Article
How to Sustain Quality Education in a Fully Online Environment: A Qualitative Study of Students’ Perceptions and Suggestions
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Abstract: This study explored the learning experience of university students in Hong Kong, where remote online instruction was adopted to sustain student learning during the first 2 years of the COVID-19 pandemic. Based on student voices, this study aimed to improve online instruction. A qualitative case study approach was adopted, involving 12 university students from different subject disciplines and universities. Individual semi-structured interviews were conducted, followed by a series of qualitative data analysis procedures. The findings of this study suggested that our participants were generally satisfied with the way synchronous online lessons progressed, but that instructors’ technical problems were common. Furthermore, the students’ self-reported level of engagement tended to be negative due to, for example, lengthy lessons and poor group dynamics in virtual rooms. We also revealed the need for professional development opportunities for instructors to enhance their online teaching skills. Recommendations for improving online instruction are discussed, such as limiting online lessons to between 90 and 120 min, and allowing students to form their own groups, while helping shy students to join a group. This study thus has important implications for sustaining quality education in a fully online environment.

Keywords: online instruction; remote teaching; student perception; qualitative study; COVID-19

1. Introduction
At the onset of the COVID-19 pandemic, schools and universities worldwide were tasked with balancing student safety and their learning [1]. To minimize the risk of the pandemic spreading, students were asked to stay at home as much as possible and to avoid crowded places and group activities. Thus, face-to-face lectures and small-group tutorials have not been possible since 2020. To address this unprecedented challenge, fully online instruction was adopted as an emergency approach to sustaining student learning [2–6]. In a fully online environment, however, instructors may not know how their class activities appear on students’ screens and, most importantly, what is happening behind the screen. Difficulties in sustaining students’ motivation and interest were often reported [5,7–9]. It is therefore invaluable to understand students’ learning experience and perceptions during the pandemic. By using student voices, we can uncover any “blind spots” in fully online instruction and make improvements accordingly.

In this paper, we report on a case study conducted across different universities in Hong Kong. This study aimed to understand students’ learning experience and their views on online instruction. As Lengyel et al. [10] noted, studying the views of university students is particularly important in the field of sustainability because they are prospective decision makers of the future. Given the diverse background of the interviewees, this study was well placed to analyze best practices in online instruction, as well as its challenges. Furthermore, by not focusing on a specific course (i.e., a specific instructor), we avoided having students offer socially decidable responses (e.g., saying kind words to please their
instructors), which would prevent us from understanding the reality. Despite its qualitative nature, as noted above, this interview-based study addresses the need for improvement in instruction and enriches the growing literature on students’ perspectives on online teaching. This study was centered around the following two research questions (RQ1 and RQ2) and looked for the participants’ reasoning and their suggestions for improvement:

- RQ1: What did the participants think of the way their synchronous online lessons progressed?
- RQ2: To what extent did the participants engage in fully online learning activities?

2. Conceptual Background

2.1. Fully Online Instruction

Without a traditional face-to-face lecture environment during the pandemic, fully online approaches offer a possible alternative to sustain quality education. Chen et al. [11] classified the possible approaches into two categories:

- Asynchronous instruction: allows interactions between an instructor and the students to happen at different times (e.g., pre-recorded video lectures).
- Synchronous instruction: requires the presence of an instructor and students at the same time for teaching and learning to take place (e.g., live online lectures).

Asynchronous instruction was widely used before the pandemic. One typical example is the flipped classroom approach in which students learn some basic materials before class by watching pre-recorded (asynchronous) video lectures (e.g., [2,8,9,12,13]). This frees up class time for more interactive learning activities (e.g., group discussion) to increase student engagement [14,15]. With face-to-face lectures not possible due to social distancing policies, instructors have to conduct live online (synchronous) lectures via a video conferencing platform, such as Blackboard Ultra, Google Meet, Microsoft Teams, and Zoom [4,5].

In Hong Kong, online instruction has been in force since early 2020. As noted by Lo [12], after the first two lessons in January, regular teaching and learning activities transitioned from face-to-face to face-to-screen settings to reduce social contact and minimize the risk of the pandemic spreading. While there were plans for a gradual resumption of on-campus activities around late 2021, the worsening fifth wave of COVID-19 infection upset optimists. The number of new infections rocketed to more than 50,000 per day in early March 2022, compared with at most several hundred in 2020 and 2021 during previous waves. At the time of writing, fully online instruction must continue, with no concrete date for the resumption of face-to-face classes in sight.

2.2. RASE Design Framework

Before the pandemic, many schools and universities lacked plans and instructor training to cope in the event of interruptions in their campus operations [3,6,16]. Thus, the outbreak of the COVID-19 pandemic has had a negative impact on the Sustainable Development Goals (SDGs) proposed by the United Nations. Among the goals, SGD-4 calls for quality education. As witnessed in Stracke et al. [1], researchers and instructors worldwide have been struggling to sustain quality education in a fully online environment. While current practice in online instruction is often limited to merely replacing a physical classroom with a video conferencing platform, a design framework should be used to guide matters.

This study applied the theoretical work of Churchill et al. [17] in the context of fully online instruction. The researchers proposed a design framework, called RASE (resources, activity, support, and evaluation), as a key strategy for leveraging various affordances of online and mobile learning technology. It was suitable for use in this study because the four aspects of the framework basically cover everything in fully online settings [17] and have been used as an analytical lens in other empirical studies (e.g., [18,19]). The framework was derived from a review of various instructional design models and theories, such as activity theory [20], constructivist learning environments [21], problem-based learning [22],
collaborative knowledge building [23], and situated learning [24]. Churchill et al. [17] suggested that an effective online learning environment should include the four core components below. Leveraging the relevant empirical studies produced during the pandemic, we contextualized the framework within a fully online educational setting:

- **Resources**: Students learn using various resources, such as real-time teaching, multimedia and text-based materials. Le [4] compared the effect of an instructor’s real-time teaching via Google Meet (synchronous) and pre-recorded lectures (asynchronous) on students’ learning outcomes. The researcher found that high-ability students learned equally well in both settings. However, when pre-recorded lectures were used, low-ability students achieved less compared with live online teaching. This showed the value of continuing to use synchronous online instruction during the pandemic.

- **Activity**: Learning activities must be learner-centered and authentic. Instructors can design problem-solving and collaborative tasks that provide a context for students to test their ideas and apply their knowledge. In a physics course designed by Ahmed and Asiksoy [2], for example, their students attempted to solve questions and discussed their solutions. The researchers also suggested that game design elements (e.g., badges and points) increased students’ motivation. For online small-group activities, Tan and Chen [25] attempted to mimic their face-to-face collaborative problem-solving activities using the “Breakout Rooms” function in their video conferencing platform. However, some researchers (e.g., [5,9]) have reported that student interactions decline in virtual meeting rooms.

- **Support**: The purpose of support is to address students’ needs and facilitate their learning. An online forum and email are possible ways to offer support. It is worth noting that the need to support instructors has also emerged in the literature. Research has generally suggested that instructors lack the IT and pedagogical skills required for online instruction [1,3,5–7]. In the words of Stracke et al. [1], there is therefore an “urgent need for professional development and training for teachers” (p. 17).

- **Evaluation**: Engaging students in a learning activity enables instructors to evaluate student performance and provide formative guidance for improvement accordingly. Campanyà et al. [26] found that while their students did not like taking exams, they placed great importance on the continuous assessment of their course. The assessment gave students the instructor feedback they needed to enhance their learning and to clarify their misconceptions about course materials [13].

### 3. Methods

Approval to conduct this study was granted by the Human Research Ethics Committee of The Education University of Hong Kong. The data for the study were collected through semi-structured interviews conducted in Chinese by the second author over a period of 2 months (from January to February 2022). Twelve university students in Hong Kong were recruited through personal contact because, according to Ando et al. [27], this sample size could provide all of the themes with most of the codes needed for thematic analysis. Based on purposeful sampling [28], the research participants were recruited from a range of subject disciplines: social sciences (Student A), media and communication (Student B), medicine (Student C), business (Student D), surveying (Student E), and education (Students F to L). In particular, more than half of them (n = 7) were from teacher education programs. We expected that these pre-service teachers would be better able to provide us with insights into instructional improvements, as they were receiving training in education and might be preparing to teach in a fully online environment after graduation.

All of the interviews were conducted online via Zoom (a video conferencing platform) and recorded, with each conversation lasting 10 to 26 min (M = 17.42, SD = 4.40). An interview topic guide was developed and organized around the two research questions. For each research question, we probed the participants for their reasoning and suggestions for instructional improvements. The second author prepared the interview transcripts for the first author to check. The qualitative data were then coded and categorized using the
qualitative data analysis procedures proposed by Creswell [29]. Specifically, we began with the transcript of the shortest interview and assigned codes to each piece of data. These codes were the exact wordings of the research participants and concepts from the literature. After completing the coding of the first transcript, all of the codes assigned were reviewed and grouped. The preliminary list of codes was used to analyze the rest of the qualitative data. This allowed us to identify any emerging codes that enriched the list. Finally, similar codes were organized into sub-themes. Some of the interview data (in Chinese) were translated into English for reporting purposes. An English language educator helped perform translation and back-translation to ensure translation accuracy [30]. To enhance the consistency of our classification, we used several quotes as examples that clearly illustrated each sub-theme. Multiple reviews of the data were carried out to ensure that we understood each sub-theme. In the event of disagreement, the authors re-examined the interview data in question together to come to a consensus.

4. Findings
4.1. RQ1: What Did the Participants Think of the Way Their Synchronous Online Lessons Progressed?

The participants were first asked to rate the way their synchronous online lessons progressed using a 5-point Likert scale, ranging from 1 “not smooth at all” to 5 “very smooth.” Table 1 shows that the participants’ ratings were generally positive (Mean = 3.67, SD = 0.89). As several participants (e.g., Students B, J, and L) explained, after the first 2 years of the pandemic, the majority of instructors and students have become accustomed to online lectures. However, it is worth noting that almost all of the participants (except Student A) reported that the instructors experienced technical problems during class, such as being unable to share their computer sound/screen or to assign students to virtual discussion rooms (e.g., the “Breakout Rooms” in Zoom). Students B and D shared their experience of class termination. As Student B recalled, “My instructor’s electronic device once disconnected during class. As a result, he had to send an email to inform students about the class arrangement”.

Table 1. Participants’ view of the progress of their synchronous online lessons.

| Rating        | Count (%) | Representative Quote                                                                 |
|---------------|-----------|---------------------------------------------------------------------------------------|
| 5 (very smooth) | 1 (8.3%) | “I think my lessons do not have many interruptions” (Student K).                       |
| 4             | 8 (66.7%) | “I think most of the lessons are smooth now because it has been a long time since Zoom lecturing was first used” (Student C). “Because Zoom lessons have been going on for about 2 years, most instructors and students are already familiar with the flow of online lecturing” (Student J). |
| 3             | 1 (8.3%) | “His [an instructor’s] electronic device for screen sharing had network connection problems three to four times during class, causing some disruption” (Student G). |
| 2             | 2 (16.7%)| “Teachers often have technical problems . . . As a result, the entire 2- to 3-h lessons did not run smoothly” (Student B). “There are often network problems . . . If there are problems with instructors’ network, it would take extra time to complete the lesson materials” (Student D). |
| 1 (not smooth at all) | 0 (0.0%) | N.A.                                                                                 |

Table 2 shows the participants’ suggestions for how instructors could improve the way their lessons progress, including improving IT skills (n = 3), ensuring network connectivity (n = 2), preloading lesson materials before the class begins (n = 2), and ensuring the stability of electronic devices (n = 1). Taking “ensuring network connectivity” as an example, Student L reported that “Some instructors seemed to have poor network connections. As a result, the screen that they shared was blurry . . . Students could not see it clearly”. The participant thus recommended that instructors “conduct classes where the network is more stable”.

Table 2. Participants’ suggestions for how instructors could improve the way their lessons progress.

| Rating | Count (%) | Representative Quote |
|--------|-----------|----------------------|
| 1 (not smooth at all) | 0 (0.0%) | N.A. |
Table 2. Participants’ suggestions for how instructors can improve lesson progress.

| Suggestion (Count) | Representative Quote |
|--------------------|-----------------------|
| Improving IT skills (n = 3) | “Instructors should learn how to use Zoom” (Student B). “I think [instructors] should be more familiar with the use of electronic devices and learn how to use Zoom in advance” (Student F). |
| Ensuring network connectivity (n = 2) | “Some instructors seemed to have poor network connections . . . I think they should conduct their classes [in the place] where the network is more stable” (Student L). “[The room for improvement is] Mainly about network connectivity” (Student G). |
| Preloading lesson materials before the class begins (n = 2) | “Instructors could not share the sound [of their audiovisual materials] . . . I think they could preload the materials before the start of lessons. This would avoid spending class time fixing the problem” (Student H). “Instructors should log in to Zoom before class to get prepared . . . sharing their screen and sound” (Student I). |
| Ensuring the stability of electronic devices (n = 1) | “[Instructors] have to ensure that their electronic devices are in good condition to avoid sudden disconnection, which is embarrassing” (Student B). |

4.2. RQ2: To What Extent Did the Participants Engage in Fully Online Learning Activities?

The participants were asked to rate their level of engagement in fully online learning activities using a 5-point Likert scale, ranging from 1 “fully disengaged” to 5 “fully engaged”. Table 3 shows that the ratings tended to be negative (M = 2.75, SD = 0.62). The majority were neutral (n = 7) or somewhat disengaged (n = 4). As Student J explained, “Because we don’t have to turn on our cameras and face our instructors at home, I am not very attentive during class”. The lack of peer support also impaired student engagement during online lessons. As Student B noted, “I think I am more attentive in face-to-face lessons than in online lessons. In face-to-face lessons, we attend classes with our classmates . . . When you don’t understand [the course materials], you can immediately seek their help”.

Table 3. Participants’ level of engagement in fully online learning activities.

| Rating | Count (%) | Representative Quote |
|--------|-----------|-----------------------|
| 5 (fully engaged) | 0 (0.0%) | N.A. |
| 4 | 1 (8.3%) | “The benefit of Zoom is that you can use Whiteboard to facilitate interactions. Some shy students may not take the initiative to answer questions during face-to-face classes. But writing or typing can make it easier for them to answer questions” (Student D). |
| 3 | 7 (58.3%) | “Because we don’t have to turn on our cameras and face our instructors at home, I am not very attentive during class. Unless my instructor asks me questions, I am actually doing something else” (Student J). “When attending classes at home, [students] must be less concentrated than in a face-to-face classroom. But I would still attend the classes” (Student G). |
| 2 | 4 (33.3%) | “I think I am more attentive in face-to-face lessons than in online lessons. In face-to-face lessons, we attend classes with our classmates . . . When you don’t understand [the course materials], you can immediately seek their help” (Student B). “As instructors would record the lessons, students would take a perfunctory attitude thinking ‘don’t be too serious because you can review the lessons later’” (Student E). |
| 1 (fully disengaged) | 0 (0.0%) | N.A. |

The interview findings suggested that the length of synchronous online lessons affected student engagement. Students E and F specifically commented that a 3 h lecture was too long in a fully online environment. Half of the participants (i.e., Students C, D, G, H, I, and L) argued that if an online lesson was too long, they lost their concentration. Several participants also pointed out that looking at the computer screen for a long time may cause fatigue (Students E and I) and risk injuring students’ eyes (Student F). Table 4
shows that the majority of the participants \((n = 7)\) recommended limiting online lessons to 90 to 120 min.

Table 4. Participants’ suggestion for the length of synchronous online lessons.

| Duration     | Count (%) | Representative Quote |
|--------------|-----------|----------------------|
| Less than 45 min | 1 (8.3%)  | “I think the shorter the lesson, the higher the level of concentration” (Student K). |
| 45–60 min    | 4 (33.3%) | “I think 3 h is too long. Students will feel very tired. But if each lesson is only 30 min long, it is too short. The instructor cannot present a lot of materials and then have to end the lesson. I think 45 min to 1 h is just right” (Student F). “I think if the class time is too short, we cannot acquire the knowledge. But if it is too long, we will feel tried and get distracted easily. I think 45 min is just right” (Student D). |
| 60–90 min    | 0 (0.0%)  | N.A. |
| 90–120 min   | 7 (58.3%) | “90 to 120 min. If the class time is too short, instructors cannot finish the lesson materials. But if it is too long, students will not be able to stay concentrated during lessons” (Student H). “I think 3 h is too long. If you look at the computer [screen] for a long time, there is a risk of injury to your eyes. However, the lessons should not be too short. So, the lesson duration should be adjusted accordingly” (Student E). |
| More than 120 min | 0 (0.0%)  | N.A. |

All of the participants reported that their instructors attempted to increase their engagement through class activities. Table 5 summarizes their comments on the five major activities, as identified in the interviews: (1) using polls/game applications to collect student responses; (2) inviting students to share their thoughts via the virtual whiteboard; (3) inviting students to share their thoughts via the chat box; (4) inviting students to share their thoughts via their microphones; and (5) creating virtual rooms for group discussions. The use of polls/game applications to collect student responses was well received. Some of the participants appreciated the use of Kahoot! (a game-based student response system) and its game design elements (e.g., timer and scores). In the words of the following two participants:

- “I would recommend using online game applications such as Kahoot! because the game involves scores, like a competition. Students are more engaged in the class when they answer gamified questions. Meanwhile, students understand whether they have mastered the course materials every time they submit their answer” (Student I).
- “I think Kahoot! is quite useful because it has a timer. Besides, the questions are in the form of multiple-choice questions. It is convenient to answer . . . When answering questions like a competition with game scores, student engagement is high” (Student C).

In contrast, we found that comments about creating virtual rooms for group discussions (e.g., Students B, C, and J) were more negative. As Student B recalled: “After entering the Breakout Rooms, many students actually muted their microphones. Even though the instructor was in the room, no one would answer him.”

In addition to their comments on class activities, the participants provided suggestions on four main aspects (i.e., on-screen drawing, taking breaks, allocating course grades to participation, and forming groups). The first aspect was related to instructors’ on-screen drawings. As Student C explained: “Some instructors read the content from the slides. I think they should use a mouse or other marking tools to point out the part they are teaching, making it easier for students to follow.” For the second aspect, Students F and K recommended taking breaks during class. As Student F commented: “I think it is important to have a break during class. If instructors tell us how many minutes to go and then we will have a break, I will be attentive immediately.” For the third aspect, Students E, F, H, and I suggested allocating some of the course grades to participation in class and/or in-class exercises. As Student E explained: “Because these [graded in-class exercises] are related to academic achievement, I would be more engaged in the lessons.”
Table 5. Participants’ comments on class activities by popularity.

| Class Activity                                      | Positive Comments                                                                 | Negative Comments |
|-----------------------------------------------------|-----------------------------------------------------------------------------------|-------------------|
| Using polls/game applications to collect student responses | “I would recommend using online game applications such as Kahoot! . . . Students are more engaged in the class when they answer gamified questions” (Student I).  
“I think Kahoot! is good because it can increase the interaction between the instructor and students. It also allows students to learn for fun” (Student H). | 8 Count | 0 Nil |
| Inviting students to share their thoughts via the virtual whiteboard | “The benefit of Zoom is that you can use Whiteboard to facilitate interactions. Some shy students may not take the initiative to answer questions during face-to-face classes. But writing or typing can make it easier for them to answer” (Student D).  
“Allowing students to write their ideas on the virtual whiteboard . . . Writing on the screen is faster” (Student L). | 3 Count | 0 Nil |
| Inviting students to share their thoughts via the chat box | “[I like] Sharing my ideas in the chat room because I think texting gives me time to think more carefully before answering the question” (Student H).  
“Typing [in the chat box] is good because some students would follow when they see others are typing” (Student A). | 3 Count | 2 “Typing in the chat room takes a long time. Sometimes while we are still typing, instructors may think that there is no one answering their questions and move on to the next part” (Student L).  
“Typing is not convenient” (Student F). |
| Inviting students to share their thoughts via their microphones | “When I hear my instructors ask me questions while I lie down to rest, I answer them immediately” (Student B).  
“Invite students to answer questions. Because I must answer my instructors when they ask me to answer” (Student K). | 2 Count | 3 “Sometimes instructors would invite students to answer via their microphone, but it might not be convenient to do so” (Student L).  
“Don’t [ask students to] use microphones! It is very embarrassing” (Student F). |
| Creating virtual rooms for group discussions | “I would like the lessons to be more interesting. Allowing time for group discussion may facilitate student interactions” (Student E).  
“No matter who the group members are, I would actively participate in discussions” (Student G). | 2 Count | 6 “After entering the Breakout Rooms, many students actually muted their microphones” (Student B).  
“In a group discussion, group members generally feel awkward and thus don’t have much to share. So, I don’t think it would increase student engagement” (Student C). |

The final set of suggestions was related to ways to form groups for class activities. However, the participants’ views were divided. Students G, H, and I proposed random groupings, as follows:

- “I prefer random groupings because we cannot make many friends during online learning. Random grouping is thus an opportunity to get to know different classmates. Besides, you can seek different perspectives when discussing things with different people, which can broaden your horizons” (Student G).
- “Random grouping can help shy students to join a group and ensure that the grouping is fair in terms of the number of group members” (Student I).

However, half of the participants (i.e., Students B, C, D, F, J, and K) disagreed. For example:

- “If all group members are my friends, I am more engaged in the conversation. But when I am in a group of strangers, I am reluctant to talk” (Student F).
• “It is so embarrassing because I don’t know them in real life. In addition, they don’t turn on their cameras and I cannot see their facial expressions” (Student D).

5. Discussion and Implications

The findings of this study suggested that our participants (university students in Hong Kong) were generally satisfied with the way synchronous online lessons progressed. However, their instructors occasionally encountered technical problems during class. Furthermore, their level of engagement was not high due to, for example, lengthy lessons and poor group dynamics in a fully online environment. Nevertheless, we identified some good practices and recommendations from students’ perspectives that can increase the efficacy of online instruction. The findings are discussed and organized using the RASE design framework [17].

5.1. Resources: Real-Time Teaching

According to Churchill et al. [17], real-time teaching is an effective element to facilitate student learning in an online learning environment. However, our participants noted that a long face-to-screen lesson is disengaging and may not be good for health (Table 4). They thus recommended reducing the duration of lectures to 90 to 120 min. This finding echoes the study by Meccawy et al. [5], who found that online lessons exceeding 2 h increased student boredom. In their study, Roy et al. [31] found that about 75% of their students suggested covering fewer topics in each online lesson but increasing the frequency of lessons per week. In online lectures, breaks are necessary to avoid fatigue and, most importantly, to allow time for students to rest their eyes. Chu et al. [32] pointed out that prolonged viewing of a computer screen is not the same as reading printed materials. Even while using a computer for only 20 min, their research participants reported significantly more issues with eyesight (e.g., blurred vision while viewing the text) compared with using a hard copy. Therefore, universities and instructors should consider dividing a long lesson (e.g., one 3 h lesson/week) into several short lessons (e.g., two 90 min lessons/week) and offering multiple short breaks within a lesson.

To help students better follow the presentation, instructors in a physical classroom usually use pointing and tracing gestures while speaking [33]. These gestures, however, are not feasible in a fully online environment. One participant thus suggested that instructors should use on-screen drawing tools to indicate the part they are teaching. This provides evidence in support of the signaling principle of Mayer’s [34] cognitive theory of multimedia learning in the context of online lecturing. According to Mayer [34], students learn more deeply from a multimedia message when cues are added to highlight the essential materials. Arrows and underlining are among the signals that can draw attention during a presentation. Instructors could use the annotation tools included in their video conferencing platform to write or draw on their shared screen while speaking or use a document camera to show their working steps in real time [12].

5.2. Activity: Polls and Small-Group Activities

Using polls/game applications to collect student responses was the most favored of the different class activities. Tan and Chen [25] pointed out that the use of instant online polls enabled instructors to keep track of students’ progress and address their learning needs accordingly. In our interviews, Kahoot! (see https://kahoot.it/ accessed on 10 March 2022) was frequently mentioned. In their social science course, Campillo-Ferrer et al. [35] used Kahoot! quizzes to assess progress during class. Similar to the findings of this study, the researchers found that their students appreciated the use of this application and their participation in the class increased. As our participants explained, they liked the game design elements (e.g., timer and scores) and the competition involved in Kahoot! quizzes. This echoes the findings of Ahmed and Asiksoy [2], who gamified their online physics course during the pandemic. For example, their students would obtain badges after scoring
full marks in quizzes. They found that the use of game design elements significantly improved students’ quiz performance compared with their non-gamified counterpart.

Another frequently mentioned class activity was group discussion. However, peer interaction in small-group activities was not promising. Similar to Teichgräber et al. [9], our participants lamented that many “students remain silent” (p. 8) in their virtual rooms. As they explained, student disengagement in group discussions was due to their instructors’ random assignment of group members. This finding resonates with Teichgräber et al. [9], who observed that members’ motivation and cooperation were lower in random groupings. Self-chosen grouping is thus recommended in synchronous online lessons. Nevertheless, instructors should help shy students to join a group and ensure the fairness of groupings.

5.3. Support: Institutional Support

The findings of this study revealed the need for professional development opportunities and institutional support. The requirement to improve instructors’ IT skills (e.g., using Zoom) and their techniques for conducting online lessons (e.g., preloading lesson materials before classes begin) was clear to some of our participants. Therefore, IT skills and online teaching skills are two areas in which institutions in Hong Kong should provide training for their teaching staff, as in some other regions [3,6]. Furthermore, institutional support should be provided for instructors to ensure network connectivity and the stability of their electronic devices. As Chin et al. [3] noted, some instructors suffer from infrastructure issues when working remotely. Institutions could provide them with financial support [3] and/or the necessary equipment to create a favorable teaching environment at home.

5.4. Evaluation: Assessing Students’ Class Performance with Grades

To increase student engagement in class activities, some of the participants suggested allocating course grades to participation in class and/or in-class exercises. This echoes the findings of previous studies. For example, the students in Campanyà et al. [26] agreed that continuous assessment was the most motivating aspect of their course. Heiss and Oxley [8] allocated course grades to students’ online learning activities. Their students quickly learned the consequences of being unprepared for their lessons. As the researchers put it, “the shock of earning a zero in their gradebook” (p. 1248) induced students to complete their course requirements. Suarez et al. [13] also found that student engagement on non-tested materials was low compared with their engagement with course exams. Clearly, making student efforts accountable and relevant to their academic achievements is important for fully online courses. Therefore, instructors should evaluate students’ class performance using in-class learning tasks (e.g., online quizzes and presentations) with course grades for online engagement.

6. Conclusions, Limitations, and Recommendations for Future Research

This study focused on how online instruction took place during the pandemic. We interviewed 12 university students in Hong Kong to understand their learning experience and asked for their suggestions for improvement. Based on the RASE design framework and interview findings, several strategies to improve real-time teaching (e.g., shortening lessons), class activities (e.g., using Kahoot! to collect student responses), and evaluation (e.g., assessing students’ performance in class) were proposed. We also recommended that support be provided for staff training and that equipment be made available for online, off-campus lectures. This study thus contributes to the literature by extending the RASE framework to the practicalities of online instruction during the pandemic.

Nevertheless, several limitations must be acknowledged, together with recommendations for future research. First, our coding and analysis could only be based on what our participants shared. The absence of certain themes in the coding implies that these were not mentioned during the interviews. Future studies could use more objective data (e.g., class observation and learning analytics in learning management systems) to understand students’ online learning behavior. Second, although the sample size (n = 12) provided the
majority of the themes and codes needed for thematic analysis, the findings may not be context-specific because the interviewees were recruited from different subject disciplines. We encourage further research into online instruction in specific subjects (e.g., mathematics teaching). Finally, this study was exploratory in nature and laid the groundwork for the establishment of a RASE framework for fully online courses. Follow-up interventions and design-based studies are required to strengthen this theoretical framework.

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Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by Human Research Ethics Committee of The Education University of Hong Kong (reference number: 2021-2022-0157; date of approval: 14 January 2022).

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Data Availability Statement: The data samples and detailed coding procedures can be accessed by contacting the corresponding author.

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