Tertiary learning in the Time of Covid 19: Student Attitudes and Technology

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Abstract

This paper looks at the changing technology that students employ to take university courses online and how that has changed over the course of the year. It also looks at the attitude of students to their classes and their feelings after a full year of online classes. Both a survey and free writing were carried out to obtain a wide range of information.

Introduction

It is now over a year since the first cases of a new virus, (what turned out to be Covid-19) were reported in Wuhan China in December 2019 (2, 3). Initially the world in general was not particularly worried about it. The virus was in the middle of China and by the time the world was waking up to its existence, an extremely strict lockdown was being enforced. Most people thought this would contain it. It was so far away, happening in another country. This is not the first time the world has faced devastating disease. There have been a number of epidemics over the extent of history, the bubonic plague (black death) first arriving in Europe in the 1300s traveling along the trade routes from China killing up to an estimated 200 million (4) which was perhaps half of the world's population at the time (5). London and surrounding towns experienced the last known outbreak in 1665 which claimed the lives of over one fifth of the city's population (4). However, it was not until modern times that these disease outbreaks have spread so far and so quickly so as to become pandemics. It is not that these older outbreaks were any less infectious, the last pandemic on this scale was the H1N1 flu, or Spanish flu as it is commonly called, in 1918-1919 (1). This flu was responsible for the deaths of up to 100 million or 5.4% of the world's population. The main difference between these earlier epidemics and later global pandemics is how easy it is to travel and the number of people moving around the world. The Spanish flu traveled from America to Europe, but ship was the main form of travel at that time and took many

times longer, 16-18 days on average, than the roughly six and a half hours it would take in a modern airplane(6).

This is not the first time a virus has threatened the world. Before the current Covid-19 outbreak the world experienced another virus; about 15 years ago, starting in 2002 and lasting until about 2004, the SARS virus appeared, and was in itself considered a pandemic though nowhere near on the scale of the current virus. There was some quarantining at that time in southern China and some other countries including the UK which did not continue for long and was effective in containing the virus. We were lucky with the SARS, in that it was contained with relatively small loss of life and affected relatively few people when compared to the current situation. Perhaps because the SARS epidemic did not spread far, people assumed Covid-19 would be the same and most of the world was caught off guard. This includes universities and as the disease spread and restrictions were put in place they had to scramble to adjust to the new reality and prepare for online classes. The learning curve was steep for students and teachers alike. In the early days of the new academic year people couldn't believe that this situation would go on for long and, it was thought that classes would return to normal in the space of a few weeks. The online teaching was extended till the end of the first semester and finally to the whole academic year.

This paper investigates the thoughts and attitudes of the students at a private women's university in Fukuoka, Japan as well as the technology they used and how it changed over the academic year starting in April 2020 and ending in early February 2021. The investigation consisted of both quantitative research in the form of a survey and qualitative research in the form of free writing.

Survey

The questionnaire was created in the survey App SurveyMonkey. In the planning stages a much longer survey was considered, but due to the limitations of the platform and a desire to keep the format simple, it was decided to keep it limited to 10 questions. The survey was administered to students at a private women's university in Fukuoka, Japan. The survey was distributed via email after the classes had finished at the end of the academic year 2020-2021, to 186 students. The students were informed

that completing the survey was not part of the class, not a requirement, and that it would not affect their grade. The survey was anonymous and students were encouraged to be as honest as possible. Both the survey and email were bilingual, English and Japanese, to ensure no misunderstanding of the intention of the survey, the questions, or answer choices. The break down of the students is as follows:

- 107 students from four communication classes (104 first, 1 second, and 2 third year students)
- 56 students from two writing classes (academic writing and writing skills, 23 first and 33 second year students)
- 10 students from a reading skills class (7 second, 1 third, and 2 fourth year students)
- 17 students from a test preparation class (TOEIC) (11 first, 1 second, and 5 third year students)

The return rate for the survey was that of the 190 emails with the survey link that were sent out to 186 students (4 students were registered in 2 of the classes) in 8 classes, 117 we returned. That is a 63.2% return rate. This was considered quite high, higher than expected, considering the fact that the survey was not part of the students' grades, nor was it compulsory (it was not done during class hours), so there was no real benefit to the students if they did take the time to complete it. In addition, since the survey was not distributed until all classes were completed, it was a concern that students would consider the courses and school finished for the year and not want to do any more school related work. Since the survey was anonymous there is no way to know what year of study, class, or major the students who responded were in. Although the ten question limit restricted the reach of the survey, it also meant that the survey itself was quick to complete, especially since the questions were bilingual in both English and Japanese making it easier and less stressful for the students to do. The survey platform itself estimated the time it would take to complete the survey as two minutes. I believe that this helped with the return rate as students were less likely to give up part way through the survey, than they would have been had the survey been only in English and/or it had contained more questions, thus taking longer to complete.

Free Writing

In addition to the survey, students from the two writing classes (56

first and second year students) were assigned a free writing exercise in the final class to gain an understanding of the students' point of view . Free writing exercises were a regular occurrence throughout the course with a different topic each time. The students are given a five minute preparation time during which they can think, make notes, make lists, draw mind maps - anything that will help them gather ideas. After the five minutes is up, they are given a further 10 minutes to write as much as they can on the day's topic. The topic for the final class was: Now that we are almost finished 1 year of remote classes, what are your thoughts and feelings about online classes? The instructions posted on the classroom stream were as follows:

Now that we are almost finished 1 year of remote classes, what are your thoughts and feelings about online classes?

Think about the start of this year and suddenly having online classes. How did you feel before the classes started? Excited, nervous, worried, something else? How easy was it to get used to the classes online? Did you get enough support from the school/teachers? How easy was it to get used to the technology? Are you using a PC, tablet, smartphone? Have you changed what you are using over the year? If 'yes' when and why? What are some things you want to keep the same if we continue online classes and what would you like to change?
What do you hope for next semester - online classes or face to face classes? Why?

You have 5 minutes thinking time - start thinking now!
Do NOT write anything yet, just think and plan.

You can make lists, notes, or mind maps if you want, just don't write your paragraph yet.

Today's topic is:- Now that we are finished 1 year of remote learning, what are your thoughts and feelings about online classes?

Results and Discussion

Questions 1, 2, and 3 were concerned with the technology hardware

that students were using at different stages of the school year.

Question 1 asked students what hardware they were using to take classes in April, at the start of the academic year. The results showed that the largest portion of the responding students, 39.66% (46 students) were using a laptop computer, 30.17% (35 students) were using a desktop computer, 25% (29 students) were using their smartphones, and the smallest portion, 5.17% (6 students) were using a tablet. One respondent commented that although she used a PC for the majority of classes, she did use her smartphone on a few occasions. There were no skipped responses and all 117 students answered this question.

Question 2 asked students what hardware device they were using to take classes in September, at the start of the second semester. The results showed that the largest portion of the responding students, 50.88% (58 students) were using a laptop computer, 29.82% (34 students) were using a desktop computer, 14.04% (16 students) were using their smartphones, and the smallest portion, 5.26% (6 students) were using a tablet. The same respondent as for question one commented again that although she used a PC for the majority of classes, she did use her smartphone on a few occasions. Another commented that she used a combination of smartphone and laptop. There were 115 responses and 2 skipped responses.

Question 3 asked students what hardware device they were using to take classes in January 2021, at the end of the second semester/end of the school year. The results showed that the largest portion of the responding students, 50% (57 students) were using a laptop computer, 28.07% (34 students) were using a desktop computer, 16.67% (19 students) were using their smartphones, and the smallest portion, 5.26% (6 students) were using a tablet (fig. 1). One respondent commented that although she used a PC for the majority of classes, she did use her smartphone on a few occasions. The same respondent as for questions 1 and 2 commented again that she changed to use her smartphone but sometimes used a PC. The second student who added a comment for question 2 commented again that she used a combination of smartphone and laptop. There were 115 responses and 2 skipped responses.

At the beginning of the school year in April, the decision to go fully online for all classes was sudden and at the beginning students mainly had to rely on what technology they already had, with no time to research or shop around for the most suitable technology to fit their needs/
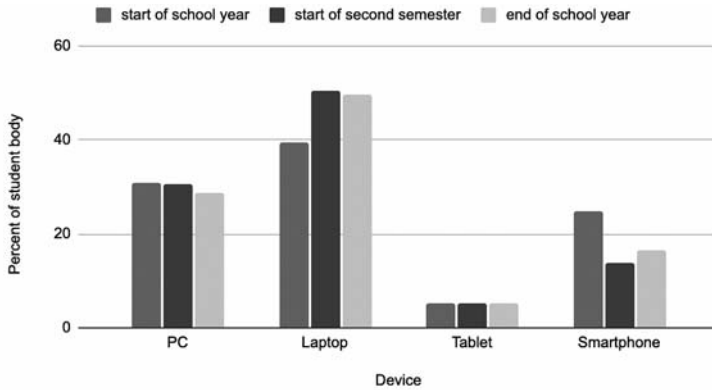
Device Use Throughout The Year (figure 1)

requirements for classes. In fact, since online classes were a new phenomenon at the time, even if students had the time, it is unlikely they would know what technology would work the best for them and their personal situation. In addition, the original intimated online study period was short. The decision was to be reevaluated after only a few weeks, at the Golden Week holiday period at the start of May and at the time classes started, many people were optimistic that classes would return to normal then. This being so, many students may not have seen the need to rush into a major purchase for such a short period of time. Over the course of the year laptop use increased from 39% to 50% then fell to 49%, 46 students increasing 58 at the midway point and then falling 1 to 57 at the end of the year. Most of that increase coming from the reduction in the use of smartphones which started out at 24.79 %, fell to 13.91% at the start of the second semester, but rose again slightly by the end of the year to 16.52%. Desktop computer use fell, but only slightly, over the course of the year from its highest of 30.77% at the start, to 30.43 in the middle of the year and finally 28.7% at the end. That was a drop of only 2%, or 3 students. Tablet use remained consistent over the year with 6 students reporting using one at each stage. It can be seen then that roughly 11% of students who responded made the change to a laptop computer, the largest portion of those who changed coming from smartphone users. This change over time could be attributed to the fact that the original intimated online study period was short. In the free writing students explained that they sometimes used combinations of technology to be able to work effectively,

for example, "I use both my smartphone and PC when attending classes at Google Meet." "Basically, I took classes on a computer and used a smartphone when I had something I wanted to check or when the computer connection was bad. I would like to continue taking online classes in this convenient way." In fact students seem quite savvy and used combinations of technologies to enhance the online learning experience. In addition, realising that using a smartphone gave mobility and the ability to to attend class anywhere, may have encouraged some students to continue to use their smartphones or to go back/start using them. This may account for the slight upward trend in smartphone use reported at the end of the school year.

Questions 4, 5, and 6 were concerned with the kind of internet connection that students were using at different stages of the school year.

Question 4 asked students what internet access they used at the start of the online classes in April, at the start of the academic year. By far the majority of students internet access was WiFi which was used by 92.24% (107) of students. The student's smartphone data plan and a combination of different data connections were both used by only 3.45% (4) of students. One student, 0.86%, was using a Lan cable. There were 116 responses and 1 skipped response.

Question 5 asked students what internet access were they using at the start of the second semester. By far the majority of students internet access was WiFi which was used by 91.38% (106) of students. The student's smartphone data plan was used by only 2.59% (3) of students. A combination of different types of access was used by 6.03% (7) and no students were using a Lan cable. There were 116 responses and 1 skipped response.

Question 6 asked students what internet access were they using at the end of the second semester. Again, by far the majority of students internet access was WiFi which was used by 91.38% (106) of students. The student's smartphone data plan was used by only 2.59% (3) of students. No one reported using a Lan cable. A combination of different data connections were used by 6.03% (7) students. There were 116 responses and 1 skipped response.

It can be seen from the responses (figure 2) that most students had access to WiFi, so, despite there being 29 students who were using their smartphones to attend classes at the beginning of the year, the majority, 25,
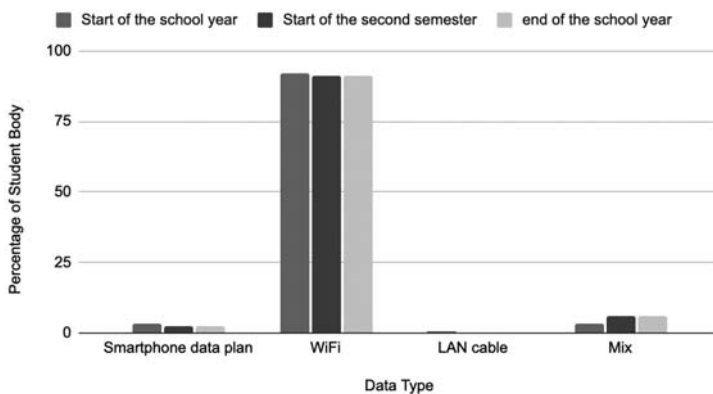
Internet Access (figure 2)

were doing so using WiFi and not their phone's data plan. This is good news as they would not run out of data as they most probably would if attending classes with a data plan. The school was very aware of this possibility and was worried about going over the students data limit and students having trouble attending class. As a result of this concern video was not used at all in the beginning and only sparingly later in the first semester and throughout the second semester, so that students on a data plan, which hovered around 3% for the entire year, would not be at a disadvantage. In fact, there was very little change at all in internet access over the year. The only change of note was for the number of students who said they used a mix of data which almost doubled from the first semester to the second, although the number overall was small (3.45% in the first semester and 6.03% in the second). In the free writing some students had trouble with a lag in the internet as shown by this student's comment, " In addition there is a time lag between teacher and students."

Question 7 asked students what kind of class they would prefer for the next school year (starting in April 2021). Just over half 55.65% (64) of the students wanted to have a mix of both online and face-to-face classes. The second highest portion of students, 23.48% (27), expressed a preference for all classes to be online, and 20.87% (24) of students preferred to have all classes face-to-face. There were 115 responses and 2 skipped responses.
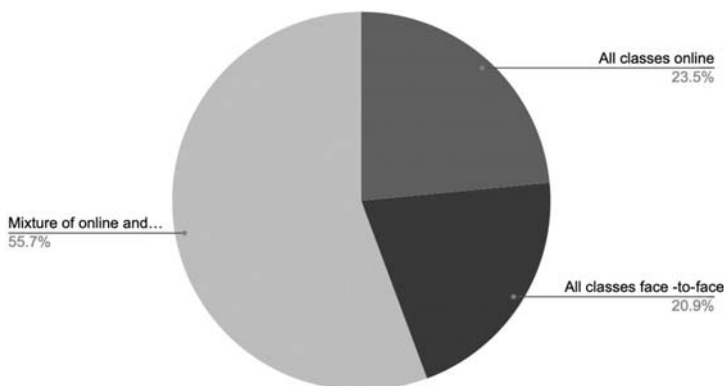
Preferred Study Styles for the Next School Year (figure 3)

The most common response (fig. 3) was that students wanted a mix of online and face to face classes and when you combine this with the number of students who want all face to face classes we can see that over three quarters of students, 76.52%, want at least some in-class learning. Some students felt that the quality of their education was suffering as this student says, "I think that the information and knowledge that can be obtained from online classes alone will be limited, so I hope that we can go to school as soon as possible." Another student expressed an advantage of face-to-face classes, " I want to take face to face class because I concentrate on studying more than online classes." Other students were not happy with online classes as they had certain expectations of what university life would be like, not just regarding classes, but socially too, such as making/ meeting friends, talking to teachers, and having the whole 'university experience'. One first year student commented, "After experiencing online classes for the past year, my honest impression was very disappointing. Since my house is far from school, it would be very difficult for me to go back and forth every day for 3 hours, but I think it was more fulfilling than my current life. I wanted to make a lot of friends and study a lot with them, and it was a shame because it was completely different from the university life I had envisioned. I wanted to study at Starbucks with my friends in my free time." This first year student's idea/dream of what student life would be like was not met - however, reality rarely lives up to our expectations. The fact there is no Starbucks or any place suitable to hang out and study near the school campus and her home is 1.5 hours away, it may not be

realistic to expect to hang out there to study. Yet another student expressed a similar opinion, " I ended up spending my days in a different way than I had imagined in my first year of college."

Some students seem torn between the convenience of online classes and the social aspect of face-to-face classes. This is very clear when we see that over 55% of students would prefer a combination of the two styles of class. One very conflicted student wrote, "Basically, I took classes on a computer and used a smartphone when I had something I wanted to check or when the computer connection was bad. I would like to continue taking online classes in this convenient way. If online lessons continue, I would like to communicate more with my teachers and friends. However, I would like to go to school directly and meet them next semester, so I would like to take face-to-face classes." The most common reason given in the free writing for wanting to take face-to-face classes was social, not because students felt it would give a better education, though that was the reason for some feeling that way, just not the majority.

Considering that one of the most commonly mentioned points in the free writing was that students missed social interaction, it was somewhat surprising that almost a quarter of students wanted only online classes. This may indicate that students are still concerned about catching COVID-19, and that this outweighs their desire to meet people. Fear of infection was not mentioned by so many students, but it was definitely a major aspect for some " Of course, I would like a face-to-face class, but I'm still very scared" and, "I want to have a face to face clothes [sic] , but in current situation I think it should be an online classes." Other students seem to be just resigned to the fact that classes will be online, one student commenting, "I don't think there will be face-to-face lessons next year, but I'm happy with that."

Question 8 asked students if they had ever signed in to an online class to show attendance, but then not attended class. This was possible as many of the classes did not use video so the teachers could not physically see the students. Students were encouraged to be honest and knew the survey was anonymous. The vast majority of students 81.03% (94) said they had never done this, 11.21% (13) said they rarely did it, 6.9% (8) said they sometimes did it, and one student, 0.86% admitted to usually doing this. No students said they always did it. There were 116 responses and 1 skipped response. Although the vast majority of students did not attempt this it
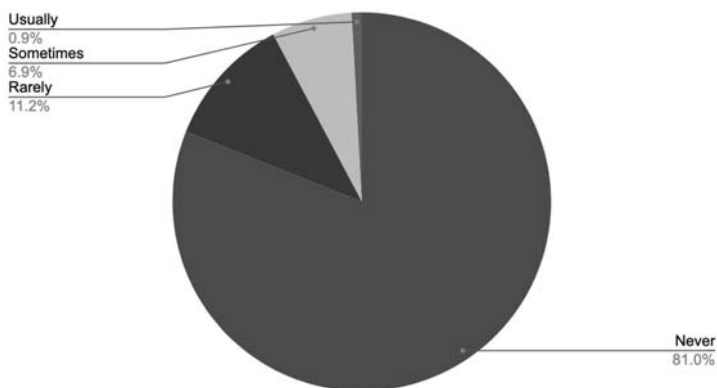
Nonattendance After Initial Sign in (figure 4)

was surprising that eight students did this sometimes and one even did this on a regular basis (fig. 4). It certainly is a drawback of the online system if some students are able to cheat the system.

Questions 9 and 10 asked students about their feelings regarding taking online classes (fig. 5) .

Question 9 asked students how they felt when they first found out they were going to have online classes. Most students 88.7% (102) said they felt anxious, 6.09% (7) said they felt excited, and 5.22% (6) said they felt confident. There were 115 responses and 2 skipped responses.

Question 10 asked students about how they felt about online classes now, at the end of the school year. The majority of students 63.79% (74) still felt anxious at the end of the academic year, 29.31% (34) felt confident, and 6.9% (8) felt excited. There were 116 responses and 1 skipped response.

There is often a general lack of basic computer skills among high school graduates and, because of this, first year students have a computer skills class in the first semester. However, since classes were online from the start, they didn't have that and so, quite understandably, confidence was quite low, at only 5.22%, and anxiety high at 88.7%, or eight ninths of the students. One student commented, "I was worried about online classes before it started because I wasn't very good at handling computers, so I thought I might not be able to take classes properly."

There was a 24.9% fall in the number of students who felt anxious
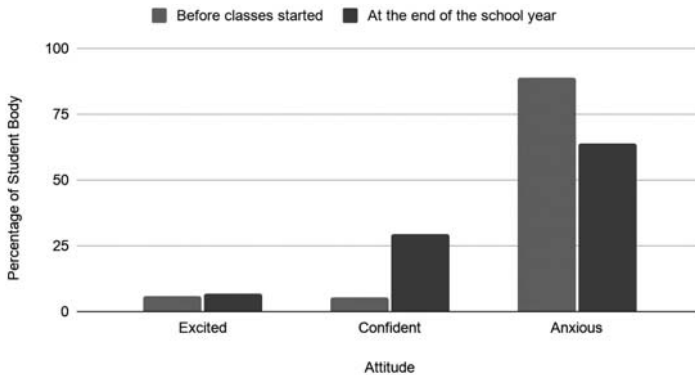
Students' Attitude to Online Learning (figure 5)

over the course of the year and at the same time there was a corresponding 24.09% increase in their confidence. It seems that the reality of online classes was not as bad as students had feared as can be seen from this students experience, "I am not very good at using computers, so at first I was confused about taking classes. However, it was not too difficult because the teachers made various efforts. It was so hard to deal with only when troubles occurred." Another student commenting, "I was worried about online classes before it started because I wasn't very good at handling computers, so I thought I might not be able to take classes properly. However, when it was started, it was easier to use than I had imagined." and "At first I was worried about online classes, but now I am used to it."

Realising they could handle the online classes must have been a big confidence boost for the students.One reason why students' confidence grew could be that the school did not allow teachers to choose which learning management system to use, with everyone free to use what they wanted. This would have resulted in the students needing to learn a number of systems and confusion about how to perform the same action in different systems. Only one system was allowed, Google Classroom, so all classes were run in the same way. Students only needed to learn one system and could do so quickly as every class was run on the same platform and they were practicing the same things and performing the same tasks over and over.

In addition to the points mentioned above, the free writing showed

that students found several benefits to online learning. Many students reported having more time in their day due to not having to travel long distances to get to school as expressed by this student, "Since I had no time to go to the university, I was able to lead a fulfilling life by increasing the amount of time I could use effectively." They also seemed satisfied with the chosen LMS, Google Classroom, mentioning not only that they have a record of the class that they can review at their own convenience, " One of the advantages is that I can check assignments and other students' comments anytime." and "I thought that I could review it by looking at the materials and videos many times." but they also found they can understand their classmates' thoughts on a topic, "In class, we can see other classmate's opinions on the stream so I know some ideas and various opinions." In addition students also felt that there were some similarities with face-to-face classes such as, "I can listen to videos and audio using Google Meat Just like face-to-face classes."

Negative aspects were pointed out too, in many classes, but in particular communication classes, students found it hard to talk in their online group stating, "However, I think online classes are unsuitable for group work. Because we can't exchange each idea and can't form an opinion as a group. Personally, I'm sad because we can't see each other's faces. I don't imagine my partner's face. I want to go to school and face to face class." Students also felt they had less interaction overall and perhaps even experienced a reduction in their skill level. For language students the lack of/limited chances to practice conversation has been a problem. "But instead I found my ability to communicate is decreasing." As mentioned before the amount of data being used for classes by students who were limited to a cell phone data plan was a concern and the use of video was limited this year. However, if online classes are to continue, teachers need to find a way for their students to interact more. From the survey, we know that the majority of students use WiFi and could handle the data load caused by video classes, but a solution has to be found for the small number of students without that access.

Conclusion

In conclusion, most students would like to return to face-to-face classes, at least partially, mainly for the chance to interact with classmates and teachers, but otherwise stated that online classes were, on the whole,

satisfying. Most students said that they felt they did learn and make progress in their online classes. Classes would have become easier as the year progresses and students learned what to do and how to navigate the system. In addition the transition that some students made from their original hardware to one that met their needs better was another point that would have helped students to enjoy their classes and learn. Having the right equipment for a job always makes for a better experience. When educators are planning online classes they would do well to consider the social/emotional needs of students as well as their academic ones. If both these needs are not met, institutions could lose students and face challenges in maintaining recruitment numbers. Even after classes return to normal, some aspects of online classes can still enhance the learning experience such as the ability to review and see others' comments. There is no guarantee that this virus, or a new one will not return in the future and we must look to research like this to plan ahead.

Appendix

Survey Questions

1. What device were you using at the start of the first semester?
   一学期のはじめに授業で使っていた機材はどれですか？

   a. PC
      デスクトップ
   b. Laptop　ラップトップ
      ノートパソコン
   a. Tablet
      タブレット
   b. Smartphone
      スマートフォン
   c. Other (please say what you used)

2. What device were you using at the start of 2nd semester?

   a. PC
      デスクトップ
   b. Laptop　ラップトップ

ノートパソコン
- c. Tablet
  タブレット
- d. Smartphone
  スマートフォン
- e. Other (please say what you used)

3. What device are you using now, at the end of the second semester?

- a. PC
  デスクトップ
- b. Laptop　ラップトップ
  ノートパソコン
- c. Tablet
  タブレット
- d. Smartphone
  スマートフォン
- e. Other (please say what you used)

4. What internet access did you use at the start of the first semester?
一学期のはじめに授業で使っていたインターネットの種類はどれですか？

- a. Smartphone data plan
  スマホのデータプラン
- b. WiFi
  Wi-Fi
- c. Lan cable internet
  有線 LAN
- d. Mix of a, b, and c
  上記のミックス

5. What internet access were you using at the start of the second semester?
二学期のはじめに授業で使っていたインターネットの種類はどれですか？

- a. Smartphone data plan

スマホのデータプラン

b. wifi
Wi-Fi

c. Lan cable internet
有線 LAN

d. Mix of a, b, and c
上記のミックス

6. What internet access are you using now?
二学期のおわり（現在）に授業で使っているインターネットの種類は
どれですか？

a. Smartphone data plan
スマホのデータプラン

b. wifi
Wi-Fi

c. Lan cable internet
有線 LAN

d. Mix of a, b, and c
上記のミックス

7. What kind of class would you prefer for next school year (starting in
April 2021)?
来年度（2021年4月）からの授業はどのタイプがいいと思いますか？

a. All classes online
全てオンライン

b. All classes face-to-face
全てフェイス・トゥー・フェイス（面と向かった授業）

c. A mixture of online and face-to-face classes
上記のミックス

8. When doing online classes, did you ever sign in then not attend class?
Please be honest.
オンライン授業でログインだけして授業に参加しなかったことはあり
ますか？
正直に答えてください。

a. Never
一度もしたことがない
b. Rarely
稀にする
c. Sometimes
たまにする
d. Usually
高頻度でする
e. Always
いつもする／殆どする

9. How did you feel when you first learned you were going to have online classes?
授業がオンラインになると知らされた時の感情を教えてください。

a. Excited
ワクワクした
b. Confident
自信があった
c. Anxious
気になった／少し心配した

10. How do you feel about online classes now?
オンライン授業に対しての今の感情を教えて下さい。

a. Excited
ワクワクした
b. Confident
自信があった
c. Anxious
気になった／少し心配した

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