Open Learning: The Journal of Open, Distance and e-Learning

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/copl20

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To cite this article: Lucas Kohnke & Benjamin Luke Moorhouse (2021) Adopting HyFlex in higher education in response to COVID-19: students' perspectives, Open Learning: The Journal of Open, Distance and e-Learning, 36:3, 231-244, DOI: 10.1080/02680513.2021.1906641

To link to this article: https://doi.org/10.1080/02680513.2021.1906641

Published online: 24 Mar 2021.

OPEN LEARNING: THE JOURNAL OF OPEN, DISTANCE AND E-LEARNING
2021, VOL. 36, NO. 3, 231–244
https://doi.org/10.1080/02680513.2021.1906641

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Adopting HyFlex in higher education in response to COVID-19: students' perspectives

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ABSTRACT

COVID-19 has led to dramatic changes in the way teachers teach and students engage in higher education (HE). To cater for social distancing and learners' diverse needs, including being in different geographical locations from their HE instruction, different modes of teaching and learning have been adopted. One such mode is HyFlex. HyFlex sees teachers teaching students at the same time in a physical classroom and synchronously online through video-conferencing software. This small-scale exploratory study considers the experiences and perceptions of nine post-graduate students who attended a six-week course delivered through HyFlex. Findings suggest that while there were communication challenges between students who attended through different modes, participants did appreciate the flexibility it afforded. The utilisation of various features of the video-conferencing software and other digital tools were seen as essential to the effectiveness of HyFlex.

KEYWORDS

HyFlex; COVID-19; online learning; Zoom; higher education

1. Introduction

The COVID-19 pandemic has had a tremendous impact on teaching and learning modes in higher education (HE) as societies try to limit face-to-face contact and the spread of the virus. This situation has led to the implementation of online and/or blended learning modes globally. These modes have included the greater use of established online practices, such as the use of learning management systems, while also leading to the utilisation of newer modes, such as synchronous lessons delivered through videoconferencing software (VCS), so that education can continue (Moorhouse, 2020; Van Nuland et al., 2020). The shift towards online teaching modes has altered how nearly all students engage with the course content, classmates, and teachers.

In Hong Kong, the context for the present study, face-to-face teaching was temporarily deferred in January 2020, with the suspension extended for the entire spring semester in February 2020. When mitigation efforts gradually contained the virus in Hong Kong and the government allowed schools to reopen with virus prevention measures in May 2020, some HE institutions decided that limited face-to-face classes could resume. It was necessary, though, that students who were unable to attend face-to-face classes due to

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mandatory quarantines, being located in a different country, or out of fear of the virus had an online option, so they could continue learning. To address this situation, the school administration, in the university under study, decided to pilot a HyFlex mode for courses offered in the 2020 summer semester that would allow students the option to join courses, either online, face-to-face or through a combination of both. Teachers would provide ways for students to join course sessions, face-to-face or synchronously online simultaneously, through the utilisation of VCS. The HyFlex mode is an instructional approach designed to give students greater control over their learning and course engagement modes. HyFlex allows students to choose in-person instruction or online instruction in real-time from a remote location (Beatty, 2010). HyFlex is also seen to benefit HE teachers, as they only need to deliver each course once, instead of separate in-person and online versions of the same course. HyFlex has only recently become possible, thanks to global advances in connectivity and VCS.

Studies have explored HE students' perceptions of synchronous and asynchronous learning, including motivation and self-regulation (e.g., Cho & Shen, 2013; Dumford & Miller, 2018; Lee, 2017; Zheng et al., 2016). However, HyFlex is a new and, up until now, rarely implemented mode, and little research has explored students' perceptions of it as a viable alternative to face-to-face only or online only modes of learning and teaching. It is, therefore, essential to assess HE learners' perceptions of the quality of the learning that HyFlex offers. This case study helps to fill this gap in the literature by documenting the experiences of nine postgraduate students enrolled in a six-week course via HyFlex mode. Three students attended the whole course face-to-face, four students attended entirely remotely, and two students attended a mix of face-to-face and online instruction. With the likely adoption of HyFlex and other alternative instructional approaches in HE in response to COVID-19, understanding students' perspectives can help teachers prepare for HyFlex and optimise various technological tools and pedagogical approaches to meet students' needs. In this respect, this study makes an original contribution to the limited literature on HyFlex.

The paper begins with a review of relevant literature pertaining to the use of technology in teaching and learning in HE, with a focus on online and blended modes of course delivery. Next the case study methodology is introduced, including specific information about the research context, participants and interview procedures and analysis. Then, the five themes identified in the data analysis are presented and discussed: communication challenges; flexibility and return to normalcy; being actively involved in learning; video-conferencing software; and motivation to attend HyFlex courses in future. Finally, the study's implications for the use of HyFlex in HE are shared with emphasis on the need to consider the learners' experiences and needs in the development of this versatile yet complex instructional mode.

2. Literature review

Traditionally, HE instruction involves face-to-face classes taught at specific times and in specific places combined with reading and tasks that students complete outside of class. Recently, there has been a shift towards integrating digital technology into teaching and learning in general (Araka et al., 2020) and, in particular, towards offering online and blended learning (Weiser et al., 2018). Online learning has become an indispensable part

of HE's future (Allen et al., 2016). Both fully and partly online modes of learning have advantages (Broadbent, 2017). Fully online learning removes the need for learners to live near their college or university and alleviates space and time limitations while potentially reducing costs and other HE barriers. Blended learning offers greater flexibility and a more varied learner experience than either fully online or entirely face-to-face instruction (Hrastinski, 2019; Van Doorn & Van Doorn, 2014), allowing students to engage in ways that meet their diverse needs and providing teachers with a variety of ways to support student learning.

Although there has been an increase globally in both blended and online-only modes of HE due to their apparent benefits, the COVID-19 pandemic has led to the rapid adoption of online-only modes (Hodges et al., 2020). This transition presented challenges for teachers (Xie et al., 2019) and students. One likely student challenge is the need to learn to employ a variety of self-regulation strategies to maintain their learning progress (e.g., engage with course content, manage time) without extensive face-to-face feedback and guidance from their teachers. Self-regulated learning (SRL) can be defined as 'an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behaviour, guided and constrained by their goals and the contextual features of the environment' (Pintrich, 2000, p. 453).

Previous research has established that SRL is an essential factor in HE learners' achievement, satisfaction, and success in online learning contexts (Broadbent & Poon, 2015; Kuo et al., 2013). Thus, researchers have reported that when compared to students in face-to-face classes, online learners must develop greater independence and become more actively involved in order to enjoy learning success (Serdyukov & Hill, 2013). Simultaneously, progress in the use of technology can enhance learners' engagement and improve their knowledge of the course material and overall academic performance (Li, 2018; Oga-Baldwin, 2019). Technological affordances allow teachers to utilise pedagogical strategies and tools that encourage interaction and collaboration (Chen et al., 2015; Kohnke & Moorhouse, 2020; Moorhouse & Kohnke, 2020).

As has been seen, one of the promises of online learning is increasing access to learners for whom face-to-face instruction is problematic (Dziuban et al., 2018). However, access to online instruction may be unequal because students from financially disadvantaged backgrounds may be unable to afford the computer equipment and high-speed internet access required to participate in fully synchronous online classes. Traditionally, online and blended learning attract different types of learners; building on what was said earlier, the former tends to attract learners who value flexibility and independence and the latter those who value structure and social presence (Bernard et al., 2014). Studies comparing face-to-face, blended, and online teaching during the COVID-19 era are naturally in the early stages, and this situation includes work on HE learners participating in courses offered simultaneously in both modes of learning, i.e., HyFlex mode.

Researchers exploring the characteristics of effective online courses have found that students' perception of immediacy in instructor-student, student-student, and student-content interactions, both verbal and non-verbal, tends to increase their satisfaction and decrease their perception of distance from their learning environment (Limperos et al., 2015; Weiser et al., 2018). However, these kinds of interactions may be more challenging in the HyFlex mode, as the interactions involve students both physically and virtually

present, making it challenging for the two groups to engage in activities that encourage participant interaction, such as pair work, group work and debates). This exploratory case study hopes to shed more light on the student experience of HyFlex by asking the following research question:

RQ. What are students' perceptions of HyFlex as an instructional mode?

Through addressing this question, it is hoped that students' needs can be better understood, therefore helping ensure they are considered as HyFlex based modes of teaching and learning are increasingly adopted in HE.

3. Methods

3.1 Context of the study and participants

This study involved students in a postgraduate course on 'Presentation Skills for Research Students' offered at one of the eight publicly funded universities in Hong Kong. The course is compulsory for postgraduate students in a variety of disciplines. Its design instructs students in the delivery of effective oral academic presentations – including the defence of their theses and dissertations – with a focus on their English language skills. The course consisted of 13 sessions delivered twice weekly, each session lasting for two hours. Its focus was on topics such as methods and procedures for oral presentations, the content and structure of academic presentations, stating a project's aims and rationale, and citing references. The students were assessed individually based on their delivery of a 15-minute presentation on an academic subject followed by a 5-minute question-and-answer period.

The first author of this paper taught the course and invited all 12 students who took the course in the summer of 2020 to participate. Nine of them agreed to do so, two women and seven men. We sent each participant a letter outlining the study's purpose, the procedures involved, and a consent form to sign. Pseudonyms were used throughout the study to protect the participants' anonymity.

The university offered the course in the HyFlex mode, with instruction being provided simultaneously through, VCS, with the platform, Zoom, adopted face-to-face, in a physical classroom on the university's main campus in Hong Kong. In this study, the teacher taught the lesson from the physical classroom using Zoom to stream the live session. Thus, students could attend in real-time, either online or in-person. Three of the students attended every session face-to-face, one student attended two of the sessions face-to-face and the other sessions remotely, and the remaining four chose to attend all the sessions remotely. See table 1 below for profile of the participants.

The instructor was asked to focus on delivering the lesson through Zoom to ensure the students received the same instruction. In other words, both groups of students, face-to-face and online, attended the lesson concurrently through Zoom. This format also meant that students attending through different modes could interact with each other on the platform. Due to social distancing rules, partitions separated in-person students. Throughout the course, the teacher utilised Zoom's various features to facilitate and

Table 1. Profile of the participants.

Participant	Gender	Research Study Level	Mode of Attendance
Brian	M	M.Phil.	Remote
Carl	M	M.Phil.	Remote
Cathryn	F	Ph.D.	Remote
Gabriel	M	M.Phil.	Mixed
Jessica	F	Ph.D.	Face-to-face
Lars	M	M.Phil.	Remote
Michael	M	Ph.D.	Mixed
Tony	M	Ph.D.	Face-to-face
Vincent	M	M.Phil.	Face-to-face

promote participation, including breakout rooms in which students could interact, socialise, make plans, and practice presentations and annotation features.

Visual collaboration tools such as online digital noticeboards, (e.g., Lino and Padlet), where the students can post notes, were incorporated so that the students could publish research posters. Student response systems, such as, Mentimeter, GoSoapBox, and game-based platforms, such as Kahoot! were used as platforms for asking and responding to questions about course content, materials and presentation videos streamed during class. These tools were utilised by the teacher to leverage the affordances of the technologies in ways that would create a sense of community among the students (Garrison, 2011) and provide them with opportunities for collaboration and reflection (Herrington et al., 2010).

3.2 Data collection and analysis

For this study, we determined that a qualitative approach was the best means to arrive at a rich understanding through in-depth interviews (Creswell, 2008). We employed a convenience sampling technique, with the first author inviting participants who were enrolled in the course to join. The first author also served as a facilitator and designed the interview guide to elicit insights into the participants' experience. Thus, we asked the students the following broad questions:

- What are your views of the HyFlex mode for learning and why?
- What did you find the most useful about HyFlex and why?
- What did you find most challenging about HyFlex and why?
- What strategies did you use and why?

We conducted the interviews in English through Zoom and audio-recorded each session. The average interview length was 42 minutes. The themes were identified and analysed using the six-step process proposed by Braun and Clarke (2006). First, we transcribed the recordings, and participants received a copy for the first member check. Second, each author read and re-read the transcripts to familiarise themselves with the data. Then, both authors coded independently and generated initial codes that were shared, discussed, clarified, and themes and subthemes were identified and accepted. To improve the findings' dependability (stability of findings over time), we employed a code-recode strategy (Anney, 2014). Thus, both authors performed a first round of coding, waited for two weeks, and then re-coded the same data. The fact that the results of the

two rounds of coding were nearly identical indicates that the findings are indeed dependable. Finally, representative quotes were selected. To increase the data's trustworthiness, we performed a second participant member check (Merriam & Tisdell, 2017) by providing each participant with a copy of the results, including the themes and representative quotes. No student requested any additions or offered any suggestions. In the next section, we discuss the interviews' findings.

4. Findings and discussion

Five themes emerged during the analytical process, as shown in the final thematic map (Figure 1). Each theme addresses the research question. In the discussion below, excerpts from the interviews exemplify the participants' experiences and reveal the complexity of their HyFlex learning encounters, thereby providing a thick description (Geertz, 1973).

4.1. Communication challenges

The dominant theme was communication between students attending face-to-face classes and those attending online classes. In particular, the students found that uncertainties relating to handover and turn-taking hindered their ability to collaborate, monitor

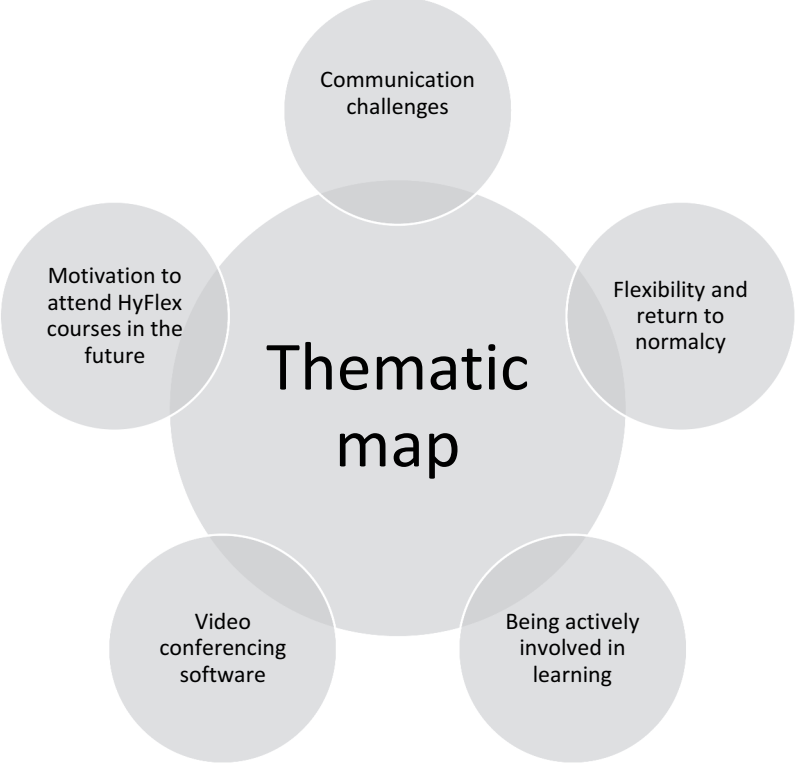

Figure 1. Final thematic map illustrating the five themes identified in the analysis.

progress, and receive and act upon feedback. Vincent, who attended the face-to-face classes, recalled that

> "I usually look around the classroom and notice if the teacher is talking to another student, but now the teacher is sitting behind his desk talking to another student on Zoom, and I'm in the classroom. I[t']s hard to get his attention."

Carl, who attended remotely, experienced similar frustration:

> "I can't work well like this. So, the teacher is in the classroom with my group partner, so we have to communicate on Zoom and try to get the teacher to join our breakout room. Sometimes, my partner asks him a question in the classroom and needs to fill me in [on] what he said, and I feel that something might be lost. It is not really efficient; I feel it takes a lot longer to do things."

Several participants perceived qualitative differences between face-to-face and fully online courses in terms of communication and feedback. Problems in the latter context included a disruption or breakdown in communication during the transition between speakers and difficulty observing paralinguistic cues. Cathryn, for example, found that it was not easy 'to read the teacher's body language and facial expressions,' and Michael likewise observed that 'it is not easy to interact with the teacher.' Students frequently mentioned the lack of clarity regarding how to communicate with fellow students and the instructor as they attended using either mode. Thus, it was necessary to choose between interacting by text in the chatbox or verbally using microphones, which was especially problematic for students in the physical classroom with the instructor. Brian said that he 'kept waiting for someone else to answer,' and Michael said that he was unsure how to begin interacting and 'if my voice will disturb others or affect the presentation of the teacher.' These and similar comments made it clear that students found HyFlex challenging in terms of verbal and nonverbal communication in real-time.

4.2. Flexibility and return to normalcy

Generally, the interviewees appreciated the flexibility that HyFlex offered and initially had had positive views of it because it enabled them to return to face-to-face classes after a full semester of online teaching and at-home learning. They had accordingly looked forward to engaging with other students and the teacher, regarding this engagement as an essential element of language learning in particular. Thus, Lars commented,

> "Last semester, I took a thesis-writing class online, and I don't think it was good. It is difficult for the teacher to give me attention and explain grammar points. So, yes, I'm happy to get back into the classroom this summer."

Jessica found that

> "Online teaching is boring. I wanted to return to the university and found it stressful to attend classes online. I think I learn better face-to-face, especially since this is a presentation course. I mean, how can I learn how to give an academic presentation with correct pronunciation and get real practice online?"

These comments highlight the students' perception that online teaching during the previous semester had not been conducive to language learning and their hope that

the HyFlex mode would be more effective. Their dissatisfaction with their online teaching experiences may be attributable to their teachers' lack of experience with or competency in using online platforms for language instruction. The influx of digital technologies into HE has compelled teachers to acquire new competencies (Starkey, 2020), especially in terms of integrating the technologies into existing pedagogical practice for online activities (Kabakci Yurdakul & Çoklar, 2014) or assessments (Gudmundsdottir & Hatlevik, 2017).

The students appreciated the flexibility that HyFlex offered, finding that the ability to choose between face-to-face and online instruction provided a sense of safety and control over their learning. Gabriel, who attended most sessions in the face-to-face classroom, for example, said,

> "I think this is good. When I feel safe, I can go to the university. If not, I just stay away and study online from home."

Brian, who attended remotely, similarly noted that 'I can decide what's best for me' and that he felt 'safer' thanks to the flexibility of the format. These two comments are particularly significant in times of social distancing, for both students and teachers need to feel safe and comfortable while attending classes. Students frequently reported the desire to attend face-to-face classes, but they remained unconvinced that the risk was commensurate with the reward. Lars, for example, expressed concern about infecting family members if he were to attend face-to-face classes. Cathryn, on the other hand, was not particularly worried about the pandemic and appreciated the opportunity to 'study from anywhere.'

The interviewees also questioned the HyFlex mode's equity concerning students' ability to secure the optimal conditions for online instruction. Gabriel, for instance, mentioned having had difficulty finding a quiet place to study with two brothers also learning at home, and Lars had had problems with equipment and connectivity: 'You know, my laptop is old, and my internet speed isn't fast, so it is not easy to study online.' The fact that not all students have access to a quiet place to study, an up-to-date computer and a high-bandwidth internet connection required for synchronous online learning is, indeed, a fundamental limitation of the HyFlex mode. HE institutions need to consider this limitation in transitioning to online teaching and ensure that all students have equal access to these required resources regardless of their socio-economic backgrounds.

4.3. Being actively involved in learning

Another theme was the need for students to take ownership of their learning. All of the interviewees spoke of having to take the initiative to remain actively involved in the learning process. They spoke of the need to communicate with their classmates before, during, and after each class to complete assignments. It was their perception that their workloads had increased compared with the workloads associated with traditional classrooms. As Carl noted, 'I have to set clear goals to make sure I can do everything now.' The communication and collaboration issues involved in completing the actual lessons when students participated in mixed-mode instruction thus appeared to encourage them to find alternative learning strategies. While students perceived this effort as an increase in

their workload, several students found that it created opportunities to learn from others. Tony, for instance, experienced an increase in communication:

> "Actually, things take longer, as some [fellow students] are attending online and [others], like me, in class. So now I message my classmates, and we talk about what we should be doing [to help] each other to complete assignments. I feel like we were closer."

Likewise, Michael said, 'I read the weekly tasks, set my goals, and then I tick them off.' These students then adopted SRL strategies to succeed in the course. The extra effort seems to have paid off in terms of taking charge of their learning, as similar studies of online language learners revealed (Amiryousefi, 2019; Zheng et al., 2016).

4.4. Video conferencing software

Another topic that the students discussed at great length was the Zoom platform's various features, and the ability to utilise other online tools simultaneously with it. They largely agreed that these functions facilitated their interactions; in a typical comment on this issue, Vincent said, 'I think it is really good just to get us all connected.' In a similar vein, Michael added that the features 'helps me to stay alert during the lesson and interact with my classmates.' Regarding the synchronous mode of instruction, the interviewees spoke most frequently of the teacher's efforts to engage them as a group using various features, such as the poll function to check their understanding and elicit their ideas and thoughts, the breakout room function, and by combining Zoom with Google Docs to create a shared space to collaborate on tasks, such as presentations, in groups or as a class. Carl thought both the peer feedback and teacher feedback provided on their presentation outline through Google Doc was very helpful. He shared:

> "I like that we can see everyone's ideas and outlines. Many times, I'm not sure if I'm doing the right thing, so, receiving helpful suggestions, ideas are a great way for us to work together. And we are all doing similar mistakes, so we can improve together."

The interviewees also correlated encouragement with participation; Jessica, for instance, felt that 'polls and word cloud[s] encouraged everyone to contribute from the start of the lesson.' A comment by Cathryn made the point in a different way: 'I think, in online learning, people just sit back and watch unless we have to do something specific.' There was a strong consensus on this issue. Likewise, they stated that, during collaborative activities, everyone seemed to have a presence. According to Gabriel, 'When we are completing tasks using Google Doc[s] or Padlet, we are doing it together as a group.' This perception was something both in-class and online learners mentioned in the interviews: completing activities online made them 'feel as a group' and 'not separated' in Tony's and Michael's words. As the above comments illustrate, the applications' affordances created a sense of community, interaction, and engagement between the learners.

At the same time, there seems to have been considerable confusion regarding how the students should contribute to the group activities, and this confusion seems to have discouraged their participation. Michael remarked, 'I think we all could do more,' and elaborated that the situation was 'awkward' because he did not know his classmates well. Uncertainty regarding how to participate in this mode of learning also seems to have contributed to students' reluctance to comment on, add to, and/or develop others' work.

Those attending the face-to-face class were more confident in contributing than the others and, not surprisingly, valued this instruction mode (Pimlott & Tikasing, 2020). Notably, an initial session activity, such as a poll or a word cloud, seems to have motivated the students and increased their sense of engagement with the course and their classmates. It is possible that the incorporation of more discussion activities (i.e. involving the whole class as well as groups and pairs) into the first few lessons would have encouraged the students to interact more and become better acquainted and, thereby, increased their willingness to contribute irrespective of the mode of instruction (Amiryousefi, 2019).

4.5. Motivation to attend hyflex courses in the future

Most interviewees agreed that the HyFlex mode was not as effective for teaching compared to face-to-face only modes. However, they understood why the university had opted for this approach. As Jessica observed, 'A lot of people were complaining about online learning. It just wasn't the same. And now the situation seems to be okay.' Lars similarly described his motivation to participate in this form of learning as stronger than during the online-only approach adopted in the spring semester since he had the option of attending the face-to-face sessions. Their appreciation of the difficult circumstances and initial motivation to attend aside, the interviewees came to find the effort required to complete the assignments overly burdensome. As Carl stated, 'We have to take the initiative;' otherwise, the instruction came to resemble a 'traditional lecture,' with the teacher's attention split uneasily between two separate groups of students in different locations. Under such circumstances, students tend to remain passive (Lee et al., 2019). When asked to suggest improvements to the HyFlex instruction, the interviewees mentioned the assignment of tasks to be completed at home before the session with the instructor, limiting the online sessions to no more than one hour, and, with respect to their presentations, a focus on speaking practice rather than the content.

5. Conclusions and implications

HE institutions will likely need to provide options for students to attend classes in person or remotely for the foreseeable future. The findings presented here suggest that the HyFlex mode can address the challenges COVID-19 has brought to HE by increasing the flexibility afforded to students. The students interviewed for this study were motivated to attend a course offered in the HyFlex format because its flexibility allowed them to choose whether to attend face-to-face or online, depending on their needs. They appreciated the sense of returning to some measure of normalcy but felt that HyFlex was not the optimal mode for learning. Indeed, when it came to negotiating meaning through cooperative interaction, the interviewees reported several communication problems – verbal and non-verbal – between students using the different modes. Additionally, they found the online learning mode more tedious than the face-to-face mode, in part because the HyFlex mode required more self-regulation to complete assignments and collaborate with classmates successfully.

This study has several implications for teaching and learning in colleges and universities. To begin with, HE teachers should incorporate different features of VCS, such as Zoom, including polling, word clouds, breakout rooms, and chats to enhance the learning experience and create a sense of students working together among the

participants who are not in the same physical location (Kohnke & Moorhouse, 2020; Moorhouse & Kohnke, 2020). Another possibility is to pair face-to-face and remote students for classwork and assignments to foster a strong sense of community in a HyFlex classroom (see Rouhshad et al., 2016). The earlier suggestion of limiting the synchronous class time to one hour should also receive serious consideration. The HyFlex mode requires a reconceptualisation of the teacher's role and how the course content is delivered in that, compared with traditional modes of instruction, more teaching and learning takes place asynchronously. Accordingly, the synchronous session should enhance the work that students have already completed before the live session following a flipped classroom instructional strategy. Lastly, our experience from using the HyFlex model shows that teachers need to focus on the online delivery mode to ensure that all students receive the same educational experience, irrespective of the portion of students attending the face-to-face classroom, and teachers should mediate all communication through the VCS.

Teachers face many challenges when trying to deliver pedagogically sound HyFlex courses, and HE institutions need to make available the appropriate resources for mitigating these challenges. Particularly desirable in this context are learning-management systems through which teachers can easily upload and download materials, monitor and provide feedback on students' work, and communicate with each other through forums, blogs, wikis, or a built-in messaging function. Institutions must provide professional development opportunities to ensure that teachers are prepared for and confident about online teaching, including training in asynchronous and synchronous instructional approaches and the use of various tools and activities. Equally important, HE institutions need to consider equity and recognise that some students lack access to computers that can run the VCS, a high-speed internet connection at home, and/or a quiet place to study.

The results of this relatively small-scale qualitative study cannot be generalised to other groups of learners in other contexts. Moreover, the participants in this study are postgraduate students and, therefore, more likely to be able to cope with both the technology and independent learning requirements. Nevertheless, these results provide a starting point for more extensive studies. Accordingly, future research could involve assessing the HyFlex mode in the delivery of courses to larger numbers of undergraduate and postgraduate students in Hong Kong and beyond that leverage other technological affordances. By offering some preliminary observations from the perspectives of students experiencing the reality of education during a pandemic, this study contributes to developing effective practices for supporting and sustaining this new mode of learning while taking into account contextual elements. We close by noting that our intention was not to identify a single pedagogically correct way to implement the HyFlex mode; we fully recognise that the manner in which individual teachers use this new approach will depend on each particular context and the available technologies.

Disclosure statement

No potential conflict of interest was reported by the authors.

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