to some extent able to enhance the communication between peers, and, between the faculty and students. The analysis of the current study reported that nearly 73.1% of the faculty are highly satisfied with communication tools of blackboard LMS. These results are consistent with the results of the study done by Al-Sofi, et al. [53]. Moreover, in the current study faculty reported that students expressed their despair using the online pedagogy. The results of the current study are in accordance with the results reported by Coman, et al. [54] in their study. Results reported in this study concluded that high proportion of the faculty disagreed to the statement that managing students during online courses is easy compared to face to face classes. These results concur with the results reported in similar study done by Saha, et al. [55].

Al-Juda, et al. [56] reported that the satisfaction levels regarding online module among students increases with the ease of technical availability and support. While studying the perceptions of the faculty members at BMC it was reported that 73.1% faculty were highly contented with the technical support, and 79.1% with internet stability. In contrast, other previous studies done by Zalut et al. [57-60] reported that one of the highest barrier to online learning is technical issue and unstable internet. Online digital resources provide flexibility in time, space. They also are easily manageable. 79.1% faculty in the current study opined that uploading materials such as videos, images via Blackboard LMS was quiet easy and manageable.

Several previous studies done by Elshami et al. [44] reported that areas expressing concern and faculty dissatisfaction towards online teaching learning module are linked to workload. The current study presents data in accordance with earlier similar studies, according to which 50.7% faculty stated that online teaching

enhanced their workload when compared with the classical learning/face-to-face teaching learning method. Moreover, 61.2% respondents reported that their personal time and space are affected due to increased workload.

The role of the instructors is crucial in the teaching and learning process whether it is the classical face-to-face module or the online module, they are significant to ensure success of students and enhance course learning outcomes. They bear responsibility of providing timely feedback to the students which is extremely significant to enhance the performance of the students' and to ensure higher satisfaction levels with their online classes. The analysis from the current study proves that the respondents are fairly satisfied with their feedback and evaluation methods using online module. Moreover, courses related to health sciences are more practical oriented with laboratory and clinical skills providing hands on experience. 80.6% participants of the current study reported that conducting and evaluating practical work through online mode is very difficult. These findings are consistent with the findings of the work done by Mishra et al. [29]; Reinhart et al. [61] Sahu, et al. [62]. Nevertheless, 71.6% faculty opined that online mode is very useful to successful to conduct and evaluate theoretical courses. These results are in accordance with the previously obtained results from the studies done by Husain et al. [63] Naik et al. [64]. Furthermore, the present study also reported that 58.2% respondents feel that online mode of education negatively impacted their course evaluation as compared to traditional mode. The participants of the current study recommend usage of the Blackboard as learning management system post COVID-19 crisis. This is similar to the conclusion provided from the study done by Al Karani, et al. [65].

STUDY LIMITATIONS

The current study is limited to the faculty members at Batterjee medical college, Jeddah. All of them are involved in teaching virtually through the blackboard learning management system during the outbreak of the COVID-19 pandemic i.e. mostly during the second semester of the academic year AY 2020-2021 and the first semester of the academic year AY 2021-2022. The study findings should reveal the existing hardships encountered by the faculty in executing virtual teaching modality. The data obtained should facilitate in overcoming these obstacles and enhancing faculties' satisfaction. Furthermore, it is not possible to track perception of the faculties using online mode of education over time due to the cross sectional design of research method used here.

CONCLUSION

The aim of the present study is to investigate faculties' perceptions about virtual/online teaching and learning pedagogy using the Blackboard LMS learning management system during the COVID-19 pandemic. The exploratory factors about faculties perceptions that

were analyzed included age, number of years of teaching experience, gender, position of the instructor; teaching experience in traditional classes vs online platform (e.g., Blackboard), and whether or not the department provided any kind of training prior to the shift to online pedagogy at the time of COVID-19 pandemic. Findings from this study tend to contribute valuable information pertaining to initial faculty perspectives using Blackboard LMS, with a Hobson's choice to adapt to emergency remote learning/Virtual teaching learning pedagogy. The participants expressed mixed feelings that assimilate with their experience levels, age, technical knowledge and assistance during online course delivery. Furthermore, the results of the current study can be used to modify curriculum/course content as per need of the current situation, keep all the stakeholders well informed about the influence of novel pedagogy on learning outcomes and student performance, and might be helpful in providing faculty with necessary training to effectively use such soft wares in their teaching, research or on demand like in current scenario. In short, it helps us prepare for a better future anticipating and overcoming such crisis situation with better prospective.

CONFLICT OF INTEREST

The authors acknowledge that the research was conducted without any kind of financial assistance from any agency or institution and that there is NO potential conflict of interest.

ACKNOWLEDGMENTS

The author would like to express her deepest gratitude to the Dean, Batterjee Medical college for providing a platform to conduct the study. The author would also like to thank her amazing colleagues for participating in the research.

REFERENCES

1. Gibson PG, Qin L, Puah SH. COVID-19 acute respiratory distress syndrome (ARDS): Clinical features and differences from typical pre-COVID-19 ARDS. *Med J Aust* 2020; 213:54-56.
2. Li C, Wu X, Liu S, et al. Role of resolvins in the inflammatory resolution of neurological diseases. *Front Pharmacol* 2020; 11:612.
3. Chen R, Lan Z, Ye J, et al. Cytokine storm: The primary determinant for the pathophysiological evolution of COVID-19 deterioration. *Front Immunol* 2021; 12:1409.
4. Xiong J, Lipsitz O, Nasri F, et al. Impact of COVID-19 pandemic on mental health in the general population: A systematic review. *J Affect Disord* 2020; 277:55-64.
5. Bchetnia M, Girard C, Duchaine C, et al. The outbreak of the novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2): A review of the current global status. *J Infect Public Health* 2020; 13:1601-1610.
6. Hu B, Guo H, Zhou P, et al. Characteristics of SARS-CoV-2

- and COVID-19. *Nature Rev Microbiol* 2021; 19:141-154.
7. Xue M, Feng L. The role of unfolded protein response in coronavirus infection and its implications for drug design. *Front Microbiol* 2021; 12.
 8. Satarker S, Nampoothiri M. Structural proteins in severe acute respiratory syndrome coronavirus-2. *Arch Med Res* 2020; 51:482-491.
 9. Mariano G, Farthing RJ, Lale-Farjat SL, et al. Structural characterization of SARS-CoV-2: where we are, and where we need to be. *Front Mol Biosci* 2020; 344.
 10. Zhao X, Chen H, Wang H. Glycans of SARS-CoV-2 spike protein in virus infection and antibody production. *Front Mol Biosci* 2021; 8:629873.
 11. Naqvi AA, Fatima K, Mohammad T, et al. Insights into SARS-CoV-2 genome, structure, evolution, pathogenesis and therapies: Structural genomics approach. *Mol Basis Dis* 2020; 1866:165878.
 12. Rahimi A, Mirzazadeh A, Tavakolpour S. Genetics and genomics of SARS-CoV-2: A review of the literature with the special focus on genetic diversity and SARS-CoV-2 genome detection. *Genomics* 2021; 113:1221-1232.
 13. Nagu P, Parashar A, Behl T, et al. CNS implications of COVID-19: A comprehensive review. *Rev Neurosci* 2021; 32:219-234.
 14. Leung NH. Transmissibility and transmission of respiratory viruses. *Nat Rev Microbiol* 2021; 19:528-545.
 15. Cuervo NZ, Grandvaux N. ACE2: Evidence of role as entry receptor for SARS-CoV-2 and implications in comorbidities. *Elife* 2020; 9:e61390.
 16. Zhang Q, Xiang R, Huo S, et al. Molecular mechanism of interaction between SARS-CoV-2 and host cells and interventional therapy. *Signal Trans Targeted Therapy* 2021; 6:1-9.
 17. Silva TF, Tomiotto-Pellissier F, Sanfelice RA, et al. A 21st century evil: immunopathology and new therapies of COVID-19. *Front Immunol* 2020; 11:562264.
 18. Rahbar Saadat Y, Hosseiniyan Khatibi SM, Zununi Vahed S, et al. Host serine proteases: A potential targeted therapy for COVID-19 and influenza. *Front Mol Biosci* 2021; 8:725528.
 19. Örd M, Faustova I, Loog M. The sequence at Spike S1/S2 site enables cleavage by furin and phospho-regulation in SARS-CoV2 but not in SARS-CoV1 or MERS-CoV. *Sci Rep* 2020; 10:1-0.
 20. Yu S, Zheng X, Zhou B, et al. SARS-CoV-2 spike engagement of ACE2 primes S2' site cleavage and fusion initiation. *Proceedings of the National Academy of Sciences* 2022; 119:e2111199119.
 21. Buchrieser J, Dufloo J, Hubert M, et al. Syncytia formation by SARS-CoV-2-infected cells. *EMBO J* 2020; 39:e106267.
 22. Pandey A, Nikam AN, Shreya AB, et al. Potential therapeutic targets for combating SARS-CoV-2: Drug repurposing, clinical trials and recent advancements. *Life Sci* 2020; 256:117883.
 23. Puelles VG, Lütgehetmann M, Lindenmeyer MT, et al. Multiorgan and renal tropism of SARS-CoV-2. *N Engl J Med* 2020; 383:590-592.
 24. Gupta S, Sahoo S. Pandemic and mental health of the front-line healthcare workers: a review and implications in the Indian context amidst COVID-19. *Gen Psychiatr* 2020; 33.
 25. Shakespeare T, Ndagire F, Seketi QE. Triple jeopardy: Disabled people and the COVID-19 pandemic. *Lancet* 2021; 397:1331-1333.
 26. Almomani EY, Qablan AM, Atrooz FY, et al. The influence of coronavirus diseases 2019 (COVID-19) pandemic and the quarantine practices on university students' beliefs about the online learning experience in Jordan. *Front Public Health* 2021; 8:595874.
 27. Khalil R, Mansour AE, Fadda WA, et al. The sudden transition to synchronized online learning during the COVID-19 pandemic in Saudi Arabia: a qualitative study exploring medical students' perspectives. *BMC Med Educ* 2020; 20:1.
 28. Alsmadi MK, Al-Marashdeh I, Alzaqebah M, et al. Digitalization of learning in Saudi Arabia during the COVID-19 outbreak: A survey. *Inform Med Unlocked* 2021; 25:100632.
 29. Mishra L, Gupta T, Shree A. Online teaching-learning in higher education during lockdown period of COVID-19 pandemic. *Int J Educ Res Open* 2020; 1:100012.
 30. Ozamiz-Etxebarria N, Berasategi Santxo N, Idoiaga Mondragon N, et al. The psychological state of teachers during the COVID-19 crisis: The challenge of returning to face-to-face teaching. *Front Psychol* 2021; 11:620718.
 31. Alturki U, Aldraiweesh A. Application of Learning Management System (LMS) during the covid-19 pandemic: A sustainable acceptance model of the expansion technology approach. *Sustainability* 2021; 13:10991.
 32. García-Morales VJ, Garrido-Moreno A, Martín-Rojas R. The transformation of higher education after the COVID disruption: Emerging challenges in an online learning scenario. *Front Psychol* 2021; 12:616059.
 33. Alenezi A. Barriers to participation in learning management systems in Saudi Arabian universities. *Educ Res Int* 2018; 2018.
 34. Ahmad Al-Ajlan R, Alsayed Ahmed Khalifa W, Ali Younes Atta H. The role of adopting blackboard system in light of the coronavirus pandemic in developing the skills of its use and academic achievement among Taif university students. *Inf Sci Lett* 2021; 10:3.
 35. <https://ssrn.com/abstract=3874035> or <http://dx.doi.org/10.2139/ssrn.3874035>
 36. Elsamanoudy AZ, Al Fayz F, Hassanien M. Adapting blackboard-collaborate ultra as an interactive online learning tool during the COVID-19 pandemic. *J Microsc Ultrastructur* 2020; 8:213.
 37. Neuwirth LS, Jović S, Mukherji BR. Reimagining higher education during and post-COVID-19: Challenges and

- opportunities. *J Adult Contin Educ* 2021; 27:141-156.
38. Rahayu RP, Wirza Y. Teachers' perception of online learning during pandemic covid-19. *J Penelitian Pendidikan* 2020; 20:392-406.
 39. Li W, Gillies R, He M, et al. Barriers and facilitators to online medical and nursing education during the COVID-19 pandemic: Perspectives from international students from low-and middle-income countries and their teaching staff. *Hum Resour Health* 2021; 19:1-4.
 40. Pimentel JL. A note on the usage of likert scaling for research data analysis. *USM R D J* 2010; 1:109-112.
 41. Xiang S, Rasool S, Hang Y, et al. The effect of COVID-19 pandemic on service Sector sustainability and growth. *Front Psychol* 2021; 1178.
 42. Dhawan S. Online learning: A panacea in the time of COVID-19 crisis. *J Educ Technol Systems* 2020; 49:5-22.
 43. Iglesias-Pradas S, Hernández-García Á, Chaparro-Peláez J, et al. Emergency remote teaching and students' academic performance in higher education during the COVID-19 pandemic: A case study. *Comput Human Behav* 2021; 119:106713.
 44. Elshami W, Taha MH, Abuzaid M, et al. Satisfaction with online learning in the new normal: perspective of students and faculty at medical and health sciences colleges. *Med Edu Online* 2021; 26:1920090.
 45. Chierichetti M, Backer P. Exploring faculty perspectives during emergency remote teaching in engineering at a large public university. *Educ Sci* 2021; 11:419.
 46. Almahasees Z, Mohsen K, Amin MO. Faculty's and students' perceptions of online learning during COVID-19. *Front Educ* 2021; 6.
 47. Aryal A, Balan S. Evaluation of a technical information systems module for distance learning during the COVID-19 pandemic. *J Res Innovative Teaching Learning* 2022.
 48. Rasmitadila R, Aliyyah RR, Rachmadtullah R, et al. The perceptions of primary school teachers of online learning during the COVID-19 pandemic period: A case study in Indonesia. *J Ethnic Cultural Studies* 2020; 7:90-109.
 49. Li W, Gillies R, He M, et al. Barriers and facilitators to online medical and nursing education during the COVID-19 pandemic: Perspectives from international students from low-and middle-income countries and their teaching staff. *Hum Resour Health* 2021; 19:1-4.
 50. Muthuprasad T, Aiswarya S, Aditya KS, et al. Students' perception and preference for online education in India during COVID-19 pandemic. *Soc Sci Humanities Open* 2021; 3:100101.
 51. Pokhrel S, Chhetri R. A literature review on impact of COVID-19 pandemic on teaching and learning. *Higher Educ Future* 2021; 8:133-141.
 52. Motte-Signoret E, Labbé A, Benoist G, et al. Perception of medical education by learners and teachers during the COVID-19 pandemic: A cross-sectional survey of online teaching. *Med Edu Online* 2021; 26:1919042.
 53. Al-Sofi BB. Student satisfaction with e-learning using blackboard LMS during the Covid-19 circumstances: Realities, expectations, and future prospects. *Pegem J Edu Instruction* 2021; 11:265-281.
 54. Coman C, Tîru LG, Meseşan-Schmitz L, et al. Online teaching and learning in higher education during the coronavirus pandemic: Students' perspective. *Sustainability* 2020; 12:10367.
 55. Saha SM, Pranty SA, Rana MJ, et al. Teaching during a pandemic: Do university teachers prefer online teaching?. *Heliyon* 2022; 8:e08663.
 56. Al-Juda MQ. Distance learning students' evaluation of e-learning system in University of Tabuk, Saudi Arabia. *J Educ Learning* 2017; 6:324-335.
 57. Zalat MM, Hamed MS, Bolbol SA. The experiences, challenges, and acceptance of e-learning as a tool for teaching during the COVID-19 pandemic among university medical staff. *PloS One* 2021; 16:e0248758.
 58. Nguyen QL, Nguyen PT, Huynh VD, et al. Application Chang's extent analysis method for ranking barriers in the e-learning model based on multi-stakeholder decision making. *Universal J Educ Res* 2020; 8:1759-1766.
 59. Dahmash NB. I couldn't join the session': Benefits and challenges of blended learning amid Covid-19 from EFL students. *Int J Engl Linguist* 2020; 10:221-230.
 60. DeCoito I, Estaiteyeh M. Transitioning to online teaching during the COVID-19 pandemic: An exploration of STEM teachers' views, successes, and challenges. *J Sci Educ Technol* 2022; 31:340-356.
 61. Reinhart A, Malzkorn B, Döing C, et al. Undergraduate medical education amid COVID-19: A qualitative analysis of enablers and barriers to acquiring competencies in distant learning using focus groups. *Med Educ Online* 2021; 26:1940765.
 62. Sahu P. Closure of universities due to coronavirus disease 2019 (COVID-19): Impact on education and mental health of students and academic staff. *Cureus* 2020; 12.
 63. Husain B, Idi YN, Basri M. Teachers' perceptions on adopting e-learning during Covid-19 outbreaks, advantages, disadvantages, suggestions. *J Tarbiyah* 2021; 27.
 64. Naik GL, Deshpande M, Shivananda DC, et al. Online teaching and learning of higher education in india during COVID-19 emergency lockdown. *Pedagog Res* 2021; 6.
 65. AlKarani AS, Thobaity AA. Medical staff members' experiences with blackboard at Taif University, Saudi Arabia. *J Multidiscip Healthc* 2020; 13:1629.