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Evaluation of Hybrid Learning and Teaching Practices: The Perspective of Academics

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Abstract: This paper presents a study on the evaluation of hybrid learning and teaching practices by academics. A mixed research method involving a questionnaire survey and a focus group interview was employed to gather academics' feedback on their experience in delivering hybrid instruction in a synchronous manner in which on-site and remote students attended classes simultaneously, their students' hybrid learning effectiveness, and their suggestions for improvement. The questionnaire was administered to 76 academics from a university in Hong Kong where hybrid learning and teaching were implemented, and the focus group interview involved 10 academics. The findings reveal that the participating academics perceived themselves as having an overall high degree of readiness to handle technical issues. They expressed that the students from their hybrid classes had lower levels of interaction, engagement, and motivation than those from traditional face-to-face classes. The participants also reported their challenges regarding hybrid learning and teaching, including heavy workload for lesson preparation and face-to-face and online classroom management, unfamiliarity with interactive teaching design suitable for hybrid classes, and difficulties in monitoring students' learning process. They provided suggestions for the improvement of hybrid classes, ranging from the provision of technological support to professional development for enhancing students' online interaction and engagement. These findings contribute to revealing academics' experience in practising hybrid learning and teaching and identifying ways to address their challenges.

Keywords: mode of education; hybrid learning; hybrid teaching; hybrid instruction; HyFlex; teaching effectiveness; COVID-19 pandemic

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1. Introduction

Advancements in technology have brought far-reaching impacts to educational delivery. The use of technologies has become essential in a broad range of pedagogical activities and promoted the development of new modes of education. Hybrid learning and teaching is a mode of education which has benefited from the advancement of information and communications technologies. It refers to an instructional approach combining face-to-face and online instruction [1,2]. As reviewed by Wong et al. [3], there has been an increasing trend in the amount of work on hybrid learning and teaching over the past decade. Particularly, during the worldwide COVID-19 pandemic of the past three years, the lockdowns and social distancing imposed by governments to control the epidemic resulted in the suspension of traditional face-to-face classes in educational institutions worldwide. In response to this tremendous impact, hybrid learning and teaching have been widely adopted as a substitution for the face-to-face approach. Such a sudden shift in the mode of educational delivery has also contributed to the rapid development of this emerging learning and teaching mode.

There has also been a range of work investigating hybrid learning and teaching. For example, Mourtzis et al. [4] developed a hybrid teaching model and examined its effectiveness in facilitating the launch of collaborative projects in a university. Elkhatat and

Al-Muhtaseb [5] implemented a hybrid, flipped learning model and analysed how it affected the learning outcomes of students in a chemical engineering programme. Li et al. [6] also created a hybrid learning model and examined its use to address the challenges resulting from the pandemic. Al-Ataby [7] examined the effectiveness of using the learning management system 'Canvas' to support hybrid learning in a group of university students. Alsharif et al. [8] explored the effectiveness of using WhatsApp to support hybrid learning among a group of undergraduate medical students. Other examples include Makhachashvili and Semenist [9], Pham and Pham [10], Gamage et al. [11], and Lorenzo-Lledo et al. [12], whose research foci have been primarily upon students' perceptions of, experience in, and satisfaction with hybrid teaching.

Despite many related studies on hybrid instruction, there remain gaps in the existing literature in this area. As highlighted in Raes et al. [13], their review of 47 related studies has shown that "most of the existing literature is exploratory and qualitative in nature and has focused mostly on descriptions of students' experiences, the organisational implementation and the technological design" (p. 269). They concluded that future research should include more empirical investigation. Our previous work [14] has also identified that relevant studies which addressed the academics' perspective have been scanty, and more attention should be paid to areas such as the readiness of academic staff and the challenges they encountered. Furthermore, as hybrid learning and teaching feature extensive use of technology [13], the technological infrastructure of a region and an educational institution, as well as the digital literacy of academics, have been found to influence the effectiveness of hybrid teaching [15]. Studies should address issues such as whether academics are technically ready to carry out hybrid teaching, whether they could pay attention to students from online and face-to-face classes, engage both groups in learning, and interact with and maintain relations with students as well as conduct fair assessments.

This paper addresses the research gaps by evaluating the hybrid learning and teaching practice of a university in Hong Kong from the perspective of academics. The evaluation study covered the academics' feedback on a number of issues related to hybrid instruction as well as their preferences and recommendations of support for hybrid learning and teaching. The results contribute to revealing the experiences of academics based on an institution-wide implementation of hybrid learning and teaching in a region which features a well-developed infrastructure of information and communications technology and an overall high level of digital literacy of members in the academic community [16]. They also inform the sustainable development of this learning and teaching mode by taking into consideration the needs of stakeholder groups. In particular, the study addresses the following research questions:

(a) How do academics evaluate their students' learning in the hybrid mode?
(b) How do academics evaluate their teaching in the hybrid mode?
(c) What are the preferences of academics for learning and teaching modes and institutional support?

2. Literature Review

2.1. Features and Benefits of Hybrid Learning and Teaching

Hybrid learning and teaching feature the utilisation of technologies to engage students in a variety of learning environments in order to respond to their diverse learning preferences and enhance their learning experiences [1]. This approach, according to Gao [17], is often characterised by a combination of "online + offline" and "in-class + extra-curricular" activities. Linder [1] discussed different features of hybrid instruction, which include its similarities to different instruction modes that provide custom-made learning activities for different student groups, increased active learning in class through the flipped model and student engagement, and improved self-regulated and self-directed learning skills. Marchisio et al. [18] described hybrid learning and teaching in a higher education context as having "its simplicity, high flexibility, facilitation of students' time management, fulfilment of learning needs, and giving additional value to face-to-face attendance" (p. 16).

Miller et al. [19] further describe hybrid learning and teaching as encompassing such features as allowing students to choose how they want to attend a class session, providing equivalent class activities in all modes of delivery, using the same learning materials for all students, helping students master technological skills to take part in class activities with different delivery modes, and administering authentic assessments.

Various benefits to student learning have been reported for a class using the hybrid mode. They include, for example, catering to learner diversity, increasing student engagement, persistence, and retention, fostering student autonomy and independence, improving student learning performance, increasing students' access to courses and resources, increasing learning flexibility, and maximising students' social presence [13,20].

2.2. Focuses of Studies on Hybrid Learning and Teaching

Hybrid learning and teaching over the years have been implemented in different disciplines such as nursing education, business education, science education, second language learning, and medicine education [20–25]. The existing body of work on hybrid instruction has focused on several major areas.

One of the focuses concerns the development and implementation of hybrid learning and teaching models, methods, and activities [4–8,26–29]. Ochia [26] developed and applied a hybrid teaching method in an undergraduate biomechanics course and reflected that its application can reduce human contact, maintain course goals, enrich students' learning experiences, and increase their engagement with the course. Rodriguez-Paz et al. [27] designed and carried out a hybrid teaching model in an engineering course and found that the model is effective in motivating students and improving their performance based on a high passing rate of students taking the course.

Another focus is on students' perceptions of, experience in, and satisfaction with hybrid learning and teaching [9–11]. Pham and Pham [10] investigated students' perceptions of hybrid learning and teaching implementation in a Vietnamese college. They reported that a majority of students were well prepared for the use of technology for hybrid learning and teaching, while some encountered technical and communication issues. Gamage et al. [11] analysed students' experience in hybrid learning and teaching and noted that even though the students were exposed to a synchronous and asynchronous learning environment and felt comfortable receiving education in this setting, they were still reluctant to engage themselves in learning.

One focus of the studies lies in the identification of challenges that students have in hybrid learning and teaching [12,30]. Lorenzo-Lledo et al. [12] examined the difficulties that university students faced during their transition period from traditional face-to-face teaching to hybrid instruction and identified challenges such as decreasing students' learning motivation, increasing their feeling of loneliness, experiencing technical problems, and limiting engagement with teachers and peers. Tian [30] reported a case study of teaching a hybrid computer programming course and observed that staying focused during a lecture, balancing personal wants and personal needs, and keeping pace with live lectures are the major challenges.

The issue of sustainability in relation to hybrid learning and teaching has also been examined [31–33]. In their study, Compton et al. [31] found that a majority of students preferred the continuation of hybrid learning and teaching as an option after the COVID-19 pandemic. They raised that the flexibility of having this option connects closely with UNESCO's sustainable development goal of inclusive and equitable quality education. Pucciarelli and Kaplan [32] analysed the challenges and opportunities of the hybrid teaching approach and illustrated the transition to this approach as a way towards more sustainable and responsible education. Griffin et al. [33] described the design and implementation of hybrid teaching environments and highlighted how sustainability was addressed in such an initiative, in aspects such as relevant technology solutions and inter-institutional co-operations. These studies show the potential and benefits of sustainable hybrid learning and teaching practices.

2.3. Evaluation of Hybrid Learning and Teaching

Evaluating hybrid learning and teaching is important for assisting education practitioners in making informed decisions on its planning and implementation in terms, for example, of types of students to be provided for hybrid instruction, course components, course material design, and assessments. The existing literature in relation to this research area has focused primarily on investigating factors influencing the effectiveness of hybrid learning and teaching [34,35]. For instance, Liu [34] identified factors affecting the effectiveness of hybrid classes, such as course objectives, students' learning motivation, pedagogies, and technological resources, hardware, and software. Raes et al. [13], in their meta-analysis of 47 studies on hybrid learning and teaching, found that most of the literature is exploratory and qualitative in nature and has focused mainly on technological design, organisational implementation, and student experiences. They emphasised the need for more empirical investigations into diverse groups of participants. Similarly, Howell [36] also identified gaps in hybrid learning and teaching research that more evaluation studies are needed based on the results of its implementation, in particular, on the need for academic staff for professional development and additional support. In this regard, despite there being plenty of work done for the sake of student learning, scant attention has been paid to how academic staff evaluate the effectiveness of their hybrid teaching practices [14].

The evaluation of hybrid learning and teaching needs to address the contextual factors of implementation. For example, as a pedagogical approach involving the extensive use of technology, the technological development of a region and an educational institution has been identified by Rodriguez [15] as a factor influencing the effectiveness of implementation. In the Hong Kong context, which features a well-developed technological infrastructure, Li and Wong [16] showed that members of the academic community possess an overall high level of digital literacy. However, studies related to hybrid learning and teaching in Hong Kong have addressed only the student perspective of learning in specific subject disciplines, such as law [37], leadership education [38], and business [39]. There is a need to have a more comprehensive study of the feedback of academic staff on this instruction mode.

The present study is intended to fill the void of attention by examining the ways in which academic staff of a university in Hong Kong evaluate their hybrid teaching practices. This investigation is important in advancing our understanding of the challenges being faced by academics for hybrid learning and teaching practices and possible ways to overcome those challenges.

3. Research Methodology

The present study aimed to evaluate the hybrid learning and teaching practices in a Hong Kong university from the perspective of academics. Hybrid learning and teaching were practised in an institution-wide manner during the COVID-19 pandemic through face-to-face classroom sessions and online sessions via Zoom in a synchronous manner. The practices covered various types of classes, such as lectures, tutorials, and laboratory sessions, depending on courses in relevant subject disciplines. Students were allowed to attend classes in either face-to-face or online mode, and academic staff needed to take care of both the students in the physical classroom and those in the virtual environment.

The feedback of academic staff on hybrid learning and teaching was collected using a mixed method involving a questionnaire survey and a focus group interview. The questionnaire was adapted from that developed by Li et al. [40], which surveyed students' experiences in hybrid learning. It consists of a total of 30 items with regard to three parts: (i) learning in the hybrid mode, (ii) teaching in the hybrid mode, and (iii) preferences for teaching modes and suggestions for institutional support for hybrid learning and teaching, with 3 open-ended questions and 27 five-point Likert scale questions with responses ranging from "Strongly Disagree" (1) to "Strongly Agree" (5).

Prior to a large-scale data collection, the questionnaire was first pilot-tested among five academics from the target group of participants, which aimed to examine the suitability

of the questionnaire items and their understanding of the items. Those items which did not properly describe the hybrid learning and teaching practice in the university or were difficult to understand or unclear were then revised based on their feedback to ensure the suitability and clarity of the questionnaire items.

The questionnaire survey was carried out in an anonymous online manner. Except for the participants in the pilot test, all academics of the university were invited to participate in the survey. They had prior experience in hybrid teaching for one semester or more. A total of 76 academic staff completed the questionnaire, covering 15–30% of academics in the five schools of the university in arts and social sciences, business and administration, education and languages, nursing and health studies, and science and technology. The questionnaire data were analysed with descriptive statistics to identify the patterns in the data.

The focus group interview was completed by a total of 10 academics from diverse academic disciplines, including natural and social sciences, arts, and humanities. They were randomly selected and invited to participate in the interview. The focus group interview collected academics' qualitative feedback to supplement the questionnaire survey results. It covered their experience in delivering hybrid teaching, such as the variations between conventional face-to-face teaching and hybrid teaching; their students' participation in hybrid learning such as learning behaviours, engagement, interaction, and motivation; the benefits and challenges of the shift to hybrid teaching; and their suggestions for improvement of hybrid learning and teaching. The focus group interview data were analysed using content analysis to identify salient themes and patterns regarding the hybrid learning and teaching practice.

4. Results

The following section reports the results of the survey and the focus group interview in terms of the participating academics' feedback on learning and teaching in the hybrid mode as well as their preferences for choices of teaching modes and suggestions for the improvement of hybrid instruction.

4.1. Learning in the Hybrid Mode

Table 1 presents the survey results of the participating academics' feedback on their student's learning in the hybrid mode. They rated their students' technical readiness for hybrid learning positively in terms of accessing course materials (M = 4.24; SD = 0.92), having good internet access (M = 3.84; SD = 0.95), and handling technical matters (M = 3.72; SD = 1.12). There was a relatively higher rating on students' effective understanding of lesson contents (M = 3.62; SD = 1.08) and taking part in assessments (M = 3.66; SD = 1.04), whereas they were slightly more neutral in the students' learning motivation (M = 3.33; SD = 1.19), concentration in learning (M = 3.11; SD = 1.14), time management (M = 3.38; SD = 1.08), interaction with peers (M = 3.34; SD = 1.21), and learning effectiveness (M = 3.30; SD = 1.11). However, they negatively rated their students' active participation in group discussion during hybrid classes (M = 2.76; SD = 1.14). Overall, the academics were only slightly more than neutral in their perception of their students' satisfaction with hybrid learning (M = 3.41; SD = 1.10).

Table 1. Academics' feedback on student learning in the hybrid mode.

Item No.		M	SD
Compared with face-to-face learning,			
1	My students' learning motivation in hybrid learning is satisfactory.	3.33	1.19
2	The interaction among my students in hybrid learning is satisfactory.	3.34	1.21
3	My students' concentration in hybrid learning is satisfactory.	3.11	1.14
4	My students understand lesson contents effectively in hybrid learning.	3.62	1.08
5	My students participate in group discussion actively in hybrid learning.	2.76	1.14
6	My students can handle technical matters in hybrid learning.	3.72	1.12
7	My students have good internet access for their hybrid learning.	3.84	0.95

Table 1. *Cont.*

Item No.		M	SD
8	My students have easy access to course materials in hybrid learning.	4.24	0.92
9	My students take part in assessments effectively in hybrid learning.	3.66	1.04
10	My students' time management is satisfactory in hybrid learning.	3.38	1.08
11	My students learn effectively in hybrid learning.	3.30	1.11
12	Overall, my students are satisfied with the implementation of hybrid learning.	3.41	1.10

In the focus group interview, academics shared details about their observations of students' learning in the hybrid mode. While the survey results suggest that the students, in general, did not have problems with internet access and technical matters, the academics supplemented in the interview that students who stayed outside Hong Kong may have had network problems and could not join hybrid classes online, as they shared:

> *"We have many students in Mainland China. They usually disconnect and cannot join the class on Zoom. I do not know what I should do to help."*

The problem of students' learning engagement was raised by a number of academics. Given the flexibility for students to choose to attend class physically or virtually, the students who are less self-disciplined tended to show a lower level of engagement in their learning. The lack of face-to-face interactions may have also negatively affected the engagement of students who attended classes online. As commented by the academics:

> *"Without face-to-face interactions, to some extent, the majority of students are less engaged."*

> *"Online learning depends on students' strong self-discipline. Passive students are not advantaged by learning in the hybrid mode."*

> *"Experience of teaching in the hybrid mode might vary depending on how many students actually show up in the classroom. From my experience, there were mostly only two to three students attending in the classroom."*

The difficulty of having an in-class group discussion was also commonly expressed by the academics. This is consistent with the survey result that the item on students' participation in group discussion received the lowest rating on average. Interaction between students in the physical and online classrooms was shown to be difficult. In many cases, there could only be a discussion within each of the two student groups in different learning environments. Furthermore, group discussion was not effective when few students attended face-to-face classes, or online students did not turn on their camera and microphone. These difficulties are shown in the following comments:

> *"Many students chose not to come back to the lab for practice sessions, which makes the teaching hard for some practical skill sessions. Student discussion can hardly be arranged."*

> *"Face-to-face group discussion is not feasible in tutorials as many students did not come back. Also, the online students are not willing to turn on their camera and microphone. The reaction was not good."*

> *"We did warm up in-class activities in physical classrooms, such as some games after group discussion. Yet in hybrid classes, it is very difficult to do that. In tutorial, some students came back to campus, but their groupmates did not. Then, they need to use a breakout room to discuss with their groupmates who were at home attending the tutorial via Zoom."*

Despite the challenges encountered, the academics also shared their observations about the benefits of hybrid learning for students. As the online class sessions can be recorded for students' self-study, this is helpful, particularly for proactive students who would watch the video recordings and ask questions afterwards:

> *"The students can watch the videos and read the lecture notes afterward, therefore, they do not need to attend the classes. On the other hand, their performance remains the same. In my opinion, it is better than before, as they can replay video recordings many times until they understand and are able to follow the steps."*
>
> *"It is helpful for the proactive students because they can ask questions after watching the recordings. I have also set online consultation."*

Furthermore, the impact of hybrid learning may be different for freshmen and senior students. The academics commented that Year-one students are more willing to follow the rules for attending online classes and make use of various channels to ask questions. In contrast, it is more difficult to change the ways Year-four students participate in hybrid learning. As the academics stated:

> *"Compared to last year [before the implementation of hybrid learning], Year-one students this year are more enthusiastic to ask questions, no matter in Zoom during class or through emails or even phone calls."*
>
> *"Year-one students are freshman, therefore, we can set rules for them to follow. For example, turn on the camera and the mic when attending class online. We can train them up since Year one. However, Year-four students cannot be pushed."*

4.2. Teaching in the Hybrid Mode

Table 2 shows the academics' feedback on their teaching in the hybrid mode. They tended to agree on the necessity to amend the methods of assessment (M = 4.03; SD = 0.88) in order to deal with the hybrid teaching context. They also tended to view positively their ability to deal with technical matters in hybrid instruction (M = 3.83; SD = 0.87) and maintain the fairness of assessment (M = 3.80; SD = 0.97). Regarding the effectiveness of their interaction with students, the academics tended to express a neutral view, as shown in their feedback (M = 3.31; SD = 1.12). The academics also tended to be neutral in their capability to pay attention to both students from online and face-to-face classes (M = 3.40; SD = 1.00), maintain students' learning engagement (M = 3.27; SD = 1.10), and monitor their learning progress effectively (M = 3.26; SD = 1.06). Besides, the results show an increase in their workload related to preparation for hybrid instruction (M = 4.14; SD = 0.89) owing to the necessity to make revisions to plenty of course materials (M = 3.69, SD = 1.10). Overall, the academics gave a neutral rating, on average, about their satisfaction with the implementation of hybrid teaching (M = 3.41; SD = 1.10).

Table 2. Academics' feedback on their teaching in the hybrid mode.

	Item No.	M	SD
Compared with face-to-face teaching,			
13	I can pay attention to both online and face-to-face students effectively in hybrid teaching.	3.40	1.00
14	I can interact with students effectively in hybrid teaching.	3.31	1.12
15	I can maintain students' learning engagement effectively in hybrid teaching.	3.27	1.10
16	I can monitor students' learning progress effectively in hybrid teaching.	3.26	1.06
17	I need to revise a lot of course materials in hybrid teaching.	3.69	1.10
18	I can handle technical issues in hybrid teaching.	3.83	0.87
19	My workload has increased because of hybrid teaching.	4.14	0.89
20	I need to change the ways of assessment for my courses in hybrid teaching.	4.03	0.88
21	I can maintain fairness of assessment effectively in hybrid teaching.	3.80	0.97
22	Overall, I am satisfied with the implementation of hybrid teaching.	3.41	1.10

Elaborations on the preparation work for hybrid teaching were made by the participants in the focus group interview. They expressed the need to redevelop course activities and assessment materials to cope with contexts of hybrid teaching and, accordingly, the increase in workload, as shown in the following comments:

"The relative success of hybrid learning in my courses depends on the weekly submission of lab exercises which requires students to pay attention in lectures or otherwise they cannot finish the lab exercises. But the weekly assignment submission and marking increase my work load."

"Group presentation is difficult under hybrid teaching. It may be changed to other forms of assessment. Therefore, we need to redesign many assessment materials and prepare for them. The students also need to hand in their completed work before the same deadline to maintain the fairness."

"Every 15 to 20 min, I ask questions to test if students are listening in class. I record who responded to my questions and give him/her some bonuses."

"This year, I add an in-class exercise as a graded component. Students have to do the exercise during the class. It is effective as they are motivated to attend the class."

The academics pointed out a major challenge to pay attention to both students who attend the class face-to-face and students who attend the class online. Particularly for practice-based classes in which the academics need to teach the use of hardware and walk around in the classroom to observe the learning progress of students, they need to ensure that online students receive the same learning experience and support. They may also need to provide extra content or activities for the online students to cope with the constraints of learning in online environments, as pointed out by them below:

"In hybrid mode, the difficulty is that both groups of students need to be handled. The Zoom camera is shooting at me, yet, I need to walk around in the classroom. I think in the hybrid mode, not every teacher can handle this setting."

"It is very difficult for us to manage hybrid teaching if it is a workshop-based course. I have to teach students how to use the camera in a video-production course. Students attending class physically will have class exercises with the camera and they will have quite a lot of questions. I have to pay full concentration for those in the studio and I have to create some extra contents for those staying at home, such as watching a documentary, but this is not good for the online students at all where I cannot explain the content for the documentary when they are watching. I cannot split myself into two to take care with both groups at the same time. The workshop-based courses are very technical, it is hard to find any class exercises or activities for those who stay at home."

Another issue raised by academics is that it is hard for them to know the problems that students are experiencing because online students tend to be unwilling to share their screen and speak in class to illustrate the problems:

"It is hard to ask the online students to share screen during class to show the problems they encounter. They are not willing to do this. Some of them do not even want to turn on the microphone."

"The students tend to put their questions in the chat box but it takes time for typing. I would be confused when I notice their questions some time later but am not sure what they ask."

"We cannot see their face and reaction if they do not turn on their camera. You do not know how much they have received and understood."

For online students who do not actively participate in class, the academics can hardly maintain a relationship with them and follow up on their learning, as in the following statements:

"My students do not ask questions in online lectures. However, they need to interact with us during practice sessions in tutorials. Zoom cannot provide this."

"I felt the relationships between teachers and students are alienated, as I do not recognise my students. I only know their names, as many of them only attend lessons via Zoom. This is so awkward that I do not know my students."

The academics also pointed out concerns about assessment. One of them shared a case of cheating in assessment by some online students:

> *"We found some students cheating during an online interview for assessment. For example, the voice was not his/her, and some students used mobile phones under their desks."*

There were comments from the academics that some of their colleagues were not familiar with the technology for hybrid teaching and not well-prepared for it, and therefore training for them is recommended, as in the following statements:

> *"Some part-time tutors are not familiar with the information technology tools for hybrid classes, even if we sent them the manual about how to use Zoom."*

> *"Sometimes the tutors thought they shared the screen in Zoom but actually they didn't. They didn't know that, and they didn't notice the messages in Zoom chat box."*

4.3. Preferences and Suggestions

Table 3 shows the academics' preferences for choices of teaching modes and recommendations for support of hybrid teaching. The academics showed their reservations about a combination of face-to-face and online teaching (M = 2.88; SD = 1.32). They also expressed their preference for face-to-face teaching over hybrid teaching (M = 4.09; SD = 1.00). Regarding their recommendations for support of hybrid teaching, both hardware and software technologies were highlighted (M = 3.99; SD = 0.84 for the former; M = 3.76; SD = 0.81 for the latter). The need was also emphasised for more training on hybrid teaching (M = 3.56; SD = 0.96), such as the utilisation of relevant teaching technologies and methods to increase engagement of online students. These findings are similar to those of Linder [1], stressing technology's use as a key component in hybrid instruction.

Table 3. Academics' preferences for choices of teaching modes and suggestions for support on hybrid teaching.

Item No.		M	SD
23	I prefer face-to-face teaching to hybrid teaching for my courses.	4.09	1.00
24	I prefer combining face-to-face and online teaching for my courses.	2.88	1.32
25	I wish to have more support on hybrid teaching in terms of hardware.	3.99	0.84
26	I wish to have more support on hybrid teaching in terms of software.	3.76	0.81
27	I wish to have more training on hybrid teaching.	3.56	0.96

As reflected by the academics, facilities and hardware technologies that are desired include private and quiet spaces for giving online courses, digital tools for on-screen drawing, and a wireless microphone system for studio-/workshop-based classes. The software suggested for hybrid teaching includes instruments for facilitating interactions. Furthermore, the participants suggested the provision of training on how to use various kinds of online teaching software and tools to enhance student engagement.

There are also suggestions for additional manpower to support hybrid classes, especially the online students, as academics can hardly pay sufficient attention to both groups of students in the classroom and online environment:

> *"It will be better if there is another person to assist you. He/she may focus on the chat box for questions from online students, while I am teaching. This requires human resources and time. We all have to learn and get used to this hybrid mode."*

5. Discussion

The results of the current study reveal the experience of academics in delivering hybrid instruction through their evaluation of the practice. The findings contribute to providing empirical data regarding the academics' feedback on hybrid instruction based on an institution-wide practice in a highly developed city with a well-established technological

infrastructure. They supplement the existing body of literature in this area, which is mostly exploratory in nature, and more empirical work covering diverse samples and settings is needed [13]. The participants' feedback echoes the results from the literature review of Howell [36] on hybrid education, in which the themes of course design, assessment, social interaction, student self-regulation, and need for faculty professional development generalised from related work are addressed by the results of this study.

Overall, the participating academics perceived themselves as technically ready for conducting hybrid instruction. This finding is consistent with that of the early study by Tang et al. [41]. Similar to the study by Raes et al. [13], the present study found that a high workload for course design and lesson preparation for hybrid teaching is a common concern for most of the study participants, whose work is not simply an addendum to tradition course design but needs to take into consideration the learning settings of students in different environments [42]. This finding reveals the importance of providing institutional support in areas such as technical, administrative, and teaching for academic staff in support of hybrid instruction.

Assessment was another important topic of concern for the study participants. Although they perceived themselves, in general, as being capable of maintaining assessment fairness in hybrid instruction, they reported problems with amending the assessment methods and preventing students from cheating in assessments in the context of hybrid teaching. Beatty [20] also argued that authentic assessment is a pre-requisite for hybrid teaching to be implemented effectively. Howell [36] raised that assessment methods may not need to be consistent for both groups of students attending classes physically or online in a course but may be adjusted to cope with the particular learning context of each group. This means that relevant institutional support needs to be provided to assist teachers in maintaining the authenticity and fairness of assessments, as well as further work to be conducted on devising suitable assessment methods for diverse contexts in hybrid learning.

The study reveals the difficulties that academics have in paying attention to students in both physical and virtual classrooms simultaneously. This involves ensuring the understanding of lesson contents for students in the two environments, identifying their problems, if any, and providing timely support; at the same time, academics need to operate the teaching and learning software platform for the online class group [43,44]. From the feedback of the academics, the task is particularly challenging for practice-based classes in which different in-class activities are needed for the face-to-face group and the online group, or when the online students do not turn on their camera and microphone that results in a loss of visual and audible cues for observing their problems in understanding. Raes et al. [13] summarise the solutions suggested from the literature in this regard, that a staff member or a student may serve as an assistant to support the academics in handling matters related to online students. In addition to showing the need for extra support for academics, the finding also implies that the potential strengths of hybrid instruction associated with catering to student's diverse needs and development of virtual learning communities may not have been completely realised in the existing hybrid learning and teaching practices, thereby requiring teachers to develop competence in hybrid instruction in terms of figuring out the role that they should play [1].

The academics' views on the low level of interaction, engagement, and motivation among students from online classes show the importance of students' self-regulation. These issues have been similarly reported by Kohnke and Moorhouse [45]. Binnewies and Wang [46] raised that the increased choices of class attendance in hybrid learning mean that students need to be more able to self-regulate their class engagement. While interaction, engagement, and motivation have been extensively regarded as key factors for success in student-centred learning, the ways to compensate for the absence of students' presence in face-to-face interaction with teachers and peers remain an area in hybrid learning and teaching worth being dealt with. The strategies suggested by the academics in this study, such as asking oral questions frequently and providing in-class exercises throughout the

lesson as well as setting class participation rules for freshmen, would be further studied to examine their effectiveness.

The significance of professional development for academics responsible for hybrid learning and teaching is also highlighted in the findings. The areas of development cover mastery of relevant technological skills, attention to the needs of students in diverse learning environments, provision of materials for these varying students, and assessment of their learning progress [47,48]. Doing so is important in assisting academics, not only in staying current with the latest technology-related and pedagogical skills for hybrid instruction, but also in adapting agilely to future changes in teaching and learning environments, such as the sudden change from traditional face-to-face teaching to hybrid instruction resulting from the pandemic.

6. Conclusions

This study contributes to revealing the experience of and challenges faced by academics in hybrid learning and teaching in the Hong Kong higher education context. The findings show that while the academics have an overall high degree of readiness to deal with technical issues, they expressed that the students from their hybrid classes have lower levels of motivation, engagement, and interaction than those from their face-to-face classes. The findings also identify challenges with respect to hybrid learning and teaching, particularly on the increased workload for class preparation and managing face-to-face and online classes, unfamiliarity with interactive teaching design for both learning environments, and difficulties in monitoring the learning process of online students. Recommendations are made for the improvement of hybrid instruction, ranging from the provision of hardware and software support to the provision of professional development for ways to enhance students' online engagement. These results also suggest ways to achieve sustainability in hybrid learning and teaching practice by offering suitable support for academics to tackle the challenges.

The findings of the study offer a number of implications. They have advanced our understanding of hybrid learning and teaching practices, revealed the major challenges faced by academics in charge of hybrid learning, and suggested the types of support which would facilitate their implementation of hybrid teaching, such as technical and administrative support to reduce the staff's workload in preparation for hybrid teaching and assist them in taking care of face-to-face and online students at the same time. Furthermore, there is a necessity for adjusting the existing instruction in response to the implementation of hybrid learning and teaching. Besides, more empirical studies should be conducted in this area; future work could examine relevant best practices reported in the literature to provide a reference for academics, such as the types of class activities, assessments, and technological tools that were shown effective in hybrid instruction. Future work should also investigate effective ways, such as requesting and acting on feedback from students to enhance their motivation and interaction to engage in hybrid learning in a sustainable manner, and the specific roles that academics should play with respect to the changing pedagogical environments.

The present study is limited by its small sample of participants who were from the same university, which limits the generalisability of its findings. Future research should cover a larger number and broader range of participants, such as academics from various educational institutions, to evaluate their hybrid teaching practices and the potential impact of their backgrounds, such as teaching experience and subject disciplines. Comprehensive reviews and bibliometric analyses could also be conducted to identify the themes in related literature and establish a link between the benefits and challenges shown in hybrid teaching practices. Additionally, further research could analyse how success factors in related types of teaching practices, such as blended and flipped teaching, could be applied to hybrid teaching to advance its development.

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