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Students' Instructional Delivery Approach Preference for Sustainable Learning Amidst the Emergence of Hybrid Teaching Post-Pandemic

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Abstract: Upon return to campus after the pandemic, students were subjected to receiving lectures online, in class, or by the emerging hybrid approaches. This study reports students' preference over the three approaches based on the experience gained during the 2022/23 academic session. The study aimed to understand the post-pandemic considerations/factors likely to influence students' preferences for or against any of the three modes (based on their experiences with each), and implications for developing university sustainability frameworks in the post-pandemic era. One hundred and twenty-seven (127) on-campus Education students in one public university in Malaysia participated in the study. Data were collected through an online forum and interviews with the participants. The data collected were analyzed using content and thematic analysis. Preference for the hybrid approach emerged as a key finding for this study. Additionally, a perceived lack of Faculty engagement and support in the online learning environment, and on-campus learner-environment challenges were identified as factors contributing to the decreased popularity of the online-only class option in the post-pandemic era. Conversely, students' engagement through faculty presence and technology innovation in class and online emerged as factors that made the hybrid approach the most popular. What the students valued the most in the hybrid approach is the face-to-face interaction that is retained, and the in-class faculty's innovative use of technology in content delivery, which they believed made learning more effective and interesting in class than online. These findings imply that institutions should prioritize technology integration into face-to-face instruction, leveraging innovative approaches to enhance student engagement and sustainable learning outcomes.

Keywords: online class; in-class; emerging hybrid; new normal; students preference

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1. Introduction

The COVID-19 pandemic prompted a significant shift toward online instructional delivery modes when campuses were shut down. It triggers research on students' experiences and preferences between the pre-pandemic instructional delivery practices and the remote teaching approaches adopted during the pandemic for post-pandemic planning on sustainable teaching–learning modalities. Before the pandemic, higher learning institutions ran on-campus and online programs separately to meet the learning needs of on-campus and off-campus students [1,2]. Each program is structured to meet the learning needs of its target audience [3]. The two programs differ significantly in their course design, pedagogical approach, instructional design, delivery platforms, learning activity, method of engagement, and assessment [4,5]. This is because the learning needs of target beneficiaries for the two programs differ [6]. Virtual classrooms leveraging video-conferencing platforms and associated online tools (for teaching and assessment) are used to facilitate

faculty–learner engagement in online structured programs [7]. On the contrary, the on-campus programs are structured for facilitation through either the traditional face-to-face classroom instructional delivery approach or the in-class technology-enhanced instructional delivery approach [8]. Thus, faculty members handling online courses are specially trained for that [9]. That structure was destabilized with the introduction of 'emergency remote teaching', where all categories of learners (for both the online and on-campus programs) were subjected to online teaching handled by experienced and inexperienced faculty members during the pandemic. With the new technological experience gained during the pandemic and current policy initiatives to promote hybrid learning in many settings, pedagogical practices and instructional delivery approaches for on-campus programs are never the same after the pandemic.

Two on-campus instructional delivery practices emerged after the pandemic. Faculties can choose to teach in class (face to face) or online (leveraging the virtual classroom) while students are on campus. The in-class approach means teaching–learning activities start and end with learner–faculty engagement in a technology-enhanced face-to-face classroom interaction, which was the predominant practice before the pandemic. The online class on the other hand is where the learner–faculty engagement starts and ends online. This may include synchronous and asynchronous modes. Synchronous online teaching involves real-time, live interaction between instructors and students. In the synchronous approach, all participants must be online at a given time to be engaged in activities like lectures, discussions, or collaborative work. Asynchronous online teaching involves recorded lectures shared online, allowing students to access materials at their own pace, without real-time interaction. These operational definitions are based on what is in practice (from 2022) as experienced by the research participants.

Preference for both options was reported in the literature [10]. Some students prefer the face-to-face over the online class option [11], while others prefer the online class. However, reported findings on what informed students' preferences over their choices were also inconsistent [11]. The strengths and weaknesses of both approaches were reported, encouraging the emergence of innovative approaches exploring the potential of hybrid mode to address the reported weaknesses of existing practices [12]. Thus, there is a need to investigate and determine which of the existing modes meets the post-pandemic learning needs of students [13]. The emerging hybrid teaching approach in the context of this study means that 'teaching-learning activities start with the technology-enhanced face-to-face interaction in the classroom and continue with additional online learning activities (using either or both the synchronous and the asynchronous modes) monitored by the lecturers.

Bibliometric studies reported a growing trend of research studies focusing on hybrid instructional delivery approaches in educational practices, highlighting its challenges and potential in schools and higher education [14]. Findings reported in such studies identify hybrid instructional delivery modes as key to fostering active learning and student-centered approaches, enhancing students' engagement, performance, and skills development [15]. It enhances flexibility, students' learning attitude, and their confidence in learning [16]. It fosters student collaboration and real-time feedback when integrated with AI [17]. It takes care of the diversity of students' learning styles because it is all-embracing in both the online and in-class learning environment [8]. However, attaining the benefits that can be derived from its potential is not without challenges [18].

Some issues and concerns challenge the hybrid instructional delivery approaches. A significant increase in workload for academics due to the need for dual classroom management (online and face to face), which complicates lesson preparation, and delivery was reported as one of such challenges [19]. The difficulties experienced by faculties in designing interactive lessons suitable to hybrid formats indicate the need for training to ensure the sustainability of the emerging hybrid approaches post-pandemic [20]. Moreover, the digital divide poses a barrier to equitable access to hybrid education [21], necessitating targeted interventions to enhance accessibility and equity. The challenges notwithstanding, the hybrid instructional delivery approach offers flexibility and improves educational

experiences provided that implementation challenges reported in the literature are properly addressed [22]. Each mode has advantages and disadvantages, but at any point in time, certain considerations and reflections must have guided students' choices and preferences on the three modes. The underlying reasons and reflections of the students post-pandemic are of interest to the researchers.

Post-pandemic studies on hybrid instructions reveal several areas requiring further exploration. First, there is the need for improved technological infrastructure and resources, as studies indicate that challenges of connectivity and devices are still a concern in many parts of the world [23]. The complexity of delivering synchronous hybrid poses challenges to both students and faculty members, informing the need for improved training and support for faculty members [12]. Investigating pedagogical strategies that foster student interaction and motivation in hybrid settings is crucial [24]. More so, the impact of hybrid learning on students' engagement and collaboration, and students' preference for hybrid modes amidst other approaches on specific disciplines remains under-researched [12,25,26]. Implications of hybrid instructions on sustainability practices, policy initiatives, and operational frameworks in higher education are also under-researched [24,27]. This study was motivated by the reported gaps, focusing on the preference of post-pandemic students and consideration for hybrid instruction on specific disciplines and courses being under-researched.

Based on the records from the Learning Management System Portal in the research site, the use of an in-class teaching approach accounted for 60% and online class option usage accounted for 40% between March and June 2023. Between August and September 2023, faculty use of the in-class option dropped to 38% while the use of the online class option rose to 62%. From October to December 2023, the online class option usage accounted for only 23% while the emerging hybrid practice accounted for 77% consuming the in-class option, making the online class a less preferred option for faculties. This indicates that the hybrid teaching approach is gradually becoming the faculty's most preferred instructional delivery approach. While the records show faculties instructional delivery preference over time, not much is available to determine students' preferences between the three instructional delivery options used by the faculty. Therefore, this study aims to investigate students' preferences over the three approaches based on the experience gained during the 2022/23 academic session. Reasons advanced by students over their preference for a given mode of instruction lead the clue to understanding the instructional mode that fits a learning context. Understanding what instructional delivery mode suites and facilitates students' learning is critically needed in university education sustainability planning, practice, and policy initiatives [28]. Research findings reporting students' choices and preferences over existing instructional delivery options are needed to understand why a particular mode of instruction is considered more relevant and suitable to a course or topic for sustainable teaching and learning.

Much is reported in the literature on students' preference between face-to-face and online class options before the pandemic when on-campus students were less exposed to online teaching [29]. Much has also been reported about students' preference between the conventional practice before the pandemic and the online teaching adopted during the pandemic (when faculties and students were at home with no option of the face-to-face approach) [30]. Not much is reported about the current position of students' instructional delivery preference amidst the gradual emergence of hybrid teaching, as noticed in Malaysian campuses. The limited studies on hybrid education in Malaysia report how it can be sustained [31] and its effects on teaching and learning [32]. Not much was reported about how faculties use the hybrid approach in their instructional delivery practices in Malaysia [33]. This study investigates students' preference over the three instructional delivery approaches used by faculties in the era of the new normal (online, in-class, and the emerging hybrid option). The following research questions guide this study:

1. What is the preferred instructional delivery approach (in-class, online, or hybrid) among on-campus university students?

2. What factors contribute to the popularity of the most preferred instructional delivery approach among the on-campus students?
3. What factors contribute to the unpopularity of the less preferred instructional delivery approach among the on-campus students?

To address these research questions, we elaborate on the methodology employed for the study. Subsequently, we present the three emergent themes identified in the study and share our reflections on the implications of these findings. The value disposition of the research finding bears relevance to policy and management issues at faculty and university levels with some implications on the future of university education sustainability as discussed in the article.

2. Materials and Methods

2.1. Design of the Study

This study employed a qualitative case study design, which was chosen for its effectiveness in examining complex phenomena within their real-life contexts [34]. The delineation of the 'case' assumes utmost importance as it defines the 'unit of analysis'. In this study, the 'case' pertains to students' preferences regarding instructional delivery amidst technology integration in educational settings. The study, therefore, was implemented in two phases. The focus of the first phase was to determine on-campus students' preference over the emerging hybrid teaching approach compared to in-class and online class options used by faculty members post the pandemic. The second phase was to find out why the preferred option (in-class, online class, or the emerging hybrid teaching approach) is popular and why the less preferred options are unpopular.

2.2. Context and Participants

One hundred and twenty-seven (127) on-campus Education students in one of the public universities in Malaysia participated in this study. Purposive sampling was used to select only the 7th Semester Students taking philosophy and Classroom Management 2nd-semester general education courses during the 2022/23 academic session as participants. The 7th-semester students were considered and selected for the study because they were familiar with different instructional delivery modes before, during, and after the pandemic. The selected participants are from various departments within the education faculty. See Table 1 for participants' data.

Table 1. Participants' data.

1. Course Group		2. Residence		3. Age Group		4. Gender Identity	
Arts and Social Science Education	77	On Campus Hostels	63	20–25 Years	125	Males	42
Vocational and Tec Education	23	Off-campus Hostels	45	25–30 Years	2	Females	85
Mathematics and Science Education	0	Private Residence	19	30 Years and Above	0	Others	0
Language and Communication	19						
Economics and Management Education	8						

As shown in Table 1, 77 (60.63%) of the participants are from the Arts and Social Science Education, 23 (18.11%) from Vocation and Technical Education, 19 (14.96%) from Language and Communication Education, and 08 (6.3%) from Economics and Management Education. The participants live in 4 types of residence, 63 of the participants (49.61%) stay within the campus in the student's hostels 4 persons per room, 45 participants (35.43%) remain in the off-campus hostels, 2 persons per room, and 19 of the participants stays in private residences outside the campus. Except for 2 participants within the age range of 25–30 years (1.57%), 125 other participants (98.83%) are between the ages of 20 and

25 years. The number of female participants 85 (66.93%) is higher than the number of male participants, which is 45 accounting for 35.43% of the participants' population.

2.3. Data Collection

Three sets of data were collected sequentially based on the research design. The first data were collected through an online forum created during the first phase for participants to indicate their preference for the three options used by faculty. The second data were collected when the second forum discussion was created for participants to discuss reasons for their preferences. Discussion in the forum was open-ended and lasted for two months. The third data were collected through one-on-one in-depth interviews with ten participants who volunteered to participate in the interviews conducted after the forum discussion was closed. The interview session for each participant (which lasted between 35–50 min) was at the time and venue suggested by the participants. The first data collected were to answer research question one raised for the first part of the study. The second and third data were collected for the second and third research questions raised for the second phase.

2.4. Procedure for Data Analysis

The first online forum data collected were analyzed using a content analysis approach. Participants' responses on their preferred mode of delivery were downloaded as a report from the online portal and used as raw data transcripts for analysis after removing and replacing the participants' identities with simple descriptive codes. Comments of participants in the forum regarding what they indicated as their preference were sorted, studied, and categorized.

The second online forum discussion and the interview data were analyzed using [35] six-phase thematic analysis approach. The audio data collected from the interviews were transcribed and saved as a Word Document for analysis. The field note taken was typed and also saved as a Word Document. The online forum discussion was downloaded and saved after removing and replacing the identity of the participants with simple codes for analysis. As recommended [35], reading through the data sets for familiarity was the first step in analyzing the data. See the initial impression the data set gave at this stage is presented in the next section.

In the second phase of the analysis (initial code generation), deductive and inductive coding approaches were used sequentially. A coding manual was developed based on the research questions raised and the literature reviewed to guide the deductive coding process. The research team members read through the data and identified initial deductive codes based on the coding scheme manual. This was followed by an inductive coding process that generated additional codes, by reading and reviewing the data that were not coded deductively. Thirty-two (32) initial codes were generated based on eighty-six (86) points of reference (interest) across the data sets. An intercoder rating assessment was performed, and the number of codes was reduced to 24. Raw data matching each code were extracted from the data pool and paired with the corresponding codes, reducing the data size based on the codes generated. A sample of the codes with their matching extracts is presented in Table 2.

In the third phase of the analysis (the search for themes), the degree of association between the 24 codes was analyzed using an axial factor verification scheme and inter-rater assessment. The data extracts matching each code were reviewed, searching for the presence of certain key concepts (the factors) in each code. The presence of each concept and related phrases, or words in two or more codes indicates an association between such codes. Six patterns of association between the codes were identified by verifying the presence of the same key factors in two or more codes. However, after inter-rater assessment, the patterns of association identified were collapsed to three based on the degree of association, and three patterns of association were eliminated. Three categories of codes emerged based on patterns of association forming the base for clustering. See Table 3 for the patterns of association identified.

Table 2. Sample data extracts matching codes.

S/No	Data Extracts	Initial Code Generated
1	"If the class would be online, getting the right environment with the kind of quietness you need on the campus is a big challenge. This was not the case during the lockdown because our parents helped us to get the environment under control" (P4).	Distraction
2	"We don't make much from the online classes because we are joining the class either from the canteen or our hostel rooms and you can imagine the kind of distraction you get. If you want to get a quiet environment you need to go to the library and use a headphone but the problem with joining the class from the library is that you cannot ask or respond to questions during the class" (P4).	Learning difficulty
3	"Knowing that there may be no eye-to-eye contact with the course lecturer when the class starts except when there is a question to ask or to answer, I am always tempted to look for something else to do as soon as we switch off our camera and mute our microphone. I always have a divided mind in online classes because of that. This is not the case with the face-to-face class where the eyes of the teacher are on the students throughout the class" (P2).	Difficulty in paying attention
4	"I think the belief that I can always learn whatever I missed from the online class on my own makes me develop a nonchalant attitude that is always affecting my concentration to learn during online classes. Because of that belief most of the time I try to be multi-tasking doing other things while the lesson is ongoing" (P7).	Hard time concentrating

Table 3. Identified patterns of code association.

	Patterns of the Association between Codes
1.	Association of codes based on 'learner Environment' as a factor considered by the students in preference;
2.	Association of codes based on 'effective faculty presence' as a factor considered by the students in their preference;
3.	Associations of codes based on 'faculty innovative use of technology' as a factor considered by the students in the preference.

The patterns of association presented in Table 3 imply that there are three broad categories of codes. Thus, 3 clusters were created and the individual-base sorting strategy was used in a distribution-based type of clustering to group the codes into 3 clusters in search themes. The themes that emerged based on the association pattern between the codes in their respective clusters, and how the association between the codes gave meaning to the key concepts in each cluster are presented in the section that follows (Section 3).

The themes that emerge from the codes clustering were reviewed further and defined (phases four and five of the analysis), the data extracted from the data pool for each code in the 3 clustered were paired and examined to see how well each code relates to the theme, and how the theme in each cluster captures the message of all the codes clustered. One code was eliminated in the process. In the next section, we present the findings from the data analysis procedure discussed.

3. Results

The findings of this study are presented according to the research questions stated. We present a quantitative description of data analysis results on students' preferences regarding the three instructional delivery methods. Subsequently, we delve into an in-depth analysis of the underlying reasons for the students' preferences.

Table 4 presents an analysis of students' preferences for the face-to-face, online, and hybrid delivery approaches. Our categorization emerged as presented. A-categories are those that prefer the face-to-face classroom teaching option. The B-categories prefer the online class option. The C-categories prefer the hybrid approach. D-category perspectives are those with no preference for any option, believing that all the opinions are good in their context.

Table 4. Categorization of perspectives identified from the online forum data.

Respondents Groups	Face-to-Face Preference	Online Class Preference	Hybrid Preference	No Preference	Total per Group
Philosophy Class	4	2	46	2	54
Classroom Management Class	9	3	54	7	73
Total Per Category	13	5	100	9	127

As presented in Table 4, the analysis shows that one hundred out of one hundred twenty-seven participants (78.74%) prefer the hybrid option, thirteen participants (10.24%) prefer the in-class option, and only five participants (3.94%) have a preference for the online option. This means that the hybrid is the most preferred option with 100 votes, the face-to-face option is the second preference with 13 votes, and the online class option is the least preferred option with 5 votes. More specifically, the preference of forty-six participants out of fifty-four (85%) in the philosophy class is in the hybrid preference category and, the preference of fifty-four out of seventy-three participants (74%) in the classroom management class is also the hybrid option. A total of one hundred participants out of one hundred twenty-seven (79%) prefer the hybrid approach. This finding shows the popularity of the hybrid approach option over the online and face-to-face options.

The thematic analysis of the data collected for research questions two and three reveals four initial impressions at the early stages of analysis, as presented in Table 5.

Table 5. Initial impressions of the data sets at the familiarization stage.

S/No	The Initial Impressions
1	It seems there are challenges associated with how faculties use the online class option in their teaching that is making the online less prepared by students;
2	There seem to be challenges particular to students on campus that are making learning in the online class difficult for students;
3	It seems faculties are adopting new approaches in their in-class instructional delivery approach that work better for students on campus;
4	Participants seem to believe that the online class option is not necessary since they are on campus; and, it is like whatever faculties do in their online class, they do it better when they teach in class.

Eleven (11) and thirteen (13) codes were sorted and clustered in search of themes using the strategy previously mentioned in the analysis section. A theme and sub-themes were identified for each cluster, as presented in Tables 6–8, and the summary of all emergent themes in Table 8.

Table 6. Clustering of codes associated with 'learner environment' as a factor of consideration that made the online class option unpopular and the least preferred.

The Codes	The Emerging Theme	The Sub-Themes
1. Distraction; 2. Learning difficulty; 3. Difficulty in paying attention; 4. Hard time concentrating; 5. Frustration.	On-campus learner-environment challenges	1. Nature of student's hostel; 2. Places other than hostels on the campus; 3. Family support as a factor.

Table 7. Clustering of codes associated with 'effective faculty presence' as a factor considered for preferring the face-to-face class over the online class option.

The Codes	Emerging Theme	Sub-Themes
6. Nature of the online class learning environment; 7. Faculty presence is not felt; 8. Faculty supervision and guidance are not felt; 9. Faculties hardly notice those having challenges; 10. Learners feel alone in their effort to learn; 11. It provides room for self-deception in learning.	Perceived lack of faculty engagement and support in the online learning environment.	1. Class management and control is lost; 2. Students feel abandoned and neglected.

Table 8. Clustering of codes associated with 'faculty presence and innovative use of technology' in class as the considered factors making the hybrid approach the popular and most preferred.

The Codes	Emerging Theme	The Sub-Themes
12. Faculty's innovative use of technology in class and online; 13. More engaged learning experience in class and online; 14. Memorable learning experience in class and online; 15. Learners are motivated by the physical presence of faculties; 16. The physical classroom as a controlled social learning environment. 17. Effective faculty supervision and guidance; 18. The psychological effect of the physical classroom; 19. Effective monitoring; 20. No room for irresponsibility; 21. The faculty effort of carrying everyone along is felt; 22. Learners receive the collective and individual attention they need; 23. Faculty-student communication is encouraged.	Student engagement through faculty presence and technology innovation.	1. Effective class control and management; 2. Positive influence of technology; 3. Positive influence of physical social Interaction.

As shown in Table 6, the degree of association between five clustered codes (1–5) identified in this study formed a meaningful pattern that led to the emergence of one theme and three sub-themes as factors that make the online class unpopular among students. On the other hand, the coded issues and challenges in the cluster that give birth to the theme and sub-themes that emerge, making the online class the least preferred are being addressed by the emerging hybrid design, thus, increasing its popularity.

The theme and sub-themes that emerge in the cluster of codes presented in Table 7 indicated a perceived lack of faculty engagement and support as a disadvantage for the online class option as compared to the face-to-face class option. It implies that online classes are less appreciated post-pandemic for students on campus. The result in Table 6 discredits the online class based on the learner-environment factor, while the result in Table 7 discredits the online class based on effective faculty presence during classes.

Three sub-themes and one theme also emerged based on the degree of association between the nine codes (12–22) clustered in search of a theme as presented in Table 8. The

theme and sub-themes indicated why in-class teaching (face to face) is valued and reasons why the hybrid approach is most preferred.

Three themes and eight sub-themes emerged as findings for research questions two and three, respectively (see Table 9). Theme one indicated why the wholly online class option is unpopular, theme two indicated why the face-to-face class option is preferred over the online class option, and theme three explains why the hybrid option is most preferred. Theme one and two address research question three (RQ 3), while theme 3 addresses RQ 2. Theme one and two have negative implications for the online class option and positive implications that gave the hybrid and face-to-face options the advantage to emerge as the first and second most preferred options for students on campus post-pandemic. Thus, the three themes favor the hybrid mode as the most preferred, followed by the face-to-face class in the absence of the hybrid.

Table 9. Emerged themes of sub-themes.

S/No	Themes	The Sub-Themes	Relevance
1	On-campus learner-environment challenges.	1. Nature of student's hostel; 2. Places other than hostels on campus; 3. Family support as a factor.	It describes why the online class is unpopular and the least preferred option, addressing RQ 3.
2	Perceived lack of faculty engagement and support in the online learning environment.	1. Class management and control is lost; 2. Students feel abandoned and neglected.	Describes why the face-to-face class option is popular and preferred over the wholly online class option, addressing RQ 3.
3	Student engagement through faculty presence and tech innovation.	1. Effective class control and management; 2. Effect of technology; 3. Effect of physical and social interaction.	Describes the popularity of the emerging hybrid option as the most preferred option, addressing RQ 2.

4. Discussion

Students returned after the pandemic to meet new instructional delivery arrangements on campus. Contrary to what they were used to, students on campus are now to receive lectures either online, in class, or through the emerging hybrid teaching approach, depending on what the faculty decides. This study is directed toward understanding the implications of this practice on teaching and learning based on students' experiences with receiving lectures in class, online, or using the hybrid teaching approach on campus after the pandemic. To achieve the aim of this study, students' preferences over the three instructional delivery options were examined in the first phases of the study. The popularity and unpopularity of the preferred and less preferred options were investigated in the second phase. Preference for the hybrid approach as a finding is discussed first (Section 4.1), followed by a discussion on why the hybrid option emerged as the most preferred option based on the three themes that emerged.

4.1. On-Campus Students' Preference for the Hybrid Teaching Approach

The findings from this study reveal that 79% (100 out of 127) of the participants prefer the emerging hybrid teaching approach over the in-class and online class options. What previous studies reported in the literature differ over time and place. While some of the studies reported students' preference for the hybrid approach [36,37] as consistent with the findings of this study, others reported the contrary. Some studies reported students' preferences for face-to-face (the in-class option) over hybrid and online options [38]. Ref. [39] reported students' preference for online classes instead of hybrid and face-to-face options. Other studies reported a preference for face to face and hybrid [40,41]. The inconsistency of the findings in the previous studies became a strong rationale for this paper.

The reports of the studies conducted during the pandemic were likely to have been influenced by the remote online teaching they were subjected to with no option [42]. As

influenced by this factor, such studies reported a preference for the online class option [43]. On the contrary, others reported a preference for a return to normal [44,45] and a strong preference for face to face [45,46]. In South Africa, for example, the majority of the students in urban settings prefer online delivery mode because of convenience and flexibility, and those in rural settings prefer face-to-face mode due to challenges with internet connectivity [47].

Related studies after the pandemic were either reporting the strengths and weaknesses of the online classes (based on experience gained during the pandemic), or the potential of online technologies in future educational practices. The flow of literature on these and other studies examining how such technologies can support on-campus educational practices created the ongoing discourse on hybrid education. The experience of students who participated in the limited studies examining students' preferences immediately after the lockdown is limited to face-to-face (acquired before the pandemic) and online teaching (acquired during the pandemic) only. Thus, reporting a preference for the face-to-face option [48,49].

The preference for the hybrid mode of delivery by many students, as revealed in this study, offers a balanced solution to challenges identified in the literature regarding face-to-face and online delivery modes. In the next section, we provide more insight into the reasons for the preference for the hybrid mode, which creates a flexible and inclusive learning environment, fostering engagement and effective integration of technology into teaching practices.

4.2. Why the Emerging Hybrid Approach?

Three themes emerged during the second phase of the study describing why the hybrid teaching approach is most preferred over the online and in-class options based on students' experience of receiving lectures in class, online, and by a hybrid approach while on campus during the 2022/2023 academic session (see Table 9).

4.2.1. On-Campus Learning-Environment Challenges

Findings from this study indicated that students are becoming frustrated searching for a convenient place on campus to join their online classes. They join online classes mostly from their hostel rooms, coffee shops, cafeteria, mosque, and sometimes from the library. These are public places on campus that the students have no control over. None of these places except the library is free from uncontrolled noises and human activities that can be a distraction. Such distractions from the surrounding environment affect students' concentration and make learning difficult during online classes. Students who join the class in the library are also restricted from active participation, as silence is required in the library spaces. This challenging situation the students on campus face makes online classes less preferred and unpopular. How students live on campus differs from how they live at home. Students' activities at home are checked by family/parental control. But, while on campus, they do what they want to do. Students' activities and how they live on campus affect their concentration and prevent them from paying attention in their online classes. These challenges make the online class option unpopular among students. On the contrary, these issues are eliminated by the design of the hybrid approach because the in-class teaching activity and students' active participation are sustained. Thus, the hybrid approach is popular and preferred over the online class option because of these factors.

This finding is consistent with what is reported in the literature over time. Ref. [50] also reported disturbances and distractions associated with students' surroundings as aspects of 'learning-situational challenges' that make online classes ineffective as compared to in-class teaching. Difficulty in concentrating is continuously reported in the literature as a challenging factor affecting students learning in online classes, [50] and noise [51]. It was also reported that students' concentration in online classes is greatly affected by multitasking: doing laundry, playing games, chatting, text-messaging, and watching arousal videos were reported as what students do during online lectures [52].

A summary of what is reported based on reviews of the literature shows that multitasking, mind wandering, the uncontrolled use of smart devices, and uncontrolled interference during classes are consistently being reported as distractions [53]. Many studies reported such distractions negatively impact students' learning if classes are online [54,55].

4.2.2. Perceived Lack of Faculty Engagement and Support in the Online Learning Environment

This is linked to the first finding, the online classroom environment does not allow faculty to control students' behavior and actions behind the screen during lectures. In practice, students joining online classes do so with the mic mute and their video camera off to avoid disturbing the class with background noise and motion images. Faculty management and control over the classroom as a learning environment is lost due to this practice. Faculty cannot hear and see what students are doing during class sessions. Thus, monitoring students' learning progress for possible instructional delivery adjustment on the go becomes difficult and faculty supervision and guidance on the go becomes minimal in online classrooms.

The absence of faculty control over what students do behind the screen provides room for self-deception in learning and irresponsible behaviors that affect students' learning. It was also discovered that students do not receive the individual attention they need when classes are online. Those requiring such individual attention are therefore not carried along when the classes are online. As a result, students feel abandoned, unattended to, and uncared for. Students are also developing a feeling that 'covering the course content' seems to be the major concern of faculty, not how well students learn when they hold classes online. Due to these factors, students prefer the hybrid approach over the wholly online class option. This is because in the hybrid approach design, teaching is face to face and in class, while learning activities other than teaching are completed online. With the design of the hybrid approach sustaining the in-class teaching activity, the referenced issues are eliminated.

Effective faculty presence (control, support, and guidance) plays a key role in students' learning in face-to-face and online learning environments [56,57]. Faculty effort to provide such support, control, and guidance in online learning environments was reported over time in the literature as limited [46] and ineffective [58]. Ineffective or low-level faculty presence leads to isolation and dissatisfaction [59]. Thus, faculty presence in online learning environments is not much felt and valued by learners because of its ineffectiveness [60]. Effective faculty presence manifests itself in two-fold: effective subject content delivery and effective classroom control and student management. Ineffective faculty presence in online learning becomes evident during the pandemic [61]. Faculty ineffectiveness in online classes during the pandemic was mostly associated with limited interaction between students and faculties [51] and faculty's pedagogical approaches, methods of presentations, and assessments used [62].

As a result of many researchers suggesting what faculties can do to improve the effect of their presence in the online teaching–learning environment, faculty effectiveness in online subject content delivery is reported as being improved by many recent studies [57]. However, effective control and management of students and the learning environment in online classes are still reported in recent studies as negative and ineffective [63,64]. As consistent with the findings in this study, student's individual learning needs are not well attended to compared to a conventional classroom setting.

4.2.3. Student Engagement through Faculty Presence and Technology Innovation

Faculty presence is identified in this study as a critical factor that plays a key role in students learning. Students view faculty presence as more strongly felt in class than online during teaching. This is based on their experiences receiving lectures online, in class, and the emerging hybrid approach (as contextualized in this study) during the 2022/23 academic session. Because of this, the online class option has become unpopular.

On the contrary, the hybrid approach is preferred over the online class option because it accommodates faculty–student in-class engagement where faculty presence is strongly felt. In addition, the hybrid approach in the context of this study allows additional flexible online learning activities with faculty engagement. This feature of the hybrid approach gave it an edge over the other options.

The physical presence of the faculty in the face-to-face classroom makes it a controlled social environment conducive to teaching and learning and free of unnecessary noise, distractions, and disturbances that affect learning. The hybrid approach is appreciated and valued because teaching and learning start in the class which students consider a conducive learning environment by students because of the faculty's physical presence. The authority and social control faculties exercise to ensure a smooth learning experience during instructional delivery is more effective in class than online based on the student's experience. Students appreciate this because it helps them to concentrate and pay attention to what is presented and discussed in class. Students' concentration in class is higher than online because of the physical presence of the faculty.

The physical presence of the faculty encourages students to be responsible and maintain self-discipline during lectures. It encourages students to be on their best behavior and put in their best to learn. In a face-to-face class, faculty and students align with the unity of purpose that brings them together and with a sense of responsibility (as applicable to in-class and hybrid approach in this study). Students believe that faculty are more responsible and caring in the class than online. The students appreciate faculties watching over them physically in the classroom to ensure they are learning. The physical presence of the faculty was identified as a key factor that helps to make the faculty–learner interaction a memorable experience. It makes the question-and-answer sessions more productive, interesting, and effective. The highly valued physical presence of faculty in the teaching–learning process as adopted in the hybrid approach takes over 40% of what accounted for the popularity of the hybrid approach among on-campus students.

Reports of previous studies indicating students' preference for the physical presence of faculties over virtual presence differ over time in the literature. Most of the studies conducted before the pandemic reported a preference for physical presence over virtual while studies conducted during and after the pandemic reported a preference for both. Preference for physical presence was reported in the work of [2]. On the contrary, [36] reported a preference for virtual presence. This notwithstanding, however, more studies are reporting a preference for physical presence over virtual for varying reasons [65]. Preference for virtual or online preference is associated with flexibility, convenience, and cost-effectiveness. Preference for physical presence on the other hand is associated with students' understanding of learning content, high-level interaction between faculties and students, and higher learning outcomes. Ref. [64] reported that students preferred the physical class over the online class during the pandemic because they found it difficult to concentrate on e-learning. Other reasons provided, as reported, are 'direct communication with Faculties' [66] and 'Better understanding' [8,67].

Innovative use of technology during face-to-face interaction in class and keeping students engaged with additional learning activities online after the class accounted for about 60% of what makes the hybrid option popular. Face-to-face classroom teaching is no longer what it used to be. It is now technology-driven. Faculties are now using video clips and project images to present learning content; and a variety of game-based activities to test students' understanding. With the new approach, students consider learning in class as more interesting, simplified, activity-oriented, and less abstract. As noted by a participant in the study, "with how faculties use technology in class now learning is less abstract and less strenuous" (P7). Another participant stated the following: "I feel happy and lively in the class as we watch laugh, think, and discuss with the lecturer and as we react to one another as students" (P5). Another participant stated the following: "Instead of receiving lectures online we simply search for additional information to read, analyze, and discuss our findings in the forum while the lecturer sees and drops his comments from time to

time" (P7). This indicated that the hybrid approach as experienced by the participant as practiced in the context defined meets the learning needs of students on campus.

4.3. Implication for Practice and Sustainability

Our findings reveal the significance of the hybrid mode of delivery as a balanced approach, addressing many challenges highlighted in the literature regarding face-to-face and online delivery modes. This underscores the practical implications of adopting hybrid teaching methods in educational settings. By embracing hybrid delivery, institutions can mitigate the drawbacks associated with traditional face-to-face or online-only instruction, offering a flexible and adaptable learning environment that caters to diverse student needs. Implementing hybrid models can enhance engagement, facilitate interactive learning experiences, and promote seamless technology integration into teaching practices, fostering a more effective and inclusive educational landscape. Things will never be the same post-pandemic, and the impact of COVID-19 offers interesting opportunities, which may influence the planning for sustainable delivery of instruction in higher education.

It is evident that the landscape of higher education will be permanently altered by the COVID-19 pandemic. This transformative period has opened up intriguing possibilities that could significantly impact how we approach the sustainable delivery of instruction moving forward. The pandemic has underscored the potential of hybrid learning models—blending in-person and online education—which could play a crucial role in shaping future educational practices.

The effectiveness of hybrid learning modes is of substantial importance, influencing both policy and management decisions at the faculty and university levels. These considerations are not merely academic; they have real implications for the long-term sustainability of university education. As institutions navigate the post-pandemic era, they must evaluate how best to integrate hybrid models in a way that enhances educational outcomes, supports diverse learning needs, and ensures equitable access.

Ultimately, the lessons learned during the pandemic present an opportunity to rethink and potentially reshape the traditional educational framework. By embracing the strengths of hybrid delivery methods, universities can develop more flexible, resilient, and sustainable approaches to education that are better suited to the evolving needs of students and society.

5. Conclusions

Technology-enhanced 'face-to-face' teaching in the classroom complemented by additional learning tasks online monitored by the faculty is the most preferred teaching approach for students on campus after the pandemic. The emerging hybrid approach as defined in the context of this study has the potential to meet the learning needs of students on campus. On the other hand, the online class option effectively meets the learning needs of off-campus students enrolled in distance and online programs. It is concluded that doing away with the weaknesses of online classes, maximizing the use of technology, and taking full advantage of face-to-face interaction as practiced in the emerging hybrid approach meet the learning needs of students on campus. While this study has shown increasing evidence of students' preference for the emerging hybrid mode of delivery, further study is needed to establish the extent to which the flexibility and adaptability of this hybrid approach enhanced meaningful learning of course material and improved academic performance.

While we have presented compelling evidence supporting the value of a hybrid learning approach, it is important to acknowledge that our findings are based on data collected from a single institution and specifically from students within the education faculty. Consequently, the generalizability of these results should be approached with caution. Students in other disciplines, such as Engineering or Medicine, might have different experiences and perspectives regarding the three modes of delivery—face-to-face, online, and hybrid. To gain a more comprehensive understanding of how these modes impact various fields of study, further research is necessary across a broader range of

faculties. This would help in identifying whether the findings observed in the education faculty are consistent with or differ from those in other academic areas.

Additionally, while we have touched upon the policy implications related to the sustainable implementation of hybrid learning models, we have not fully explored the specific nature and extent of such policies. Further investigation is required to develop a detailed and actionable framework for policy-making that addresses the unique challenges and opportunities presented by hybrid instruction.

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