

Difficulties faced by undergraduate students in group interactions during COVID-19 and the highest motivation-inducing delivery method

Abstract

In light of the COVID-19 pandemic, online education became ever so prevalent and crucial. The hasty shift of learning mode to online platforms through implementing various delivery methods affected students in a range of ways. Group interactions are arguably the most affected due to the differences between face-to-face and online communication. Students may have found themselves having to deal with situations that likely would not have occurred if not for online learning. The purpose of this study is to investigate difficulties faced by undergraduate students in group interactions during COVID-19 and the highest motivation-inducing delivery method. It must be noted that some difficulties are more impactful in nature than others despite being less frequent. Subsequently, a survey was constructed with questions that collected *a posteriori* data as quantitative numbers which were visualised as graphs to reflect delivery methods at The University of Hong Kong (HKU). In relevance to group interactions, difficulties; significance in learning; the most motivation-inducing delivery method; and differences in how students who have and have not had face-to-face classes perceive online learning will be analysed. The study highlights findings from 150 undergraduates that delivery methods involving interactions are more impactful; the role of engagement or lack thereof; inducing motivation with more group interactions; contradictions between interactiveness and motivation; and the highest and lowest motivation-inducing delivery method. Therefore, this study suggests that the ideal delivery methods are live Zoom meetings for lectures and tutorials, and face-to-face for practicals.

Part I

1. Introduction

The beginning of 2020 has seen unprecedented global change due to the COVID-19 pandemic. With schools closing down and up to 214 million children globally having missed more than three-quarters of their in-person learning (Unicef, 2021), remote learning has undoubtedly impacted students' learning efficacy worldwide. Adjusting to new delivery methods of learning during COVID-19 is a modern occurrence that education institutes are adapting to. At present, during the conduction of this study, it has been a year since the initial outbreak of COVID-19.

The rapid shift from face-to-face to online learning brought forward insufficient or flawed technological arrangements, impeding continuous and coherent interaction and students' motivation. As students have adapted to the change, each student has developed personal preferences on the learning methods and methods of learning to adapt and enhance their learning experience.

2. Research Questions

- A. Which delivery method motivates students to learn the most/the least?

'Delivery method' refers to face-to-face (f2f), hybrid and online mode that consists of lectures and tutorials, and practicals such as labs. The delivery methods of lectures and tutorials are live Zoom meetings, recorded live Zoom meetings, Panopto recordings/ Pre-recorded videos (with facecam), Panopto recordings/ Pre-recorded videos (without facecam), audio-recorded Powerpoint slides, separate audio and presentation slides). While, practicals refer to practical recordings, practical simulations, practical worksheets and f2f practicals such as labs or studio. All these fall under f2f, hybrid and online 'delivery modes'.

- B. What are the difficulties undergraduate students face during online group interactions?

'Undergraduate students' refers to local and non-local students in the typical academic duration of Year 1 to Year 4, and Year 5 or above - excluding exchange students. They come from all Faculties: Faculty of Architecture, Faculty of Arts, Faculty of Business & Economics, Faculty of Dentistry, Faculty of Education, Faculty of Engineering, Faculty of Law, Faculty of Science, Faculty of Social Science and Li Ka Shing Faculty of Medicine. 'Group interaction' refers to in-class Zoom/Breakout Room and group project discussions.

- C. What is the significance of group interaction in learning?

Refer to the above for the definition of 'group interaction'.

3. Objectives

This study will examine and compare how the learning conditions presented during COVID-19, namely delivery methods, evoke difficulties in students' group interactions at The University of Hong Kong (HKU). A recommendation will be provided for the highest

motivation-inducing delivery mode by considering the group interaction difficulties.

4. Literature review

Personally developed preferences influence levels of motivation for various delivery modes. According to a recent study, it is widely accepted that motivation decreases when transitioning to online learning; the interactiveness of an online class also plays a vital role in motivating students (Aguilera-Hermida, 2020). Therefore, students' motivation to interact during learning will be investigated.

As learning has shifted from traditional to online delivery methods, group-related work may also be impacted. About half (49.55%) of those studying in local higher education institutions said that they were affected by no "in-class interaction" (Lingnan University, 2020). Additionally, students who took more online classes had "lower quality of interaction" (Dumford & Miller, 2018). This study will go in-depth to specifically explore the various challenges students face when interacting in online classes and to what extent they feel affected.

Student interactions are vital in any learning progress; student engagement increases student satisfaction, enhances student motivation to learn, reduces the sense of isolation, and improves student performance in online courses (Martin & Bolliger, 2018). Likewise, students reported lower satisfaction and motivation due to the lack of time put in engagement that would normally be prevalent in lectures and small group meetings (Meeter at al., 2020). Hence, learning about the various difficulties students face during online learning interactions can aid in providing appropriate solutions to enhance learning experiences.

Part II

1. Research methodology

The study is subjective in nature as students' perceptions towards their own learning motivation, group interactivity and difficulties were solicited. Additionally, no two students' personal experience of delivery methods is identical. Therefore, a mainly quantitative approach was adopted in order to obtain overall data that could be generalised. This data will be presented as graphs to measure the relationship between two variables, such as difficulties experienced and motivation, and present the average opinion of undergraduates.

2. Research methods/tools

Convenience sampling and voluntary response sampling were used. It was conducted through online surveys, and targeted full-time undergraduate students at HKU.

We had two surveys made using Google Forms: an initial survey and the principal survey:

The 2-minute initial survey was sent to acquaintances via social media. It was first conducted to find out the different types of delivery methods experienced by undergraduates from all HKU Faculties, then planned to be incorporated into the principal survey. However, the initial delivery methods provided included most methods experienced by students.

As for the principal survey, it was distributed through HKU's mass emailing system, researchers' social media posts, and directly sent to acquaintances. It took 10 minutes to complete and financial incentives were also provided to boost survey response rate. Survey questions consisted of checkboxes with options such as "lack of engagement"; multiple-choices on a 5-star rating system (*see Appendix*); and options for listing 'others' to cover all responses. A set of questions regarding the benefits of online delivery methods were also included in an effort to reduce participant bias. They were also considered when giving recommendations on the most motivating delivery method.

3. Data collection and analysis

In the initial survey, 43 responses were collected. There were no respondents from the Faculty of Education and the Faculty of Law.

The principal survey had 150 respondents ranging from all targeted faculties, albeit not equally distributed among them. For instance, nearly one third of the respondents were students from the Faculty of Science. Moreover, the majority of respondents were first and second year students.

When graphically presenting data, we compared the averages of students as two distinct groups of those who have had f2f to those who never had f2f. Five such charts on the rating of learning motivation, group interactiveness and difficulties for delivery methods were generated. This allows the average of those who have never had f2f to act as a negative control group when analysing the effectiveness of online learning. Those who have had f2f would benchmark motivation and difficulties in learning, whereas those who have never had f2f form the basis on just online delivery methods.

Part III

1. Findings

1. Lectures and tutorials

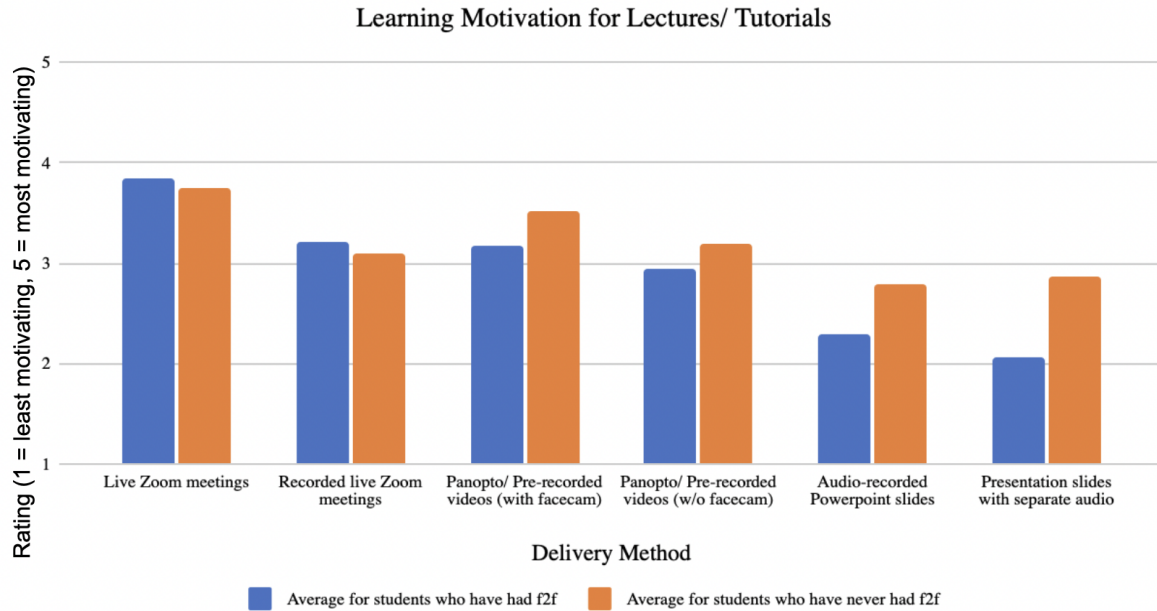


Figure 1: Chart showing the average rating of learning motivation for lectures and tutorials

Regarding learning motivation for lecture and tutorial delivery methods in Figure 1, the motivation rating for the six delivery methods has a small range: from 2.23 to 3.81 of a 5 point rating system. Achieving the top motivation rating of 3.81 are live Zoom meetings, followed by Panopto/ pre-recorded videos with face camera at 3.26 and in third, recorded live Zoom meetings at 3.17.

Referring to Figure 1, the descent in the degree of interactivity for the different delivery methods correlates with the motivation for lectures and tutorials. As the degree of interactivity decreases, those who had no prior f2f experience gave higher motivation ratings than those who had. Even more, the gap between the two groups’ ratings steadily widened as the interactivity decreased.

2. Practicals and labs

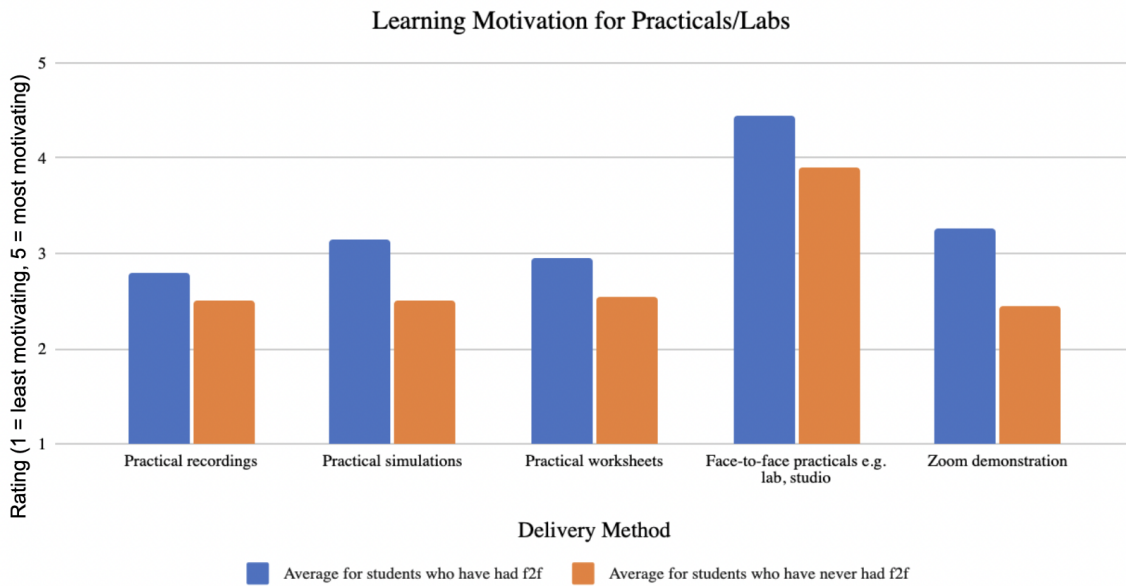


Figure 2: Chart showing the average rating of learning motivation for practicals and labs

In Figure 2, the average motivation for learning in practicals and labs has a wider range from 2.73 to 4.37. The top spot belongs to f2f practicals that scored 4.37 on average, while Zoom demonstrations scored second in 3.05. Practical simulations were the third most motivation-inducing practical delivery method, scoring 2.97.

In contrast to the previous comparisons of f2f-experienced undergraduates and those not, the former group gave higher motivation ratings. Furthermore, the differences between the two groups' average ratings were roughly the same for all practical delivery methods.

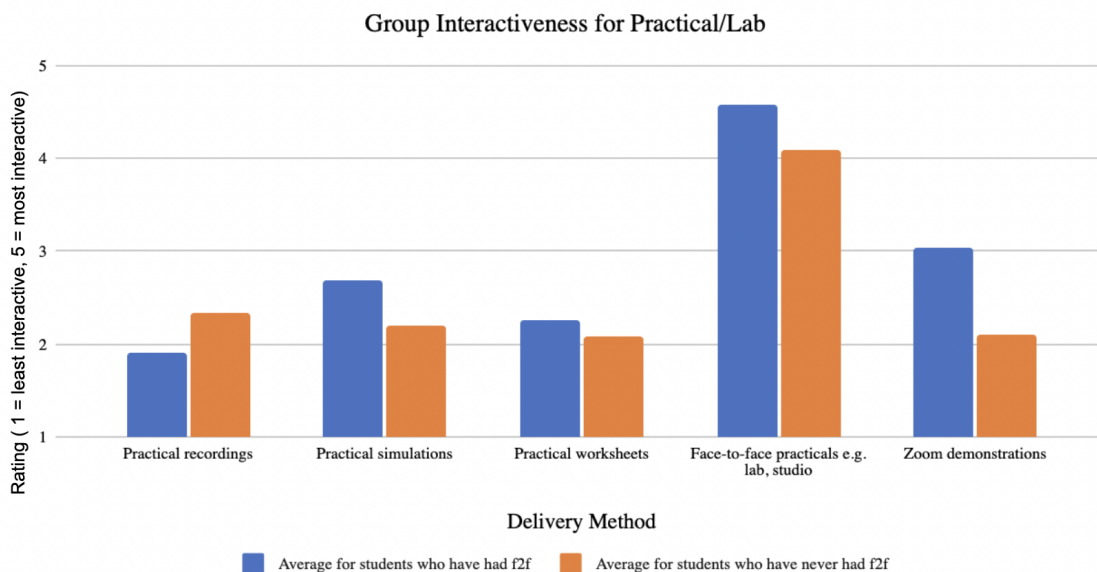


Figure 3: Chart showing the average rating of group interactiveness for practicals and labs

Practical methods were also evaluated on its group interactivenss. F2f practicals obtained the average highest rating of 4.51, with Zoom demonstrations and practical simulations just behind at 2.81 and 2.56 respectively.

Generally, f2f-experienced students have a higher rating for group interactivenss. The average rating of delivery methods in descending order reveals the same order for both learning motivation and practicals and labs group interactivity.

The highest collective number of respondents, at 35, reported that live Zoom meetings benefited in their learning as it is “motivating” - three times higher than other methods. This occurred in an alike manner for f2f practicals.

3. Difficulties Faced by Students During In-class Zoom/Breakout Rooms

This study involves two instances where students engaged with one another online and the difficulties they faced. They were when students were put into Breakout Rooms during live Zoom meetings and when students engaged with one another outside of class to discuss group work.

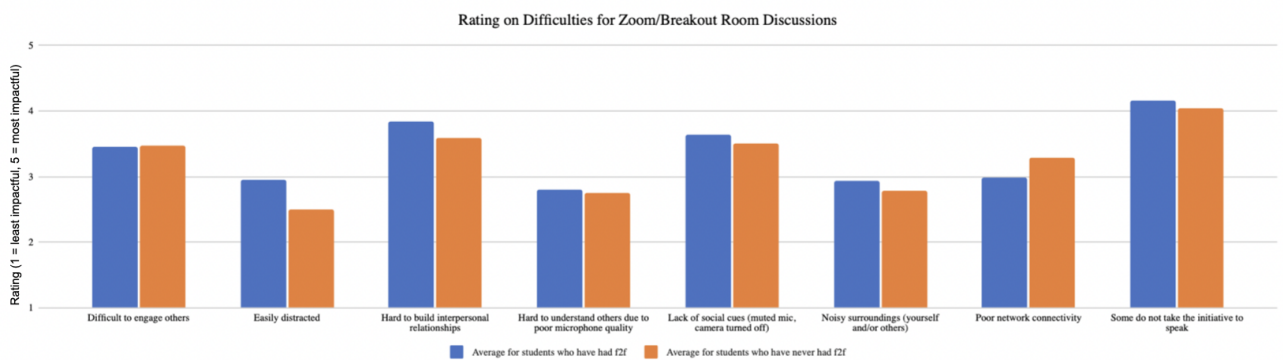


Figure 4: Chart showing the average impact of difficulties faced by students during Zoom/Breakout room discussions

Students who have and have not experienced any f2f classes display similar trends towards the same set of difficulties. From Figure 4, it is clear that the most impactful difficulty faced by students is that “some do not take the initiative to speak”, indicating that students found it difficult to communicate. On the other hand, students find the difficulty of being “easily distracted” the least impactful difficulty.

4. Difficulties Faced by Students During Group Project Discussions

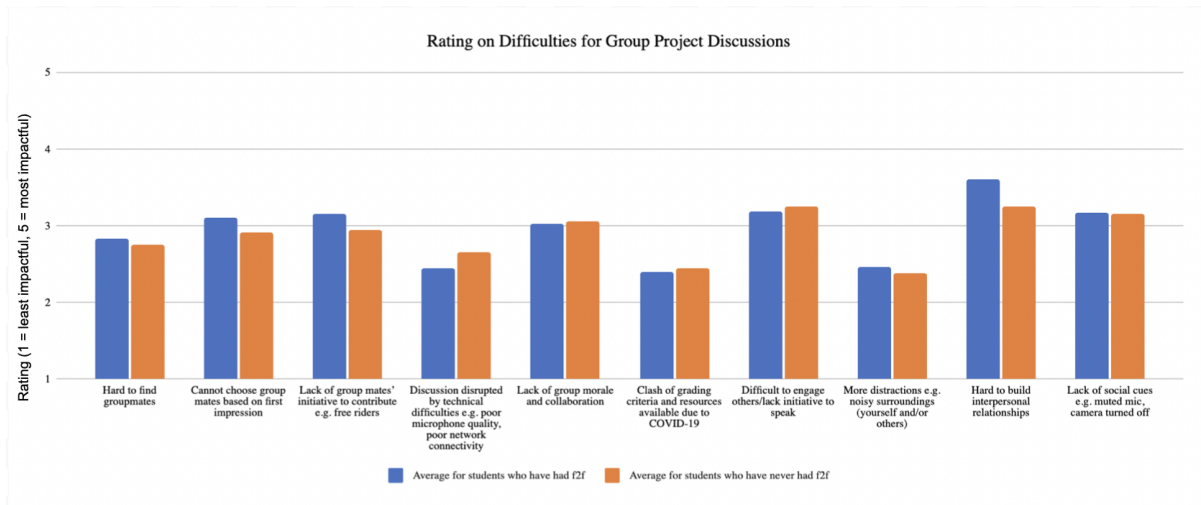


Figure 5: Chart showing the average impact of difficulties faced by students during group project discussions

Similar to Figure 4, both the averages of students who have and have not experienced f2f display a similar trend for Figure 5. Of the many difficulties which arise from group project discussions, the difficulty which impacts students the most is “Hard to build interpersonal relationships” rated at 3.51, whereas “Clash of grading criteria and resources available” was the least impactful for students, rated at 2.40.

2. Discussion

An interesting pattern can be identified which occurs in both Figure 4 and Figure 5, where difficulties affecting group communication in Zoom/Breakout Room discussions and Group Projects rated higher than technical and environmental-related difficulties, highlighting its significance in students’ learning experiences.

This can be explained by characterising what is and what is not within the control of each student. Difficulties relatively within a student's control are their surroundings and network stability, for which students would actively seek for solutions to resolve these problems. On the other hand, difficulties involving student engagement are not within students’ control, thus increasing the impact of these difficulties. This is consistent with Figure 4 and Figure 5 as “Difficult to engage others to speak” and “Hard to build interpersonal relationships” are the two highest scoring difficulties. Students may often turn their cameras off and only speak when required; hindering communication flow between group members, resulting in inefficient and unengaging conversations.

Moreover, the lack of group communication also leads to disconnect in not just group morale but also with the assigned work, as one’s learning is impacted by difficulties as shown in Figure 5. Additionally, “learning” not only includes academic learning, but also social skills from group interactions. Collaboration, leadership, and organisational communication are social skills that are more challenging to cultivate under online learning initiated by COVID-19 due to unideal circumstances in the learning environment. The dissonance in group communication caused by the learning environment during COVID-19 leads to

difficulties in practising organisational communication. Rather than learning these social skills through group communication, additional difficulties listed by participants expressed complaints on how they have had to experience unnecessary stress from learning to tolerate others' unruly behaviour stemming rather than benefit from productive and helpful discussions, the behaviour likely being instances of Online Disinhibition Effect (Suler, 2004). Experiencing less difficulties in group interactions also contributes to increased student satisfaction, reduced sense of isolation and enhanced motivation for learning. This was demonstrated by a study done by Martin and Bolliger which concluded that courses upholding those benefits ultimately contributed to better performance by students (Martin & Bolliger, 2018).

This lack of engagement hinders students' interests and thus motivation to engage with people they cannot see (Mazer, 2013): a positive feedback loop that usually results in mundane and unproductive group discussions. To address this issue, students should be encouraged to not only turn on their cameras during class discussions, but also during their personal group discussions. This can subsequently result in students being more engaged and interactive with each other as they are able to pick up on social cues to build interpersonal relationships and have more confidence to speak up to engage in group discussions.

As for learning motivation and group interactiveness, their same average rating order implies that there is a positive correlation between them. This is further supported by Aguilera-Hermida (2020): interactiveness of an online class plays a crucial role in students' motivation. If such correlation is true in our study, it would further back up the finding that motivation decreases with delivery method interactivity, evident in the downward trend of Figure 1.

However, if learning motivation truly increases with group interactiveness, then some responses are considered contradictory. A respondent mentioned that they found pre-recorded videos with and without face camera, a rather noninteractive delivery, to have less chance to have discussion with other students, and rated it a 4 for learning motivation. Furthermore, f2f-inexperienced students gave higher motivation ratings than their counterparts for delivery methods with decreased interactivity. Such discrepancies, however, are due to students' preference on interactivity and their lack of f2f experience.

Therefore, the highest motivation-inducing delivery method should encompass maximum interactivity so that students would be more motivated. This study points toward live Zoom Meetings for lectures and tutorials, and f2f practicals being highest motivation-inducing. Although live Zoom meetings were reported to have some difficulties, with 76 and 100 undergraduates reporting distractions from surroundings and network/technical problems respectively, these are all technical difficulties and bear little significance and impact on students' learning. For example, Breakout Rooms rated on average as the least impactful in Figure 4. On the other hand, presentation slides and separate audio and practical recordings are the least interactive and have the lowest motivation rating, indicating them as the lowest motivation-inducing delivery methods.

In the process of learning, group communication and interactiveness fosters an active learning environment rather than passive, contributing to more effective learning (Harton et al., 2002). Live Zoom meetings, which is the only online delivery method for lectures and tutorials that included real-time group communication, rated highest for learning motivation as shown in

Figure 1. Similarly for labs and practicals, f2f was the only delivery method that had a higher number of participants reporting it as having no difficulties than the difficulties listed. The reported benefits for different delivery methods of practicals in question 4 of the survey show that although a large portion of students agreed that online methods for practicals save time, f2f still scored significantly higher for inducing motivation. This motivation can stem from engagement that increases satisfaction, reduces the sense of isolation, with communication that enhances understanding of learning materials (Martin & Bolliger, 2018). Likewise, benefits of f2f practicals are it being more engaging, easier to ask questions and having increased group interactiveness. This indicates group communication as a key role in the learning process and the importance of its inclusion in online learning. Question 4 of the lectures and tutorials section shows that live Zoom meetings were reported to be the most motivating for students' learning, along with being more communicative and easier to ask questions. Whereas other online delivery methods require emailing outside of class, the chat function in live Zoom meetings provided a quick and simple way for direct communication to the professor or other students, allowing a smoother flow of conversation dynamics as with f2f where active learning is more convenient compared to a majority of online delivery methods.

3. Limitations and Delimitations

There are several flaws behind the research design. Non-probability sampling methods, namely convenience sampling and voluntary response sampling, were mainly used instead for probability sampling. This risks a higher chance of sampling bias. Only quantitative research methodology was carried out. Hence, this study did not benefit from understanding any possible qualitative data.

The response rate for practicals/labs was relatively small; only 54% of total responses. This small sample size may lead to a few inaccuracies in analysis. Other than that, there were vast differences in sampling size, especially when comparing the average ratings by students who have had and those who never had f2f experience. However, having a large enough sample condition ($n \geq 30$) indicates that the sample size for f2f-inexperienced students was large enough. compared to those who have not ($n = 115$) (Ganti, 2021).

Considering all circumstances, some students, such as those in Year 2 and Year 4, have without a doubt experienced f2f delivery mode. Yet, upon response validation, it was found that a large number of such students failed to select this option when asked for "*Which of the following delivery modes have you experienced at HKU (even before COVID-19)?*". Therefore, it is assumed for the construction of Figures 1-5 that only Year 1 students did not experience any f2f, unlike all other Years, possibly producing many inconsistencies in regards to the analysis of the learning motivation differences in the two groups.

The open-ended text box provided at the end of each section showed promise for respondents to express their opinions but yet about 20 respondents failed to supply a response that was fully coherent. So, there may have been unrepresented opinions in the findings that have the potential to contradict the data.

Due to researchers' personal experiences in the mentioned online learning methods, there is a possibility of researcher bias as the survey may be subconsciously constructed with questions that specifically target a desired answer. Also, because the project title and survey questions

lean towards negative polarity with questions containing words like “difficulties” and “impact”, participant bias is likely.

4. Conclusion

Through investigating the survey responses, online delivery methods were found to generally present more difficulties in students’ learning, and such difficulties were rated higher in terms of impact when related to group interactions. Those that had more group interactivity were found to be more impactful and motivation-inducing, thus live Zoom meetings for lectures and tutorials, and face-to-face for practicals are the most ideal. Limitations can be ameliorated by surveying a larger, more diverse participant pool and constructing objective questions. When choosing a delivery method, it is suggested for educators to take into consideration difficulties and group interactivity which can influence motivation.

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Appendix

a. Initial survey

Initial Survey on Difficulties faced by undergraduate students in group interactions during COVID-19 and the highest motivation-inducing delivery mode

You are invited to participate in a research study conducted by a group of student researchers at The University of Hong Kong. You can participate in this survey if you are currently studying in HKU as an undergraduate student. The purpose of the study is to investigate the difficulties faced by students during COVID-19. You will be invited to fill out the online survey to state some delivery methods you have experienced during online learning.

The survey would only take about 5 minutes to complete, and you can choose to terminate the survey at any time without negative consequences. I would like to stress that all information collected will remain strictly confidential. Individual details will not be disclosed or identifiable from this survey. Your email address will not be collected.

If you have any questions about the research, please feel free to contact Isabella ([Email: ikroon@connect.hku.hk](mailto:ikroon@connect.hku.hk)).

HREC reference number: EA2005014.

* Required

What is your study programme? (e.g. MBBS, BSc, BA) *

Your answer

Which Faculty are you from? *

- Faculty of Architecture
- Faculty of Arts
- Faculty of Business & Economics
- Faculty of Dentistry
- Faculty of Education
- Faculty of Engineering
- Faculty of Law
- Faculty of Science
- Faculty of Social Science
- Li Ka Shing Faculty of Medicine

Year of Study *

- Year 1
- Year 2
- Year 3
- Year 4
- Year 5 or above

Lecture, tutorial and practical delivery methods

Check all that apply. If there are any methods that you have experienced but were not provided as a choice, kindly write them in 'Other' so as to further aid our study. Thank you.

Which of the following ways were your lectures and tutorials delivered? *

- Live Zoom meetings
- Recorded live Zoom meetings
- Panopto/ Pre-recorded videos (with facecam)
- Panopto/ Pre-recorded videos (w/o facecam)
- Audio-recorded Powerpoint slides
- Presentation slides with separate audio
- Other:


Which of the following ways were your practicals delivered? *

- Practical recordings
- Practical simulations
- Practical worksheets
- Face-to-face practicals
- N/A
- Other:

Get link

Page 1 of 2

b. Email sent through HKU mass email system

From: Common Core Office pennyt@hku.hk
Subject: [CHANCE TO WIN \$100] Difficulties faced by undergraduate students in group interactions during COVID-19 and the highest motivation-inducing delivery mode 
Date: 6 June 2021 at 3:03 AM
To:
Cc: mail.service@intranet.hku.hk

Message from Common Core Office

You are invited to participate in a research study conducted by a group of student researchers at The University of Hong Kong. **You can participate in this survey if you are currently studying at HKU as an undergraduate student.** The purpose of the study is to investigate the difficulties faced by students during COVID-19. You will be invited to fill out the online survey to give your opinion on the learning efficacy of different delivery methods.

Link to the survey: <https://forms.gle/BTeoTR4zbAcJQ6i8A>

The survey would only take about 10 minutes to complete, and you can choose to terminate the survey at any time without negative consequences. All information collected will remain strictly confidential, and individual details will not be disclosed or identifiable from this survey.

Deadline: 8 June, 2021 (Tuesday)

Benefits for your participation:
To thank you for your time and compensate for your participation, you may choose to enter a **lucky draw** with chances to win from **three \$100** and **four \$50 coupons from Coffee Academics**.

If you wish to enter the lucky draw and/or consent to attend an optional 5 minute follow-up interview, kindly enter your email address at the end of the survey.

If you have any questions about the research, please feel free to contact Isabella (Email:ikroon@connect.hku.hk).

HREC reference number: EA2005014.

[This study is part of the project "HKU Undergraduate students' Learning & Research Experience under COVID-19", organized by the Centre for the Enhancement of Teaching and Learning (CETL) & Common Core of the University of Hong Kong]

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This is a **General Notice** delivered by the Bulk Email Delivery System.

****To Unsubscribe****
If you do not wish to receive **General Notice** from a department, [please click here to unsubscribe](#).
(You will be prompted to login HKU Portal if you have not done so.)

c. Principal survey

Difficulties faced by undergraduate students in group interactions during COVID-19 and the highest motivation-inducing delivery mode

You are invited to participate in a research study conducted by a group of student researchers at The University of Hong Kong. You can participate in this survey if you are currently studying at HKU as an undergraduate student. The purpose of the study is to investigate the difficulties faced by students DURING COVID-19. You will be invited to fill out the online survey to give your opinion on the learning efficacy of different delivery methods.

The survey would only take about 10 minutes to complete, and you can choose to terminate the survey at any time without negative consequences. All information collected will remain strictly confidential, and individual details will not be disclosed or identifiable from this survey.

Benefits for your participation:

To thank you for your time and compensate for your participation, you may choose to enter a lucky draw with chances to win from three \$100 and four \$50 coupons from Coffee Academics.

If you wish to enter the lucky draw and/or consent to attend an optional 5 minute follow-up interview, kindly enter your email address at the end of the survey.

If you have any questions about the research, please feel free to contact Isabella ([Email:ikroon@connect.hku.hk](mailto:ikroon@connect.hku.hk)).

HREC reference number: EA2005014.

* Required

1. You are currently an undergraduate non-exchange student at HKU. *

Mark only one oval.

- Yes
 No

Personal Information

2. Which Faculty are you from? *

Mark only one oval.

- Faculty of Architecture
 Faculty of Arts
 Faculty of Business & Economics
 Faculty of Dentistry
 Faculty of Education
 Faculty of Engineering
 Faculty of Law
 Faculty of Science
 Faculty of Social Science
 Li Ka Shing Faculty of Medicine

3. What is your study programme? e.g. MBBS, BSc, BA *

4. Year of Study (2020/21) *

Mark only one oval.

- Year 1
 Year 2
 Year 3
 Year 4
 Year 5 or above

Online Learning Experience

5. Which of the following delivery modes have you experienced at HKU (even before COVID-19)? (select 1 or more) *

Check all that apply.

- Face-to-face
 Hybrid mode
 Online mode

Lectures and Tutorials

If you have never experienced the delivery method, select N/A.

6. What delivery methods have you experienced for lectures and/or tutorials? (select all that apply) *
If an option is not listed, a text box is provided at the end of this section.

Check all that apply.

- Live Zoom meetings
- Recorded live Zoom meetings
- Panopto/ Pre-recorded videos (with facecam)
- Panopto/ Pre-recorded videos (w/o facecam)
- Audio-recorded Powerpoint slides
- Presentation slides with separate audio

7. What difficulties have you experienced with the following delivery methods for lectures and/or tutorials? *
If an option is not listed, a text box is provided at the end of this section.

Check all that apply.

	Distractions from surroundings	Lack of engagement	Tedious to watch	Network/technical problems e.g. low quality video/audio, lag	More likely to procrastinate	No difficulties	N/A
Live Zoom meetings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recorded live Zoom meetings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Panopto/ Pre-recorded videos (with facecam)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Panopto/ Pre-recorded videos (w/o facecam)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Audio-recorded Powerpoint slides	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Presentation slides with separate audio	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. How did the following delivery methods for lectures and/or tutorials benefit your learning? *
If an option is not listed, a text box is provided at the end of this section.

Check all that apply.

	Motivating	Saves time (i.e. speed up recording, no commute)	Engaging	Communicative/easier to ask questions	Can revisit the lecture	No change	N/A
Live Zoom meetings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recorded live Zoom meetings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Panopto/ Pre-recorded videos (with facecam)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Panopto/ Pre-recorded videos (w/o facecam)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Audio-recorded Powerpoint slides	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Presentation slides with separate audio	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. Rate the delivery methods for lectures and/or tutorials in terms of motivation for learning. (1 = least motivating, 5 = most motivating) *
If an option is not listed, a text box is provided at the end of this section.

Mark only one oval per row.

	1	2	3	4	5	N/A
Live Zoom meetings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recorded live Zoom meetings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Panopto/ Pre-recorded videos (with facecam)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Panopto/ Pre-recorded videos (w/o facecam)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Audio-recorded Powerpoint slides	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Presentation slides with separate audio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. Please list other delivery methods for lectures and tutorials, difficulties you have experienced with them and any benefits towards your learning (if any). Please also rate it in terms of motivation for learning. (1 = least motivating, 5 = most motivating)
Delivery method (difficulty 1, difficulty 2...//benefit 1, benefit 2...) Motivation for learning (MO): 1/2/3/4/5 e.g. Live Zoom meetings (distractions from surroundings//more convenient) MO 3

Practicals/Labs

11. Have you experienced any practicals and/or labs? *

Mark only one oval.

- Yes
 No Skip to question 18

Practicals/labs

If you have never experienced the delivery method, select N/A.

12. What delivery methods have you experienced for practicals and/or labs? (select all that apply) *

If an option is not listed, a text box is provided at the end of this section.

Check all that apply.

- Practical recordings
 Practical simulations
 Practical worksheets
 Face-to-face practicals e.g. lab, studio
 Zoom demonstrations

13. What difficulties have you experienced with the following practical/lab delivery methods? *

If an option is not listed, a text box is provided at the end of this section.

Check all that apply.

	Difficulty in understanding the procedures/concepts	Unable to visualize the concepts/ideas/theories	It was boring to complete	Difficulty in writing reports	Lack of clear instructions	Hard to get help from others e.g. instructors/peers	No difficulties	N/A
Practical recordings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Practical simulations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Practical worksheets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Face-to-face practicals e.g. lab, studio	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Zoom demonstrations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14. How did the following delivery methods for practicals/labs benefit your learning? *

If an option is not listed, a text box is provided at the end of this section.

Check all that apply.

	Motivating	Saves time (i.e. speed up recording, no commute)	Engaging	Communicative/easier to ask questions	Can revisit the practical content	No change	N/A
Practical recordings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Practical simulations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Practical worksheets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Face-to-face practicals e.g. lab, studio	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Zoom demonstrations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15. Rate the following practical/lab delivery methods in terms of motivation for learning. *

If an option is not listed, a text box is provided at the end of this section.

Mark only one oval per row.

	1	2	3	4	5	N/A
Practical recordings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Practical simulations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Practical worksheets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Face-to-face practicals e.g. lab, studio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Zoom demonstrations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16. Rate the following practical/lab delivery methods in terms of its group interactivens. (1 = least interactive, 5 = most interactive) *
If an option is not listed, a text box is provided at the end of this section.

Mark only one oval per row.

	1	2	3	4	5	N/A
Practical recordings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Practical simulations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Practical worksheets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Face-to-face practicals e.g. lab, studio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Zoom demonstrations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

17. Please list other delivery methods for practicals/labs, difficulties you have experienced with them and benefits towards your learning (if any). Please also rate it in terms of motivation for learning (1 = least motivating, 5 = most motivating) and group interactivens (1 = least interactive, 5 = most interactive).
Delivery method (difficulty 1, difficulty 2...//benefit 1, benefit 2...) Motivation for learning (MO): 1/2/3/4/5 Group interactivens (GI): 1/2/3/4/5 e.g. Practical recordings (it was boring to complete, not clear//more convenient) MO 5 GI 3

18. Did you experience any in-class Zoom/Breakout Room discussions? *

Mark only one oval.

- Yes
 No Skip to question 22

In-class Zoom/Breakout Room discussions

If you did not experience the difficulties/benefits, please select N/A.

19. Rate the following difficulties during in-class Zoom/Breakout Room discussions in terms of its impact on discussion. (1 = least impactful, 5 = most impactful) *

Mark only one oval per row.

	1	2	3	4	5	N/A
Difficult to engage others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Easily distracted	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hard to build interpersonal relationships	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hard to understand others due to poor microphone quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of social cues (muted mic, camera turned off)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Noisy surroundings (yourself and/or others)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Poor network connectivity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Some do not take the initiative to speak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20. Which of the following benefits did you find in doing in-class Zoom/Breakout Room discussions? *

If an option is not listed, a text box is provided at the end of this section.

Check all that apply.

- More comfortable/confident in speaking
 Less shy to ask the lecturer questions
 It felt more personal/genuine
 My classmates took more initiative to participate in discussions
 The lecturer gave more personalised feedback
 Easier to communicate ideas e.g. share screen for videos, articles
 More diverse perspectives could be discussed
 More comfortable to share controversial opinions without being judged
 N/A

21. Please list other difficulties you have faced during in-class Zoom/Breakout Room discussions and rate them in terms of its impact on discussion (1 = least impactful, 5 = most impactful). Please also list other benefits you have faced.

Difficulty 1 (rate: 1/2/3/4/5), Difficulty 2 (rate: 1/2/3/4/5)... // benefit 1, benefit 2... e.g. No one speaks (5), connection issues (2) // diverse ideas raised

22. Did you have any group projects under the COVID-19 pandemic? *

Mark only one oval.

- Yes
 No Skip to question 26

Group Projects

23. Rate the following difficulties in doing group projects during online learning in terms of its impact on discussion. (1 = least impactful, 5 = most impactful) *

If an option is not listed, a text box is provided at the end of this section.

Mark only one oval per row.

	1	2	3	4	5
Hard to find groupmates	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cannot choose group mates based on first impression	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of group mates' initiative to contribute e.g. free riders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Discussion disrupted by technical difficulties e.g. poor microphone quality, poor network connectivity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of group morale and collaboration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Clash of grading criteria and resources available due to COVID-19	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Difficult to engage others/lack initiative to speak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
More distractions e.g. noisy surroundings (yourself and/or others)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hard to build interpersonal relationships	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of social cues e.g. muted mic, camera turned off	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

24. Which of the following benefits did you find in doing group projects during online learning? *

If an option is not listed, a text box is provided at the end of this section.

Check all that apply.

- Flexible timings for meetings e.g. doing group work
- More in-depth project discussion
- In-person meetings are unnecessary for discussion
- Easier to bond with teammates
- Easier to communicate ideas e.g. share screen for videos, articles
- Less shy to contribute ideas to the project
- My group mates took more initiative to participate in discussions
- N/A

25. Please list other difficulties you have faced in doing group projects and rate them in terms of its impact on discussion (1 = least impactful, 5 = most impactful). Please also list other benefits you have faced.

Difficulty 1 (rate: 1/2/3/4/5), Difficulty 2 (rate: 1/2/3/4/5)... // benefit 1, benefit 2... e.g. hard to arrange meeting (4) // chat and work simultaneously on google docs

Contact information

All information collected will remain strictly confidential. Individual details will not be disclosed or identifiable from this survey.
 If you have any questions about the research, please feel free to contact Isabella ([Email: ikroon@connect.hku.hk](mailto:ikroon@connect.hku.hk)).
 HREC reference number: EA2005014.

26. Do you wish to enter the lucky draw? *

Prizes: three \$100 and four \$50 coupons from Coffee Academics

Mark only one oval.

Yes

No

27. Do you wish to attend an optional 5 minute follow-up interview? *

Mark only one oval.

Yes

No

28. If you wish to enter the lucky draw and/or a follow-up interview, please enter your email.
