

# Nurturing leadership qualities under COVID-19: Student perceptions of the qualities and effectiveness of online teaching and learning on leadership development

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## Abstract

Because of the easy transmission of COVID-19 through social contact, university students in many parts of the world have joined online courses instead of face-to-face classes since early 2020. This change in teaching and learning mode poses difficulties, particularly for subjects requiring intensive interaction between the teacher and the students, which would eventually impair teacher and student well-being. In this paper, we examine the students' perceptions of an online course on leadership development at a university in Hong Kong, with 1,206 students taking the subject. Based on the post-lecture evaluation findings using the client satisfaction approach, results showed that students had high satisfaction with the lecture content and teachers. They also perceived that the lectures were effective in promoting their leadership qualities. Relative to traditional face-to-face approach, students generally welcomed online teaching and learning. The present findings suggest that with adequate preparation, coaching, facilitation, mutual support and empowerment for teachers, online teaching is a promising strategy to nurture leadership qualities in university students.

**Keywords:** COVID-19, leadership development, university students, online teaching, subjective outcome evaluation

## Introduction

Although there has been an increase in online courses in the higher education sector, face-to-face lecture is still the primary mode of teaching and learning in university education. There are several advantages of face-to-face lectures. First, teachers can have direct and indirect contact with the students (e.g., visual contact) and judge whether they understand the lecture content or not. Such contact provides instant feedback to the teacher so that they can adjust the teaching if necessary. Second, as face-to-face contact

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provides better “human touch,” such human touch helps to elicit positive responses from students. Third, the teacher can easily adjust the lecture content in face-to-face teaching. In contrast, it is difficult to adjust the content of online teaching because the teaching components are rather fixed, especially for MOOC courses. Finally, it is easy to have interactive activities during face-to-face teaching. For example, if we want students to draw a group picture that can stand for effective leadership, it is easy to do it in a group format. Similarly, we can conduct role-play exercises in a face-to-face classroom setting.

COVID-19 has severely affected the lives of many people in different parts of the world. Because of its highly contagious nature, many countries have used different measures, including lockdown of cities, wearing masks and social distancing requirements. As it is risky to have face-to-face teaching and learning in educational institutions, schools have been suspended with the replacement of online teaching and learning. For teachers, switching to online teaching and learning within a short time is a big challenge. Apart from developing new teaching materials (such as videos and online exercises), the actual delivery of synchronous online lectures is taxing and stressful for teachers. Besides the challenge of talking to the computer, monitoring student feedback and spotting students who need help are also challenges for teachers.

Online learning poses some challenges for students. First, sitting in front of the computer for a long time is a challenge because it would seriously impair the health of students, such as not moving for a long time and looking at a very small computer monitor. Second, due to the inflexible mode of teaching and learning, students may get bored quickly. Third, although one may “raise hand” in online lectures, teachers may not notice their participation easily, especially for large classes with more than 100 students. Fourth, for students who are introverted, they may simply log in and choose not to engage in any class activities at all. Finally, although one may form groups in an online class, the discussion is not quite ‘natural’ because students need time to type their comments or speak one by one.

Empirically, the scientific literature shows that online teaching and learning have some benefits. For example, Appana (1) suggested that online learning

promoted information technology and writing skills in students. Paechte et al. (2) pointed out that because students have more freedom to choose location and time in learning, they can learn self-regulation of learning. Renes et al. (3) also asserted that with student engagement and having appropriate support and instructions from the teachers, students could have better learning.

Research also suggests that online teaching can promote interaction amongst different stakeholders in the class. In terms of student-student interaction, online learning provides an efficient platform for students to exchange views (such as using the chat box and group discussion rooms) and contribute to the lecture activities (such as adding details to a figure). By dividing students into groups, students can be connected in learning and support each other. For teacher-student interaction, Paechte et al. (2) remarked that teachers could provide support to students during their learning, give feedback on their performance, help them get involved, and elicit student motivation and reflection. In short, with careful design of the online course, there are many opportunities to facilitate student learning motivation, engagement, and preferences, which would eventually contribute to their satisfaction and well-being. Empirically, Appana (1) showed that responsiveness and flexibility facilitate better learner performance in distance learning courses. Besides, they found that the coaching and facilitating roles of the teacher, student-centered pedagogies in course design, and reliable and uncomplicated technology can contribute to student satisfaction in online courses.

In addition, anonymity in online classes such as not turning on the video may actually encourage students to express their views, particularly for those who are introverted or lack public speaking skills. For example, students can write down their questions and then ask questions that may not be easily done in face-to-face lectures. Without specific visual cues such as eye contact, students would not be much affected by social anxiety (1,4). Besides, online teaching can promote insights and social and cognitive skills via mutual debate and feedback (2). Furthermore, an online platform can facilitate evaluation work on student performance, teacher performance, and course design (1). Finally, efficient updating of the curriculum and dissemination of the

course materials without time lag is another strength of online teaching.

Although there are many advantages of online teaching and learning, there is also research suggesting the drawbacks of online teaching and learning. Primarily, there is the criticism that online teaching lacks human touch, and this problem is particularly crucial for online teaching with non-synchronous teaching. Paechter et al. (2) argued that even though students like the fast exchange of information in online learning (e.g., quick feedback on online assignments), they appreciate face-to-face communication where educators can better satisfy their learning and social-emotional relations needs. Besides, learning outcomes of online courses are not favorable for all courses. Primarily, the success of online subjects depends on the course design and implementation process and the self-regulation of the students. Furthermore, Arkorful et al. (5) revealed that not all disciplines are suitable for using an online form in education. For example, one can argue that online teaching would be difficult for subjects requiring interactive activities and hands-on experience.

There are other challenges in online learning. Arkorful et al. (5) pointed out that issues of cheating and examination arrangements are common issues encountered in online teaching. Besides, the quality of online teaching can be constrained by Wifi connection capability and computer reliability. These problems are common in students experiencing economic disadvantage. With specific reference to societies where living space is very tiny (e.g., Hong Kong), having online teaching and learning may pose a practical problem for students if the home environment is not suitable for learning. In addition, students may not be willing to show their actual home environment because of the possibility of “losing face.” The problem of having a suitable teaching environment is also relevant to teachers.

Considering the challenges faced by teachers and students, it is essential to understand how students perceive online teaching and learning activities. In this paper, we evaluated the perceptions of students on an online subject on leadership. At The Hong Kong Polytechnic University, we have designed and implemented a leadership subject entitled “Tomorrow’s leaders” since the 2012/13 academic

year. Under the new undergraduate program, there is a graduation requirement on Leadership and Intrapersonal Development. To enable students to fulfill this requirement, we have designed a subject entitled “Tomorrow’s leaders” which attempts to promote the intrapersonal and interpersonal competencies of the students. There are several features of this subject. First, its theoretical foundation is positive youth development upholding the belief that every student has leadership potential. Second, we believe in the importance of helping students to develop intrapersonal skills (such as resilience, intrapersonal leadership competences, spirituality and self-leadership) and interpersonal skills (such as relationship building, team building and conflict resolution). Third, experiential learning activities are used to promote interaction between the teacher and students, such as role-play, group exercises, personal reflection, and group reflection. Third, we highlight the importance of reflective learning and collaborative learning processes. Fourth, we uphold the principle of evidence-based teaching, where we collect different types of evaluation findings to inform and improve teaching and learning.

This subject has been offered to 17,241 students since the 2012/13 academic year. Throughout the years, many evaluation studies have been conducted to gauge the students’ views on the subject and the perceived benefits of the subject. Based on one group pretest-posttest research design, we found that students showed positive changes after taking the subject (6-8). For example, using data collected from 2,876 students over several years, Li et al. (9) revealed that students showed improvement in several areas of positive youth development, such as psychosocial competencies and spirituality. Complementing the objective outcome evaluation studies, we have also used the client satisfaction approach to understand the perceptions of the students. Studies generally showed that students were satisfied with the subject, with high satisfaction with the subject and teachers, and perceived benefits of taking the subject (10-12). Several qualitative evaluation studies also showed that students held positive views of the subject, teacher, and benefits (13-15). Shek (16) also indicated that the subject was able to promote well-being in the students. The teachers teaching “Tomorrow’s leaders” also showed

that the subject helped them developed their personal as well as professional development. The value and achievement of this subject have been recognized locally and internationally. In 2017, this subject was awarded the Gold Award (Ethical leadership) in QS Reimagine Education Awards. In 2018, this subject (together with three other subjects) was awarded the University Grants Committee Teaching Award, the most prestigious teaching award in the higher education sector in Hong Kong.

As the existing evaluation studies are based on face-to-face lectures, there is a need to examine the views of the students on online teaching before COVID-19. Because of the pandemic, face-to-face classes were suspended and replaced by online lectures with synchronous teaching. Due to the urgency of conducting synchronous online teaching as well as the anxiety of the teachers, the first author coached the teachers involved and provided sharing and discussion opportunities by conducting regular teaching team meetings and mock teaching. He also developed reminders to support the teachers (see appendix 1 as an example) and visited almost all online classes. Furthermore, the teaching team noted and discussed the post-lecture evaluation after each lecture.

Utilizing the subjective outcome evaluation method used in the previous studies (17-19), we attempted to examine the views of the students on the online lectures which were delivered in a synchronous manner. For each lecture, the teacher taught in the typical manner in front of the computer. Prior to the lecture, teachers uploaded the relevant materials to the website. During the lecture, an assistant was present to help the teacher, such as spotting questions raised by students and reminding them about the procedures (e.g., recording the lecture).

## Methods

In the second semester of the 2019-2020 academic year, 1,206 students took “Tomorrow’s leaders” over 13 weeks because of face-to-face class suspension due to COVID-19. As the last three lectures were devoted to student presentations, we collected data for the first 10 lectures. The students gave consent to join the study and they responded to the post-lecture

evaluation in a voluntary manner after the completion of an online lecture.

### *Instrument*

Based on previous studies on post-lecture and post-course evaluation, 23 items were developed to assess the perceptions of the students after each lecture. The items are as follows:

1. The design of this lecture was very good.
2. The online classroom atmosphere of this lecture was very pleasant.
3. This lecture increased my awareness of the importance of self-development.
4. This lecture has improved my problem-solving ability.
5. This lecture has improved my understanding of the importance of attributes of successful leaders (e.g., critical thinking, moral competence, etc.).
6. I was able to reflect on the relevance of the leadership quality to my own profession in this lecture.
7. There was much peer interaction amongst the students in this lecture.
8. This lecture has improved my critical thinking.
9. I have actively participated in this lecture.
10. There were many opportunities for reflection in this lecture.
11. This lecture is helpful to my personal development.
12. The lecturer had a good mastery of the lecture material.
13. The lecturer used different methods to encourage students to learn.
14. The lecturer in this lecture was able to help students understand the knowledge covered in the lecture.
15. Overall speaking, I have very positive evaluation of the lecturer in this lecture.
16. Overall speaking, I have very positive evaluation of this lecture.
17. Compared to the traditional teaching methods, the online teaching approach

- increases my flexibility of access to lecture material.
18. Compared to traditional classroom learning, I learn better in online environments.
  19. Online learning allows me to learn the lecture materials according to my own pace.
  20. I prefer online learning to traditional/classroom learning.
  21. I prefer traditional classroom learning to online learning.\*
  22. Overall speaking, I like the online learning experience.
  23. Overall speaking, I like the arrangement of this lecture (i.e., real-time online lecture)

There are several categories of items in this scale, including perceived course design (item 1), perceived online teaching and learning process (items 2, 6, 7, 9 and 10), perceived benefits (items 3, 4, 5, 8 and 11), perceived teacher qualities (items 12, 13 and 14), overall satisfaction (items 15, 16, 22 and 23), and perception of online teaching (items 17, 18, 19, 20 and 21). For each item, the students responded to a 6-point scale with “strongly disagree”, “moderately disagree”, “slightly disagree”, “slightly agree”, “moderately agree” and “strongly agree” as the response options.

## Results

The responses of the students to the 23 post-lecture evaluation items are presented in Table 1. For each item, we also computed the mean rating and mean percentage across the ten lectures. Generally speaking, students showed positive perception of the course design (Item 1: mean rating = 4.72; mean percentage = 95.7%) and online teaching and learning process (Item 2: mean rating = 4.81; mean percentage = 95.6%; Item 6: mean rating = 4.72; mean percentage = 95.2%; Item 7: mean rating = 4.75; mean percentage = 94.0%; Item 9: mean rating = 4.73; mean percentage = 94.2%; Item 10: mean rating = 4.71; mean percentage = 95.2%). The respondents also perceived the teacher qualities (Item 12: mean rating = 4.86; mean percentage = 97.0%; Item 13: mean rating = 4.88; mean

percentage = 97.2%; Item 14: mean rating = 4.84; mean percentage = 97.3%) in a positive manner.

Besides, students perceived benefits for joining the course (Item 3: mean rating = 4.75; mean percentage = 95.7%; Item 4: mean rating = 4.65; mean percentage = 93.8%; Item 5: mean rating = 4.76; mean percentage = 95.7%; Item 8: mean rating = 4.64; mean percentage = 94.3%; Item 11: mean rating = 4.73; mean percentage = 95.5%). Regarding overall satisfaction, students were satisfied with the teacher (Item 15: mean rating = 4.90; mean percentage = 97.2%) the course (Item 16: mean rating = 4.82; mean percentage = 96.3%), online learning experience (Item 22: mean rating = 4.34; mean percentage = 84.7%) and online teaching arrangements (Item 23: mean rating = 4.54; mean percentage = 90.9%).

Finally, students were generally positive in their views of online learning, including flexibility (Item 17 mean rating = 4.43; mean percentage = 85.3%), better learning (Item 18: mean rating = 4.18; mean percentage = 74.8%), self-paced learning (Item 19: mean rating = 4.39; mean percentage = 85.8%), and preference for online learning (Item 20: mean rating = 3.92; mean percentage = 65.6%). However, the percentage of students who disagreed with the statement that they preferred traditional classroom learning to online learning experience was not high (Item 21: mean rating = 3.92; mean percentage = 36.1%).

## Discussion

In the Introduction section, we outline several strengths and weaknesses of online teaching and learning. We also highlight some studies in the scientific literature showing the advantages and disadvantages of online courses. As “Tomorrow’s leaders” was changed to an online mode within a short time, and there were concerns expressed by the teachers and students, there is a need to monitor the online lectures closely. As such, we conducted a post-lecture evaluation after each lecture. Besides understanding the feedback of students, we can also understand how online lectures could be improved. This approach is in line with the principle of evidence-based teaching, where we collect data to

gauge student feedback and use the evaluation data to inform and improve teaching.

Overall speaking, the evaluation findings are very positive. As far as the design of the subject is concerned, most of the students were satisfied with the design (mean percentage = 96%), class atmosphere (mean percentage = 96%), personal reflection (mean percentage = 95%), peer interaction (mean percentage = 94%), active participation (mean percentage = 94%) and opportunities for reflection (mean percentage = 95%). They also showed positive evaluation of the teacher, including their mastery of the subject (mean percentage = 97%), encouragement of students (mean percentage = 97%) and helping students to learn (mean percentage = 97%). Overall speaking, most students were satisfied with the teacher (mean percentage = 97%) and the course (mean percentage = 96%). They also showed positive evaluation of the online learning opportunity (mean percentage = 85%) and online course arrangement (mean percentage = 91%).

Apart from the satisfaction of different aspects of the subject, it is noteworthy that students perceived that the subject enabled them to learn leadership knowledge and promoted their personal development (mean percentage = 96%), improvement of problem-solving (mean percentage = 94%), understanding of leadership (mean percentage = 96%), improvement of critical thinking (mean percentage = 94%) and providing help to one's development (mean percentage = 96%). This is important because the positive responses suggest that the course objectives could be met via online teaching and learning.

As far as the receptivity to online teaching, the students were generally satisfied with the online classes, including relative flexibility (mean percentage = 85%), better learning (mean percentage = 75%), and self-paced learning (mean percentage = 86%). Interestingly, while more than half of them preferred online classes (Item 20: 66%), less than half of them disagreed that they preferred traditional classroom teaching (Item 21: 36.1%). The responses to these two items are not entirely consistent, and they reflected the ambivalence of the students towards online teaching. Although they preferred online teaching to traditional face-to-face lectures, they also mentioned their preference for the traditional mode of class learning in another separate item. Taken as a

whole, we can still conclude that students basically showed positive responses to online teaching and learning.

One may naturally ask why the profiles of responses are positive. Several factors may contribute to the findings. First, under the coaching of the first author, teachers were well-prepared for online teaching. As the use of an online teaching platform (Blackboard Collaborate) was new to colleagues, the first author conducted several online meetings and mock teaching sessions for the teachers. Besides, the University and the Department of Applied Social Sciences also conducted workshops for teachers. Second, useful information for designing and implementing online teaching was disseminated to the teachers. Besides guides and guidelines issued by the University, the first author also issued reminding notes for the teachers (see appendix for an example). Such reminding notes could promote competence, confidence, empowerment, improvement directions for the teachers. Third, regular online meetings were held with the team to update the teaching situation and understand the issues faced by the teachers. Fourth, teachers were encouraged to have peer support such as sharing useful teaching strategies and materials. Fifth, at each lecture, an assistant helped the teacher to take care of the logistics and practical issues. Finally, we conducted online post-lecture evaluations after each lecture for the first ten lectures.

Certainly, students' preference for online teaching appears to be ambivalent, although they did see many strengths of online teaching and learning. It is an intriguing aspect deserving further studies. It is recommended that qualitative methodologies should be used to understand the subjective experiences and views of the students. Through such analyses, we can know more about the hurdles and challenges involved in the use of online teaching. For example, Mukhtar et al. (20) conducted a case study to understand the advantages and challenges of online teaching under COVID-19. Graham (21) also conducted a phenomenological study to examine the value of online teaching in "Historically Black College and Universities." Besides, although the present scale is based on the previous post-lecture evaluation scales (12, 22, 23), it would be helpful to further validate the subjective outcome measure.

**Table 1. Descriptive statistics on the responses to the items in the 10 lectures**

Lecture		Lecture 1 (N = 834)		Lecture 2 (N = 789)		Lecture 3 (N = 821)		Lecture 4 (N = 916)		Lecture 5 (N = 983)		Lecture 6 (N = 1041)		Lecture 7 (N = 998)		Lecture 8 (N = 985)		Lecture 9 (N = 1019)		Lecture 10 (N = 976)	
Questionnaire Item		Mean	Positive response rate%	Mean	Positive response rate%	Mean	Positive response rate%	Mean	Positive response rate%	Mean	Positive response rate%	Mean	Positive response rate%	Mean	Positive response rate%	Mean	Positive response rate%	Mean	Positive response rate%	Mean	Positive response rate%
Q1	The design of this lecture was very good.	4.72	95.35	4.70	96.49	4.64	94.66	4.74	95.91	4.75	95.78	4.71	95.43	4.72	95.53	4.67	94.97	4.74	95.94	4.81	97.20
Q2	The online classroom atmosphere of this lecture was very pleasant.	4.93	95.59	4.86	96.23	4.77	95.05	4.91	96.68	4.86	96.70	4.75	95.04	4.71	93.84	4.69	95.28	4.76	95.25	4.85	96.56
Q3	This lecture increased my awareness of the importance of self-development.	4.64	94.50	4.78	95.31	4.70	94.86	4.76	96.10	4.78	95.88	4.74	96.00	4.76	95.24	4.70	95.79	4.78	95.64	4.84	96.98
Q4	This lecture has improved my problem-solving ability.	4.41	89.60	4.56	92.10	4.62	93.91	4.68	95.80	4.71	94.13	4.62	93.60	4.62	92.91	4.62	93.73	4.76	95.26	4.83	96.36
Q5	This lecture has improved my understanding of the importance of attributes of successful leaders (e.g., critical thinking, moral competence, etc.).	4.70	95.69	4.83	96.74	4.67	94.64	4.73	96.45	4.69	94.55	4.77	95.53	4.77	94.91	4.71	95.59	4.82	96.24	4.86	96.98
Q6	I was able to reflect on the relevance of the leadership quality to my own profession in this lecture.	4.69	95.33	4.75	95.31	4.68	94.41	4.72	95.77	4.68	93.95	4.72	95.22	4.70	94.23	4.69	95.39	4.76	95.85	4.81	96.26
Q7	There was much peer interaction amongst the students in this lecture.	4.78	92.66	4.69	91.43	4.72	92.64	4.92	96.66	4.79	94.24	4.72	94.26	4.68	93.12	4.72	94.66	4.72	93.77	4.81	95.83
Q8	This lecture has improved my critical thinking.	4.42	91.04	4.56	93.08	4.56	93.03	4.68	95.34	4.66	95.16	4.70	95.42	4.66	93.82	4.66	94.47	4.68	95.04	4.79	96.05
Q9	I have actively participated in this lecture.	4.70	93.28	4.73	94.15	4.68	93.07	4.76	95.23	4.72	93.29	4.73	93.78	4.71	93.52	4.70	95.09	4.73	94.05	4.80	96.15
Q10	There were many opportunities for reflection in this lecture.	4.49	92.56	4.73	95.05	4.67	95.01	4.74	96.02	4.74	96.20	4.74	95.23	4.74	95.13	4.68	94.88	4.74	95.25	4.80	96.35
Q11	This lecture is helpful to my personal development.	4.58	94.46	4.74	95.53	4.71	95.40	4.76	96.57	4.76	96.28	4.72	94.92	4.73	94.93	4.71	95.27	4.76	95.25	4.83	96.76

(Table 1 continued on next page)

Lecture		Lecture 1 (N = 834)		Lecture 2 (N = 789)		Lecture 3 (N = 821)		Lecture 4 (N = 916)		Lecture 5 (N = 983)		Lecture 6 (N = 1041)		Lecture 7 (N = 998)		Lecture 8 (N = 985)		Lecture 9 (N = 1019)		Lecture 10 (N = 976)	
Questionnaire Item		Mean	Positive response rate%	Mean	Positive response rate%	Mean	Positive response rate%	Mean	Positive response rate%	Mean	Positive response rate%	Mean	Positive response rate%	Mean	Positive response rate%	Mean	Positive response rate%	Mean	Positive response rate%	Mean	Positive response rate%
Q12	The lecturer had a good mastery of the lecture material.	4.93	97.78	4.92	96.48	4.84	96.63	4.86	97.12	4.86	96.52	4.83	96.89	4.83	96.66	4.80	96.93	4.85	97.02	4.91	97.91
Q13	The lecturer used different methods to encourage students to learn.	4.97	98.66	4.93	97.25	4.85	96.38	4.94	97.89	4.89	96.68	4.83	97.18	4.85	96.86	4.80	96.91	4.84	97.13	4.91	97.60
Q14	The lecturer in this lecture was able to help students understand the knowledge covered in the lecture.	4.85	97.91	4.90	97.67	4.79	96.51	4.85	97.88	4.86	97.22	4.83	97.17	4.84	97.04	4.77	97.03	4.83	96.73	4.89	97.51
Q15	Overall speaking, I have very positive evaluation of the lecturer in this lecture.	5.01	97.92	5.01	98.30	4.86	96.51	4.90	97.20	4.91	96.80	4.88	97.17	4.85	96.75	4.83	96.92	4.87	97.32	4.92	97.49
Q16	Overall speaking, I have very positive evaluation of this lecture.	4.87	96.55	4.86	96.47	4.78	95.27	4.86	97.11	4.83	96.08	4.82	96.87	4.78	95.61	4.77	96.19	4.82	95.84	4.87	97.29
Q17	Compared to the traditional teaching methods, the online teaching approach increases my flexibility of access to lecture material.	4.45	83.05	4.42	83.16	4.40	83.58	4.43	85.46	4.43	85.20	4.43	85.76	4.39	84.74	4.41	86.51	4.45	87.02	4.49	87.19
Q18	Compared to traditional classroom learning, I learn better in online environments.	4.23	75.00	4.17	73.33	4.17	74.22	4.18	75.78	4.18	74.87	4.18	74.83	4.14	73.63	4.16	74.69	4.19	75.02	4.23	76.04
Q19	Online learning allows me to learn the lecture materials according to my own pace.	4.46	84.87	4.43	85.19	4.39	85.95	4.40	86.50	4.37	84.89	4.37	85.36	4.36	85.06	4.33	85.36	4.38	86.88	4.44	87.29
Q20	I prefer online learning to traditional/classroom learning.	3.85	61.49	3.84	61.91	3.85	62.28	3.87	65.07	3.94	66.29	3.97	65.65	3.94	67.01	3.93	66.77	4.00	68.69	4.01	68.33
Q21	I prefer traditional classroom learning to online learning.*	3.84	40.69	3.91	37.37	3.91	36.02	3.95	33.22	3.96	35.30	3.96	34.73	3.97	35.00	3.88	37.78	3.91	35.54	3.93	36.67
Q22	Overall speaking, I like the online learning experience.	4.32	84.00	4.30	83.01	4.32	83.92	4.36	86.18	4.37	85.91	4.36	84.74	4.30	83.23	4.35	85.15	4.35	84.77	4.40	85.45
Q23	Overall speaking, I like the arrangement of this lecture (i.e., real-time online lecture)	4.47	89.48	4.47	88.50	4.49	89.64	4.55	91.42	4.58	92.16	4.57	91.27	4.52	90.09	4.54	90.71	4.57	91.60	4.62	92.98

\*Q21 Item to be recoded.

Note 1 (Q1-Q23): All items were rated on a 6-point Likert scale with 1 = Strongly disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Slightly Agree, 5 = Agree, 6 = Strongly agree.



Finally, besides the teaching format (i.e., online versus face-to-face teaching), there is a need to explore the factors affecting the effectiveness of online teaching. A review of the scientific literature shows that because of teaching mode, other factors affect the perceived effectiveness of online teaching: Gray and DiLoreto (24) showed that many student factors and student engagement are related to student perceptions of online teaching; Dumford and Miller (25) explored the pros and cons of online education with specific reference to student engagement; Nortvig, Petersen and Balle (2018) reviewed the factors influencing the learning outcomes in student online learning outcomes and satisfaction. It is suggested that future work should explore the factors influencing the quality of online teaching and learning, particularly with reference to mediators and moderators.

## Appendix: Example of a reminder for colleagues

Dear All,

Based on the two mock teaching sessions, I would like to draw your attention to the following points:

### *Preparation and pre-lecture tasks*

1. Have a clear understanding of the standards of online teaching issued by the University. Make sure that you meet at least the MINIMAL standard. The University has set up a website for Online Teaching. Familiarize yourself with the related materials.
2. APSS also has useful resources under Teaching Café. Go to Learn@POLYU to look at the videos.
3. Familiarize yourself with COLLABORATE, including its functions, capabilities and limitations. It is a great challenge particularly you have to learn it within a very short time. However, I always believe and experience that success goes to those who are diligent and well-prepared. Practice makes perfect.

4. Check that your computer is compatible with the system and the fonts in the PPTs will not be changed when played in CU. Get one spare computer as a back-up. If you need one, APSS or Project P.A.T.H.S. can supply it.
5. The standalone PCs in the lecture rooms DO NOT have cameras. If necessary, we can ask the Project Assistant to set up a camera for recording which may give a better resolution.
6. Specify the roles of the Project Assistants. Make sure that they know what they should do. Write down the list of tasks that the Project Assistant should help.
7. Besides physical preparation, have psychological preparation. It is a good time for personal growth and building up resilience.
8. Send a Welcome Letter to all the students ASAP. Tell all the students that we will use COLLABORATE. Prepare a list of the STEPs involved in participation in COLLABORATE and how to enter and leave the Lecture Room and Group Discussion Room.
9. Upload the relevant materials to Blackboard BEFORE each lecture.
10. Prepare the steps in the lecture (similar to launching a rocket) and make a checklist for yourself.
11. Keep your PPT slides simple and easy to follow. Do NOT use a lot of words.
12. Prepare a pre-recorded lecture as a back-up for Lecture 1 (University requirement)

### *Tasks during lecture*

1. Make sure that the students can HEAR you. Ensure this before you start the lecture.
2. Remember to ask the all of the students to COMPLETE the Consent Form for video-taping and for data collection. Explain if they have doubts. Highlight confidentiality, anonymity, and aggregate data analysis. Tell them that we have not encountered student refusal in the past and we sincerely thank the students for their contribution.
3. Remember to RECORD the lecture (this is a requirement that can protect you).

4. Remember to MUTE the mics of the students.
5. Remember to DISABLE the drawing and writing functions in the participants. Otherwise, they can mark on your PPT slides.
6. Remember not to assign the students to be Moderators. If not, they can move your PPT slides.
7. Work closely with the Project Assistant/ Research colleague from P.A.T.H.S. Ask her to remind you and help you with the pre-assigned tasks.
8. The first few minutes are crucial (primacy effect). If it does not work well, it will adversely affect you (sweating and increase in anxiety) and the students' learning experience. Technical failure is a DISASTER.
9. Briefly talk about the teaching arrangements in this term, particularly why we use online teaching. Empower the students that online teaching will be enjoyable and meaningful.
10. Check whether the students have received your email. Recap the materials that have been uploaded to the website and the topics as well as learning outcomes of the lecture.
11. Tell students that while we encourage them to actively participate in class, we may not be able to address all responses because of time limitations. However, each student will be given adequate opportunities to speak and share during classes. We will also note the interesting responses and invite students to share after the lecture.
12. Prepare simple and clear instructions for forming groups for discussion. Particularly, help students to familiarize themselves with the steps of "getting in" and "getting out of" the Group Discussion Room.
13. We can get feedback from students by asking students to Raise Hand. You can then invite those who have (or have not) raised their hands for engagement purposes.
14. We can get feedback from students from the Chat Box. Students can write and click on the emoji. Ask students to share the experience. DO NOT just ask them to write or click on the emoji without feedback.
15. We can get feedback from students from the Drawing (Pencil, Shape) or Writing (Text Box) Tools. The font size of the Text Box can be enlarged by clicking the "Arrow" button and then going back to the Text Box.
16. We can get feedback from students from the Response Box (Mood, Agreement or Disagreement). This is very convenient. You can then choose students to share (e.g., why agree or disagree).
17. You can use White Board to invite students to down their responses. This is a very good tool for interaction.
18. You can use Poll to invite students to down their responses. This is a very good tool for interaction. Invite students to comment on the poll results.
19. Be proactive in engaging students. If you want a particular student to share, hail his/her name and unmute the student's mic.
20. After you ask whether students have any questions, give students 30 seconds to write down their responses. If you use "Raise Hand" (i.e., understood), then watch out for those who do not raise hands. In any case, wait for student responses.
21. Attend to the needs of the students (e.g., sad faces). Watch out for questions and comments deserving further discussion and consideration.
22. While videos can promote learning motivation, they may not work well because of transmission problems. Make sure the transmission is good. Use "Share Link" instead of "Share Application". Have a Plan B. Instead of using videos, you can have synchronous lectures and put the videos on Blackboard. Remember that playing videos is a RISK factor.
23. If you want to ask students to complete worksheets in Blackboard, keep it short. Breakdown of the worksheet tasks into small parts in CU is also a RISK factor.
24. The tools in CU should be adequate for meaningful interaction. Make good use of them.

25. Evaluate your lecture. Besides our own post-lecture evaluation form, see the self-evaluation form developed by the University.
26. Always remind students that online teaching is enjoyable and beneficial to the students. Empower the students. Remind them that the four subjects are award-winning subjects with excellent evaluation – it means that they can also grow in the subjects. Share with them the sharing of past students and evaluation findings would be helpful.
27. Always remind students that this is a good opportunity to develop their cognitive competence (creativity and critical thinking), resilience, social competence, spirituality and character development in such a novel learning environment.
28. Online teaching is also a good opportunity for you to grow as a teacher. Share your experiences with the students will be very helpful. Deal with the negative emotions (including your own) but strives to stay positive. There is always a silver lining. Let us grow together. I will pray for you and the students.

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