ORIGINAL ARTICLE

Undergraduate Dental Student's Perspective on Classroom and Online Distance Learning During the Covid-19 Pandemic

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ABSTRACT

Introduction: The COVID-19 pandemic disrupted education, including dental studies, leading Universiti Kebangsaan Malaysia (UKM) to implement online learning in the second semester of 2019/2020. Previous studies have reported that students have preferences for their mode of learning, although they faced challenges in both online and classroom settings. Therefore, this study aims to assess the perspectives of undergraduate dental students at UKM regarding classroom and online learning within the Faculty of Dentistry during the pandemic. **Materials and Methods:** A cross-sectional method was used in this study. Demographic data, the effectiveness and acceptance of learning modes, challenges faced during learning, and participants' preferred learning platform were assessed via an online questionnaire. The questionnaire, which has been previously published, was adapted and modified for this study. It was pretested and validated. Descriptive statistics were used for analysis. **Results:** The overall response rate was 83%. Most students preferred classroom learning, particularly for enhancing knowledge (71%), clinical skills (48%), and social competencies (58%). However, 51% still supported online learning and agreed its continued future use. Challenges included technical issues and social media distractions. Microsoft Teams was the most preferred online platform due to its features and usability. **Conclusion:** While classroom learning was preferred, many students recognized the benefits of online learning and supported its continued use. Despite challenges such as technical issues and distractions, online platforms remained valuable, with Microsoft Teams being the most favoured. Therefore, dental educators should consider integrating online distance learning into the curriculum to enhance the overall learning experience.

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INTRODUCTION

The COVID-19 pandemic, caused by the novel coronavirus SARS-CoV-2, originated in Wuhan, China, in 2019. The virus is primarily transmitted from person to person and has led to a global health crisis. Subsequently, the World Health Organization (WHO) declared the disease a global pandemic. To mitigate the spread of infection, various countries, including Malaysia, implemented social distancing measures, such as stay-at-home restrictions, travel bans, and the closure of offices and educational institutions (1,22).

Many dental schools worldwide implemented the shutdown of their educational institutions at all levels, necessitating both educators and students to stay at home. Despite the use of the internet and various technological tools for teaching delivery, academic dental schools typically have a two-year preclinical and a three-year clinical dental course curriculum. This curriculum is designed to prepare students for licensure and practice upon graduation. While emerging technologies like simulation and virtual reality are gaining popularity, they can never fully replace the benefits of direct, in-person interaction (2).

In the context of dental education, the situation mirrored that of many other institutions. Both students and educators had to adapt to a significant shift toward online teaching to keep students engaged during the pandemic lockdown. This significant change particularly

impacted learning for clinical-year students. Despite the introduction of alternative forms of education and evaluation, such as live and pre-recorded online lectures, problem-solving activities, and computer-based reports and exams, the implementing patient care in clinics proved to be impossible.

Studies have highlighted several advantages of online teaching during its implementation (3,4). A key benefit is its student-centered approach, which contrasts with the traditional teacher-centered classroom setting. Online distance learning allows students to learn at their own pace and adapt to their individual needs, relying less on rigid instructions compared to conventional methods (3). Additionally, students value its flexibility, cost-effectiveness, and the convenience of not having to travel, as long as they have internet access (4).

Nevertheless, students faced technical issues, prompting some universities to alternate between synchronous and asynchronous classes to support those with connectivity problems. Asynchronous online learning allows students to access course materials and complete tasks at their own pace, whereas synchronous learning involves real-time interactions between lecturers and students (5). By incorporating asynchronous learning, students can participate in classes without facing immediate technical disruptions and can access lectures when their internet connection is stable.

Previous studies have examined on the effectiveness of both classroom learning and online learning (3,5-9), but little attention has been given to understanding and studying the perspectives of students regarding these two modes of learning. Therefore, this study aims to evaluate the perspectives of undergraduate dental students at Universiti Kebangsaan Malaysia (UKM) concerning classroom and online distance learning within the Faculty of Dentistry during the COVID-19 pandemic.

MATERIALS AND METHODS

Sample Collection

A cross-sectional questionnaire survey was conducted during second semester of 2019/2020.This questionnaire was modified and adapted based on Amir et al. (2020). The questionnaire was pre-tested on final-year undergraduate dental students through Google Forms. A cognitive interview was carried out while they were completing the questionnaire. These students were asked to comment on the content, structure, and ease of completion. After necessary amendments, the questionnaires were administered among five final-year undergraduate students, and this was repeated after a week. The intra-rater agreement was acceptable (κ=0.65). Ethics approval was obtained from the university's research ethics committee [UKM PPI/111/8JEP-2022-552].

The questionnaire consisted of five parts with a total of 30 questions, structured as follows: Part A consisted of basic demographic data, including student name, matrix number, year of studies, and gender (Question 1-Question 4). Part B compared online learning to classroom learning (Question 5-Question 14), with participants answering using a 5-point Likert scale (1=extremely ineffective, 2=ineffective, 3=uncertain, 4=effective, 5=extremely effective). Part C focused on student acceptance and readiness for online learning (Question 15 - Question 20), with participants using a 5-point Likert scale (1=strongly disagree, 2=disagree, 3=uncertain, 4=agree, 5=strongly agree). Part D explored the challenges students faced during online learning (Question 21-Question 29), with answers given using a 5-point Likert scale (1=strongly disagree, 2=disagree, 3=uncertain, 4=agree, 5=strongly agree). Part E consisted of a few options about students preferred online platforms (Question 30). In this cross-sectional survey, the sample consisted of undergraduate students from the Faculty of Dentistry, UKM, including all those in the batch 2021/2022. This comprised students from Year 1 to Year 5, who experienced four semesters (two years) of online learning due to the pandemic, providing valuable insights into their perspectives on both online and classroom education. The self-administered questionnaire was sent via Google Forms to each individual. Written consent from the respondent was waived, as informed consent was implied through the return of completed questionnaires. Respondents were given two weeks duration to complete and return the questionnaire. Non-respondents received another copy of the questionnaire after two weeks, followed by telephone reminders.

Data analysis

Data entry and analysis were performed using Microsoft Excel 2019. Descriptive statistics were performed. Data from the subdomains in each domain were grouped, and frequencies and percentages were calculated.

RESULTS

Basic demographic data

Of the 223 questionnaires distributed to the UKM dental students, 185 questionnaires were completed with a response rate of 83%. Most of the participants were female (77.84%), reflecting most of our undergraduate dental students (Table 1). The majority of respondents in this study were from the third year, comprising 23.24% of the total participants, followed by second-year students at 20%. First-year and fifth-year students had an equal number of participants in the study, with 36 students each, accounting for 19.46% of the total participants. In contrast, fourth-year students comprised 17.84% of the total participants (Table 1).

Table I. Basic Demographic Data

Demographic	Frequency, n (%) (N=185)
Gender	
Female	144 (77.8)
Male	41 (22.2)
Age	
20	45 (24.3)
21	34 (18.9)
22	41 (22.2)
23	27 (14.6)
24	38 (20.5(
Year of study	
Year 1	36 (19.5)
Year 2	37 (20.0)
Year 3	43 (23.2)
Year 4	33 (17.8)
Year 5	36 (19.5)

Online learning and classroom learning

According to Table 2, over 50% of the students viewed online distance learning as a valuable setting for enhancing their knowledge. However, most of them doubted the effectiveness of online learning in improving clinical skills (45%) and social competences (42%). Conversely, while 71% of the students perceived classroom learning as an effective method for increasing their knowledge, a higher proportion of students believed that classroom learning is even more beneficial for improving their knowledge (71%), clinical skills (58%), and social competences (58%).

Table II. Percentage of Students' Preferences Online Learning and Classroom Learning

Questions	Extremely ineffective	In-effective	Un-certain	Effective	Extremely Effective	ean (SD)
	n (%)	n (%)	n (%)	n (%)	n (%)	
What is the effectiveness of online distance learning in terms of increasing knowledge?	0 (0.00%)	15 (8.11%)	40 (21.62%)	122 (65.95%)	8 (4.32%)	3.66 ± 0.69
What is the effectiveness of online distance learning in terms of increasing clinical skills?	21 (11.35%)	84 (45.41%)	57 (30.81%)	22 (11.89%)	1 (0.54%)	2.45 ± 0.87
What is the effectiveness of online distance learning in terms of increasing social competences?	14 (7.57%)	78 (42.16%)	51 (27.57%)	40 (21.62%)	2 (1.08%)	.66 ± 0.94
Is the activity in online learning effective for your study?	1 (0.54%)	20 (10.81%)	42 (22.70%)	113 (61.08%)	9 (4.86%)	3.59 ± 0.77
Does the online learning environment be effective towards your study?	1 (0.54%)	27 (14.59%)	42 (22.70%)	104 (56.22%)	11 (5.95%)	3.52 ± 0.83
What is the effectiveness of classroom learning in terms of increasing knowledge?	1 (0.54%)	3 (1.62%)	25 (13.51%)	132 (71.35%)	24 (12.97%)	3.95 ± 0.61

CONTINUE

Table II. Percentage of Students' Preferences Online Learning and Classroom Learning (CONT.)

Questions	Extremely ineffective	In-effective	Un-certain	Effective	Extremely Effective	Mean (SD)
	n (%)	n (%)	n (%)	n (%)	n (%)	
What is the effectiveness of classroom learning in terms of increasing clinical skills?	3 (1.62%)	18 (9.73%)	19 (10.27%)	88 (47.57%)	57 (30.81%)	3.96 ± 0.97
What is the effectiveness of classroom learning in terms of increasing social competences?	0 (0.00%)	12 (6.49%)	30 (16.22%)	107 (57.84%)	36 (19.46%)	3.90 ± 0.78
Does the activity in classroom learning is effective for your study?	1 (0.54%)	6 (3.24%)	27 (14.59%)	132 (71.35%)	19 (10.27%)	3.88 ± 0.64
Does the classroom learning environment be effective towards your study?	1 (0.54%)	9 (4.86%)	29 (15.68%)	120 (64.86%)	26 (14.05%)	3.87 ± 0.73

Student acceptance and readiness towards online learning

Based on Table 3, approximately half of the students (51%) agreed with using online learning in the future, while only a small percentage (13%) disagreed. Regarding speaking positively about online classes in the future, around 47% of the students agreed, while a considerable portion (34%) remained uncertain about it. Furthermore, most students (50%) agreed that online learning helped improve their academic performance

Table III: Percentage of Student Acceptance and Readiness towards Online Learning

Questions	Strongly disagree	Disagree	Un-certain	Agree	Strongly agree	Mean
	n (%)	n (%)	n (%)	n (%)	n (%)	
Do the student agree to use online classes in the future?	1 (0.5%)	25 (13.5%)	42 (22.7%)	95 (51.4%)	22 (11.9%)	3.61 ± 0.89
Do the student agree to talk positively about online classes to others in the future?	0 (0.00%)	13 (7.0%)	64 (34.6%)	88 (47.5%)	20 (10.8%)	3.62 ± 0.77
Online learning help to improve student academic performance	2 (1.1%)	21 (11.4%)	56 (30.3%)	93 (50.3%)	13 (7.0%)	3.51 ± 0.83
Online learning allows students to do more work in less time	2 (1.1%)	8 (4.3%)	37 (20%)	103 (55.6%)	35 (18.9%)	3.87 ± 0.80
It is easy to operate the online learning system	2 (1.1%)	15 (8.1%)	22 (11.9%)	121 (64.4%)	25 (13.5%)	3.82 ± 0.80
The interaction with the online learning system is clear and understandable	1 (0.5%)	26 (14.1%)	51 (27.6%)	89 (48.1%)	18 (9.7%)	3.52 ± 0.87

and allowed them to work efficiently. A larger proportion of students (64%) found online learning systems very easy to operate, while 11% were uncertain and 8% disagreed. Additionally, nearly all students (48%) agreed that the interaction with the online learning system was clear and understandable.

Challenges faced by students during online learning

Table 4 shows that most students find technical issues (67%) and online distractions such as social media (57%) the most challenging aspects of online learning. Additionally, 43% of the students agree that they struggle with time management, lack of discipline during online classes, and the inability to receive appropriate assistance. However, 38% of the students disagree that they have limited time to prepare before an online class, and another 41% disagree that students cannot use technology effectively for learning purposes. Furthermore, 40% of the students feel disinterested during online classes, and 42% feel emotionally disconnected or isolated during online learning. Finally, the majority of students report having poor learning conditions at home (41%).

Table IV: Challenges Faced by Students during Online Learning

Questions	Strongly disagree	Disagree	Uncertain	Agree	Strongly agree	Mean
	n (%)	n (%)	n (%)	n (%)	n (%)	
Student have poor time management and lack of discipline during online classes	5 (2.7%)	39 (21.1%)	50 (27.0%)	80 (43.2%)	11 (6%)	3.29 ± 0.96
Student fail to get appropriate help during online classes	5 (2.7%)	47 (25.4%)	43 (23.2%)	81 (43.8%)	9 (4.9%)	3.22 ± 0.97
Student have limited preparation before an online class	6 (3.2%)	71 (38.4%)	56 (30.3%)	46 (24.9%)	6 (3.2%)	2.86 ± 0.94
Student feel disinterested during online class	7 (3.8%)	50 (27%)	47 (25.4%)	74 (40%)	7 (3.8%)	3.13 ± 0.98
Student have to encounter with technical problems	1 (0.5%)	6 (3.2%)	19 (10.3%)	124 (67%)	35 (18.90%)	4.01 ± 0.69
Student emotionally disconnected or isolated during online classes	13 (7.0%)	43 (23.2%)	40 (21.6%)	79 (42.7%)	10 (5.4%)	3.16 ± 1.07
Student lack of ability to effectively use technology to facilitate learning	15 (8.1%)	76 (41.1%)	45 (24.3%)	45 (24.3%)	4 (2.2%)	2.71 ± 0.99
Student have poor learning condition at home	9 (4.9%)	43 (23.24%)	51 (27.6%)	76 (41.1%)	6 (3.2%)	3.15 ± 0.98
Student experience online distractions such as social media during online classes	4 (2.2%)	22 (11.89%)	29 (15.7%)	106 (57.3%)	24 (13%)	3.67 ± 0.92

Table V: Preferred Online Learning Platforms Among Students

Online platforms	Frequency, n (%) (N=185)
Whatsapp	1 (0.54)
Zoom	2 (1.08)
UKM - folio	14 (7.6)
Microsoft - teams	168 (90.1)

Preferred online platforms for students

According to Table 5, most students (91%) preferred to use Microsoft Teams among the five online platforms commonly used in UKM. A small number of students preferred UKM-folio (8%) and Zoom (1%), while only one student preferred WhatsApp.

DISCUSSION

The COVID-19 pandemic prompted the unprecedented closure of university facilities, affecting millions of students globally. In response, universities, including UKM, rapidly transitioned teaching and learning activities to an online mode to ensure academic continuity while mitigating the risk of infection.

In this study, a significant number of students indicated that classroom learning more effectively enhanced their knowledge, clinical skills, and social competencies compared to online learning. Additionally, the classroom setting and learning environment contributed positively to their studies. In this survey, the majority of students (71%) preferred classroom learning over online learning. This result was higher than those reported in other studies comparing online and classroom learning, which found a lower preference for classroom learning (6,7,10).

Students expressed a strong preference for classroom learning and a desire to return to traditional teaching formats after the pandemic (5). This preference may be attributed to the study's sample composition, which primarily consisted of third- to fifth-year clinical students required to engage in hands-on clinical training and fulfil specific graduation requirements.

Although online lectures are beneficial for theoretical learning, the lack of clinical practice and laboratory sessions can hinder the development of practical skills. Similarly, a study by Lestari et al. (2022) reported that many clinical-year students recognized online learning as useful for theoretical study but found it insufficient for building the confidence needed for patient care (21). It is also important to note that while clinical training formally begins in Year three, Year two students are required to attend simulation lab exercises as preparation for their clinical sessions in the following year. These simulation labs provide hands-on experience and

skill development that cannot be replicated through online learning. Although theoretical knowledge can be delivered effectively through virtual platforms, the integration of hands-on exercises, patient interactions, and real-time supervision remains essential for clinical competency. This further reinforces why classroom and in-person learning remains the preferred choice among students, as it ensures comprehensive training that online learning alone cannot provide.

Despite the majority of students preferring classroom learning, they have shown a positive acceptance of online learning as part of future teaching methods. Among those who support this approach, many belong to a technologically proficient younger generation. Similarly, studies conducted by Amir et al. (2020), Khalil et al. (2020), and Green et al. (2018) have reported that younger students tend to adapt well to online learning (6,7,10).

One possible reason for this trend is that online learning enables students to work efficiently and navigate digital learning platforms with ease. Previous studies (6,7) have also highlighted that students benefit from convenient access to digital course materials and enhanced visualization tools. Furthermore, integrating online learning technology with classroom instruction could improve knowledge retention by providing repeated exposure to key concepts and increasing student engagement (11,12). Additionally, students' acceptance of online learning is influenced by their personality types, which shape how they engage with its self-regulatory nature. Self-regulation is associated with goal-setting, effective time management, problem-solving skills, and the perception of having sufficient opportunities to seek guidance from educators (16,17).

Having adopted online learning as their preferred method, students also acknowledged encountering various challenges during its implementation. One of the primary difficulties, as reported in several studies, was technical issues related to internet connectivity (5-7). Similarly, a study conducted by Gherheş et al. (2021) reported that students faced comparable obstacles, including limited access to stable internet and difficulties in navigating online learning platforms. In addition to internet connectivity, having appropriate devices such as laptops or tablets is essential for attending online classes and accessing course materials. Without these devices, students would be unable to participate effectively, hindering their learning experience. However, at UKM, efforts are being made to address this situation by accommodating students facing internet-related challenges that hinder their participation in online classes at the same pace as their peers. Lectures are recorded and uploaded to the platform, allowing students to review recorded sessions. The university actively monitors its IT infrastructure to ensure universal access. Despite these measures, some students experienced slow internet connection, particularly during online exams. In response, educators collaborated with the IT department to stabilize the online exam platform. They remained available at their computers to assist students facing difficulties and provided additional exam time to ensure completion amid technical challenges.

Another challenge is that students encounter online distractions, such as social media, during virtual classes. When students deactivate their cameras, they can participate in activities that may hinder their engagement in the class. Unfortunately, educators find it challenging to assess students' participation levels as easily as in traditional, in-person classes. As a result, there is a requirement for students to activate their cameras during virtual sessions. However, some students oppose this obligation. A study conducted with students from the Politehnica University of Timisoara (5) identified reasons for not turning on cameras, including anxiety, shyness, fear of exposure, and concerns about the privacy of their surroundings. While these reasons are understandable from a human perspective, there is a concern about their impact on the effectiveness of learning from an educational standpoint.

Moreover, the challenges faced by students in receiving appropriate help during online classes, as reported in this study, are similar to the findings of Amir et al. (2021) and Gherhes et al. (2020). A similar disadvantage was identified in a study conducted in India, where students perceived the lack of practical guidance as a significant impediment to their educational activity (16). Consequently, the performance of educators responsible for the distance learning process varied in terms of their interactive pedagogy ability, uplifting spirit, and confidence in utilizing innovative learning methods. Furthermore, many educational institutions offer online platforms that facilitate two-way communication between students and faculty outside class hours, allowing for the sharing of posts and discussions. Additionally, educators use social media to address students' queries before or after class, providing valuable support, especially for students who may feel hesitant to ask questions during regular class hours. A closed Facebook discussion group for pre-clinical education facilitated rapport with educators, enhanced content learning, and improved emotional well-being among students (20). A study revealed that students who perceived the importance of communicating issues related to dental training via social media were 1.65 times more likely to engage in such communication. Dental students surveyed in the United States expressed a belief that social media should be incorporated into their courses (21).

Another interesting point worth mentioning is student preferences in selecting an online platform for learning. Understanding these preferences enables educators to conduct online classes more effectively. In this study, most students favoured Microsoft Teams for online

distance learning over other platforms like Google Classroom. One of the main reasons for this preference is that the faculty primarily used Microsoft Teams for synchronous learning and meeting, giving students more exposure to this platform. Meanwhile, UKMfolio, the official online platform of UKM for asynchronous learning, was commonly used by lecturers for non-live sessions, further reinforcing students' familiarity with it compared to other tools.

On top of that, a key factor influencing the success of online learning is the flexibility and accessibility of the platform. Microsoft Teams is perceived as user-friendly, with a minimal learning curve, which contributes to its popularity among students. Additionally, the ease of accessing digital tools on their computers further enhances their learning experience (18). Previous study has highlighted that familiarity with technology plays a crucial role in student engagement, as students are more likely to participate actively in online classes when using a platform, they are comfortable with (19).

CONCLUSION

In conclusion, this study revealed that students predominantly prefer classroom learning, as it effectively increases their knowledge, clinical skills, and social competences. Despite this preference for classroom learning, they also expressed acceptance with the use of online learning as part of future teaching methods. Consequently, it is crucial for dental educators to incorporate a blended learning strategy into the curriculum, amalgamating the most beneficial elements from both classroom and online learning, resulting in holistic learning environment.

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