

University Students' Acceptance and Feedback for Online Delivery Learning during the COVID-19 Pandemic Period

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Abstract—The year 2020 has started with the COVID-19 pandemic. This has caused education institutions around the globe to resort to online teaching and learning delivery in order to ensure safety while not to stop learning progress. It will be interesting to learn whether students are ready and willing to adopt this change, especially when the decision and the change were made within a very short period of time. This paper presents a study carried out across two semester an a private university in Malaysia to investigate students learning experience and factors that may influence it. Both quantitative and qualitative questions were given to over 400 students in each semesters to obtain their feedback. Statistical and sentiment analysis have been carried out to analyse and observe the produced results.

1. Introduction

The year 2020 is an unusual year. The impact and effects of the COVID-19 pandemic totally caught the world unprepared. In the higher education area, all institutions all over the world have resorted to online delivery as countries were forced to lock down in order to stop the spread of the virus [1] [2] The changes and adaptations are unplanned. Both education institutions and students are caught unprepared [3].

While the shutdown and unplanned (or even unprepared) move to fully online delivery caused certain level of inconvenience and challenges, this unprecedented event also created opportunities for education institutions and educators to investigate online learning and its future direction [4]. In Malaysia, an announcement was made by the Prime Minister on the 16th March 2020 to announce the Movement Control Order (MCO) starting from the 18th March 2020. Within less than 48 hours, education institutions must be closed until further notice¹.

The universities in Malaysia have to react and adapt to the lock down very quickly. Online learning delivery has to

be adopted and implemented immediately as classes need to continue. Some universities delayed classes or intake, just to assist the academics and infrastructure to cope with this sudden change. For the university selected for the study in this paper, new semester was postponed for 2 weeks. Academics used these two weeks to convert material and delivery to their learning management system. Training for online delivery and tools was offered during this time to support academics. Investment has been made to ensure the infrastructure is ready to cope with the requirements and demand for a full online delivery.

This paper presents a study carried out through surveys to understand students acceptance and responses for online delivery and learning during the COVID-19 pandemic. From April to July 2020, a fully online semester was implemented. With the announcement of Recovery Movement Control Order (RMCO) in June 2020, the university, abiding strictly to the standard operating procedure (SOP) given by the Ministry of Education, decided on a dual-mode delivery for the August 2020 semester. Hence, the researchers carried out two rounds of survey for each semester, focusing to find out the following answers:

- 1) How good is the overall learning experience of the students in each semester with the provided mode(s) of study?
- 2) What are factors that may impact their acceptance and satisfaction for the different modes of study?
- 3) What are problems faced by students during the fully online and dual-mode semesters, respectively?
- 4) What are their feedback and suggestions for the university to consider and improve?

The structure of this paper is as follow: Section 2 presents related work especially those published in 2020 related to COVID-19 and its impact to higher education if not generally education institutions. Section 3 describes the methodology used and the sample selected for the study. Next, the results are presented in Section 4 and followed by the discussion in Section 5. The paper is then concluded in Section 6.

1. The first MCO was supposed to end on 31s March 2020 but extended until 12th May 2020. This was followed by the Conditional MCO from 4th May until 9th June 2020. Lock down for education institutions was lifted in stages since 10th June 2020 (Recovery MCO)

2. Related Work

Mullen and Sullivan [5] have carried out a study to see how students may perceive the effectiveness of online content delivery. While there is no statistical differences between traditional delivery in class (face-to-face) and blended online mode, the study strongly indicated the students felt online pre-recorded video lectures were less effective as compared to face-to-face classes. Parker and Martin [6] carried out a study in 2010 to compare a fully online course with a blended course. The study showed that students rated online and virtual course students higher than a blended course. The authors suggested that the results may be due to their familiarity with technology and also because there was no face-to-face options.

A study carried out in Kenya by Maina and Kihoro [7] has shown students prefer e-learning mode because of the convenience and flexibility it brings. This is observed despite challenges such as inadequate lecturer facilitation and learning materials as well as slow Internet. Vigentini and Zhao [8] studied efficiency of Massive Open Online Courses (MOOC) and students' satisfaction towards it. The study showed satisfaction and engagement are more evident with committed learners. The satisfaction with the MOOCs may be positive, but this outcome is a complex combination of factors such as course features and students characteristics as well as actual engagement [8].

Sometimes, the satisfaction and effectiveness may also be a perceived value. Ghazal et al. [9] studied 174 university students to find out the effects of critical success factors that influence students' experience and satisfaction with Learning Machine Systems in a blended learning setting. The identified factors, such as students', classmates' and course characteristics, will play a more important role to maintain positive usage experience. In another study by Safsouf et al. [10], factors such as perceived usefulness, assessment diversity, social interaction, course flexibility may have impacts on the learning systems' satisfaction.

Online learning has been a solution to continue the provision of education during a crisis. Rajab [11] presented a study carried out in Saudi Arabia where e-learning was used after traditional delivery was suspended due to war. While the findings showed that the learning outcome is comparable between online and traditional deliveries, an interesting observation is the significantly lower enrolment rate than the face-to-face semester. Other than the influence of war, the fear that online courses are lacking in different aspects or perhaps is more difficult academically is something one must pay attention to.

The above related work suggests online delivery is not without its problems or challenges, but has high potential especially when face-to-face delivery is not available or viable. As COVID-19 pandemic caused more countries to lockdown or discourage close contact, online delivery and learning are best options one would have to continue learning. This paper will investigate how successful online delivery has been in a private university in Malaysia and what factors

may have influenced the overall learning experience and students' acceptance or preferences towards online delivery.

3. Methodology

The methodology used in this study involves online survey for students over two separate semesters. The survey results were then studied and evaluated. The surveys include both quantitative and qualitative questions. The quantitative results were analysed and summarised for descriptive and inferential analysis. The qualitative questions were analysed by reading through the comments as well as through text analytics. This helped the researchers to observe trends and frequencies of specific theme or keywords within the answers.

The surveys were carried out at the School of Science and Technology (SST), where students from three academic departments (Computing, Psychology and Biological Sciences) were invited to provide their feedback. The first survey received 467 responses while the second received 483. Percentage of the respondents from total school population is around 24.8% and 25.2% respectively. In other words, around a quarter of the students in SST has participated in the surveys.

The questions set in the surveys are listed in Table 1. There are two categories of questions used in both surveys. The first category is quantitative section, where students are asked for their ratings for the following aspects:

- 1) Overall learning experience
- 2) Quality of teaching delivery
- 3) Quality of teaching materials
- 4) Communication with lecturers
- 5) Communication amongst classmates

Questions given in both semester for this category were slightly different worded, as the modes of delivery are different. It should not influence the result but serve to be specific on respective mode of delivery. Also, the survey in August semester has three additional questions. Q2 and Q3 were added to know whether a student has chosen face-to-face session or fully online, and also the reasons for their decisions. The addition aims to understand any possible impact due to the introduction of dual-mode delivery. Q2 to Q4 from March 2020 survey are identical with Q4 to Q6 and Q8 in August 2020 survey (Only minor wording changes). Q7 in August 2020 was also an additional question to obtain students' recommendations for improvement.

Both surveys were released around week 4 of the semester. Results were compiled towards end of week 7.

4. Results

4.1. Ratings for the mode of delivery in each semester

The first analysis is on the quantitative part of the collected data. Students are asked to rate their experience

	March 2020	August 2020
Q1	How do you rate the fully-online semester offered by SST thus far?	How do you rate the August semester offered by SST thus far?
Q2	State ONE THING that you enjoy most about this online semester?	Do you have any face-to-face classes this August semester?
Q3	State ONE THING that stops you from learning?	Share your MAIN reason for the decision above (Question 3 - choice to take face-to-face or fully online classes)
Q4	State ONE GOOD THING about online teaching that SST should continue doing?	What is the ONE THING that you enjoy most about this August semester?
Q5	Do you have any other feedback related to online teaching this semester?	What is the ONE THING that stops you from learning?
Q6	-	What is the ONE GOOD THING about this semester's teaching and learning that SST should continue doing?
Q7	-	What is the ONE THING about this semester's teaching and learning you would recommend for SST to improve?
Q8	-	Do you have any other feedback related to the dual-mode (combination of online and face-to-face) teaching and learning this semester?

TABLE 1: Questions for students to rate

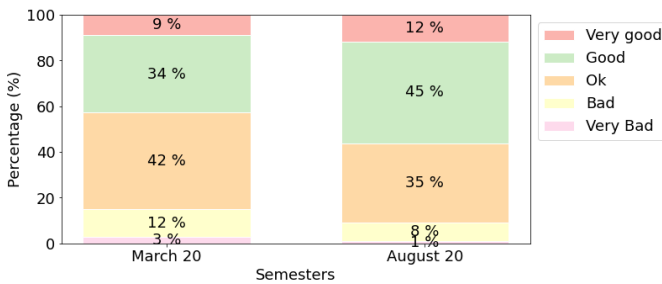


Figure 1: Overall learning experience.

and the quality of course delivery as well as communication with peers and lecturers. Students' ratings for the overall learning experience are shown in Figure 1. Around 15% and 9% rated their experience in March and August semester *bad* and *very bad* respectively. In other words, 85% rated their experience from *Ok* to *Very Good* in March 2020, and this total increased to 91% in August 2020.

When it comes to the ratings for quality of teaching materials and delivery, the results are depicted in Figure 2 and 3. With regards to teaching delivery, the *Good* and *Very Good* ratings of the quality have increased from 46% (March) to 57% (August). For teaching materials, the trend is also similar (58% in March increased to 64% in Aug). Students' ratings for these two factors are consistent with the ratings of their overall learning experience.

The last two aspects - communications with lecturers and amongst classmates - aim to help the understanding on how

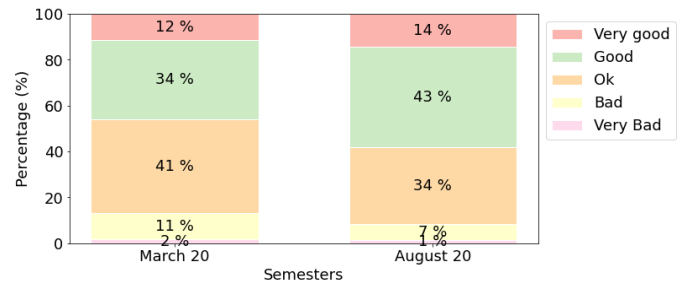


Figure 2: Quality of teaching delivery.

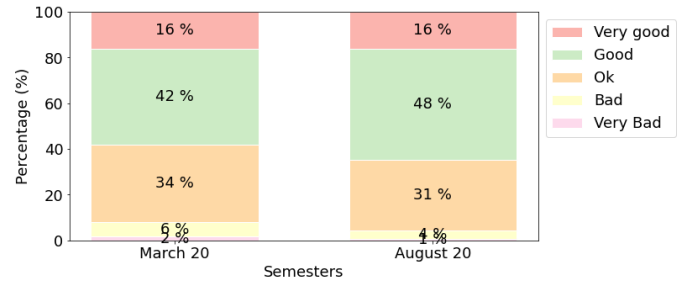


Figure 3: Quality of teaching materials.

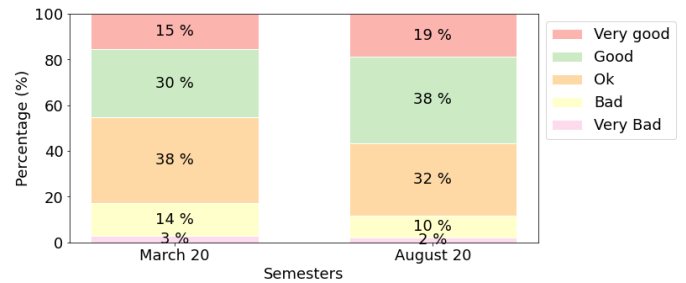


Figure 4: Communication with lecturers.

the students rate their communication with others during the two online/dual-mode semesters. Relatively speaking, the communication with lecturers was pretty positive in March 2020 and it improves from 45% to 57% in August 2020 (See Figure 4). Only the aspect of communication amongst classmates has gotten a relatively low rating. The two best categories only received 29% votes, while the two worst ratings total to 34%. Especially when most of the results showed more satisfaction or positive response from the students, it is worth paying attention to the outcome in aspect no. 5. The students indicated communication amongst classmate is less than optimal in March, but this has changed quite significantly in August 2020 where the *Bad* and *Very Bad* ratings reduced to 18%, almost half of the feedback given in March 2020. The best two categories also increased from 29% to 47%.

March Survey Feedback (N = 467)					August Survey Feedback (N = 483)				
Q#	Total	Neutral	Positive	Negative	Q#	Total	Neutral	Positive	Negative
Q2	428 (91.6%)	226 (52.8%)	172 (40.2%)	30 (7%)	Q4	429 (88.8%)	287 (66.9%)	120 (28%)	22 (5.1%)
Q3	433 (92.7%)	181 (41.8%)	31 (7.2%)	221 (51%)	Q5	421 (87.2%)	194 (46.1%)	33 (7.8%)	194 (46.1%)
Q4	396 (84.8%)	272 (68.7%)	107 (27%)	17 (4.3%)	Q6	399 (82.6%)	308 (77.2%)	82 (20.5%)	9 (2.3%)s
Q5	356 (76.2%)	171 (48%)	102 (28.7%)	83 (23.3%)	Q8	316 (65.4%)	180 (57%)	104 (32.9%)	32 (10.1%)

TABLE 2: Total feedback in each survey

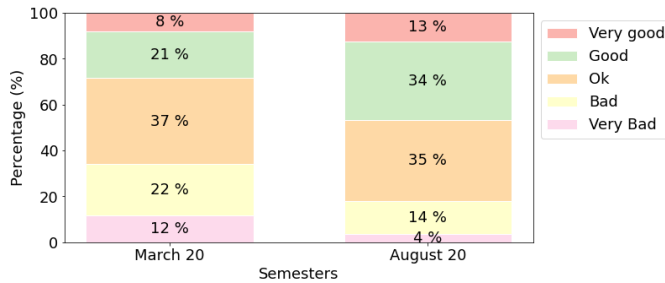


Figure 5: Communication amongst classmates.

4.2. Students' feedback for the qualitative questions

As for the qualitative questions, sentiment analysis was carried out to study students' feedback. QDAP² in R was used to carry out the analysis. Comparison and analysis will be performed using three factors - Sentiment Score as well as Positive and Negative Words. Information about the feedback as listed in Table 2.

Overall, majority of the respondents provided feedback for the qualitative questions. The response rates were 76.2% to 92.7% for March survey, and 65.4% to 88.8% for August survey. The result of the sentiment analysis showed around half or slightly more are more on the neutral side (minimum 41.8% to maximum 77.2%). Q2 and Q3 in March survey (Q4 and Q5 in August) are results consistent with the questions. When it is asked about what the students enjoyed in their classes, only 7% (March) and 5.1% (August) showed negative sentiment. Similarly, when it comes to what they missed the most (Q3 and Q5 respectively), positive keywords are only around 7%.

When the students were asked about *ONE GOOD THING* the school should continue doing, neutral and positive keywords were mainly provided as feedback (95.7% and 97.7% respectively). Q5 (March) and Q8 (August) were about other feedback. What students wrote were mixed in March (28.7% positive and 23.3% negative) but improved in August semester (32.9% positive and 10.1% negative). Factors that may contribute to the improvement will be discussed in Section 5.

2. QDAP - <https://cran.r-project.org/web/packages/qdap/index.html>

4.3. Students' reason for choosing online or face-to-face classes

As dual-mode delivery was made available for students to choose in the August semester, the August survey also asked students (Q2 and Q3 in Table 1) about their decisions and reasons. A total of 311 out of 483 students (64.4%) answered *Yes* to Q2. This means, 172 students have chosen to learn fully online. Using the same technique as in Section 4.2, the sentiment analysis outcome was mixed. 58.7% from the 172 students graded as neutral. 18.6% and 22.7% were positive and negative respectively. Sample positive keywords are shown in Figure 6. Further discussion will be presented in Section 5.

5. Discussions

From the results in Section 4, it is observed that the short adaptation period "given" to students did not negatively impact their overall learning experience. The worst two ranks (*Bad* and *Very Bad*) were relatively low (15%) in March. As this number dropped to 9% in August, the possibility to resume face-to-face classes will likely be the reason for improvement of overall learning experience. To verify this point, the word cloud from Q3 in August (see Figure 6a) showed students (64.4%) used words like *better*, *easier* and *prefer*.



Figure 6: Word cloud of feedback on why students chose face-to-face or online classes.

Apart from this, students also appreciate the flexibility online classes bring. Figure 7 showed students' feedback on the one good thing they found during the semester. Other common keywords used by students are such as

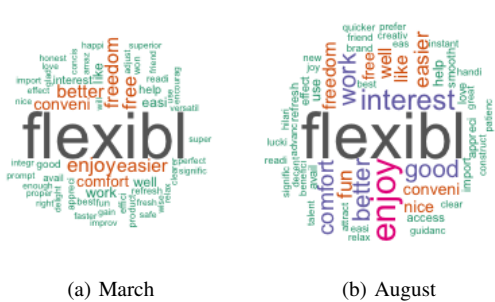


Figure 7: Word cloud from feedback rated positive on one good thing students enjoyed most.



Figure 9: Word cloud from additional feedback rated negative for Q5 (March) and Q8 (August).

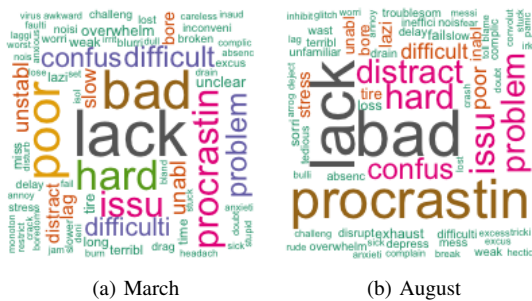


Figure 8: Word cloud from feedback rated negative on what stopped students from learning.

positive and negative feedback for Q5 in March were almost balanced (28.7% vs. 23.3%), this has improved slightly in August where positive responses increased to 32.9% while negative ones reduced to 10.1%. A quick look at the frequent keywords (shown in Figure 9) showed that students still have factors that hinder them from learning efficiently. Some commented of the difficulties they faced (such as *hard*, *confusing*, *bad*). Some admitted own issues that are affecting their progress (such as *excuse*, *stress*, *bored* and *lazy*). These will be factors the university should look into in order to provide solutions to the students' feedback and help further improve the overall learning experience.

enjoy, *easy*, *comfort*, *convenient* and *free/freedom*. In August (Figure 7b), new words were found in their feedback, such as *work*, *interest*, *good/nice/well* and *fun*. Generally, it is observed that students have embraced the online delivery rather positively looking at the benefits they have named.

5.1. Summary

Q3 (March) and Q5 (August) focused on understanding what factors may have stopped students from learning. Figure 8 shows keywords that were rated negative in students' feedback. Around 50% of students who replied in both semesters reported issues such as difficulty in following the lesson or to focus and bad or unstable internet. Also, words like *procrastination*, *distraction* and *confusion* are also found in students' feedback. These are common problems one may face when carrying out learning at home, especially when one has other family members around the house or has often other distractions that may happen when one is alone instead of sitting in a physical class room.

Based on the above observations, it is appropriate to conclude that the overall outcome of adopting fully online delivery was positive both in March and August semesters. One may attribute to the circumstances where both students and lecturers are left with no choice. However, from a fairer point of view, the positive feedback left by the students suggested the quick reaction of the institution and the willingness of the students to follow and learn have contributed to this "success". The survey numbers as well as the sentiment analysis outcome will support this observation.

The survey also asked for students' suggestion which good practice the school should continue doing as well as general feedback. The more frequent keywords observed from students feedback (Q4/Q5 in March and Q6/Q8 in August) are such as *good/well/better*, *flexible*, *appreciate* and *helpful*. The generally very positive feedback may be due to the students appreciating both the opportunity to continue learning despite the pandemic, as well as the effort the lecturers put in to enable the former. Such positive responses showed gratitude and also positive attitude.

Regardless how successful online delivery has turned out to be, it is also shown with strong reasons students still prepare face-to-face sessions whenever possible. Indeed, online delivery will be help to ensure content delivery and best effort interactions (synchronous and asynchronous) that can accomplish the goal of teaching and learning. The surveys still show sufficient evident that majority students will still desire face-to-face interaction, as they missed communication among themselves. Even the flexibility and convenience that come along with study from home are not factors why one will give up face-to-face interaction. This will be an interesting point to be further investigated.

It is worth noting that even though the percentages of

6. Conclusion and the way forward

In this paper, a study that involved two surveys carried out for all students in the School of Science and Technology

has been presented. The quantitative study showed students gave generally positive feedback for the quick change to online delivery due to the COVID-19 pandemic and the lock down back in March 2020. The students have also indicated face-to-face interactions are important, especially when it comes to communication with their course mates.

The main take-aways from the results are the responses from the students. It is observed that students are appreciative and positive in supporting the move to online delivery. While there are benefits such as flexibility and convenience when one can study from home, but students have indicated their preferences to have face-to-face classes whenever possible. Hence, the improvement of student feedback from March to August results as well as the feedback students answered have strongly indicated their preferences.

In future work, the study can be extended to more departments or schools and also other institutions across different regions. It will be interesting to see whether the results produced in this study will still remain or new observations may be obtained.

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