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RESEARCH ARTICLE

Fostering University Resilience in the Face of Crisis: Insights from Global Student Experiences During the COVID-19 Pandemic

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ABSTRACT

This paper explores the impact of COVID-19 on higher education, emphasising the shift to remote learning and its consequences on student experiences. The study, conducted through an internet-based survey in seven countries, reveals challenges faced by 1392 university students. Findings include a decline in motivation, concerns about instruction modes, financial stress, technical issues, and increased demand for mental health support. Recommendations for universities involve improving communication, enhancing technology, prioritising mental health, revising educational programs, and providing financial assistance, highlighting the importance of aligning policies with evolving student realities in both short-term disruptions and long-term consequences post-pandemic.

1 Introduction

When the World Health Organization (WHO) declared COVID-19 a pandemic in March 2020, many institutions of higher education were forced to stop live classes and lock down facilities to stop further viral spread.[33] Universities typically shifted to operating remotely mainly through online platforms and video classes. COVID-19 refocused attention on how universities must deal with complex crises while simultaneously ensuring high quality education. It is extremely important to understand student experiences at universities to provide educational institutions with updated information on managing future disruptions. Through an internet-based survey, experiences from university students across seven countries on four continents were captured at the height of the pandemic. Those experiences revealed diverse issues students faced during the pandemic, ranging from differing perceptions of the most suitable mode of instruction, requests for financial support, technical issues that arose from the shift to online learning, online-appropriate teaching and learning strategies, COVID-19 rules and the university's communication regarding those, and how the changes during COVID-19 affected the students' mental health.

To date, this is still the only published study that focuses on student experiences in different universities across multiple continents capturing a multitude of issues that students during COVID-19 education struggled with, and provides a comprehensive, comparative overview of students' perspectives globally. This paper addresses the following research question: *What lessons from the COVID-19 pandemic could be learned from university student experiences to better prepare for future educational disruptions?*

1.1 EDUCATION DURING COVID-19

Since the beginning of the pandemic, our understanding of how students adapted to the learning circumstances during COVID-19 has evolved. Literature during the height of the COVID-19 lockdown in 2020 showed that globally, many students found the uncertainty about their university experience caused by COVID-19 concerning. Students had issues with getting used to online learning, criticised unclear instructions from teachers, and were worried about their assessment performance or potential study delay under remote teaching conditions.[11,15] Several studies from different countries showed that students found the switch to online education challenging, and problems like lack of motivation to study, ineffective learning and teaching strategies, and poor communication skills were intensified in remote learning settings.[13,17,19,28] Learning ability is not only affected by the mode of instruction, but also by the student's mental well-being.[30] COVID-19 restrictions affected students' mental health negatively.[11,15] A study from a Spanish university reported that during lockdown, anxiety, depression, and stress levels amongst the students increased; half of the students reported to be moderately or severely impacted by the restrictions mentally, approximately a fifth reported experiencing anxiety, approximately a third reported experiencing depression, and over a quarter reported feeling stressed.[21] Du et al.[12] also found that students' sleep quality decreased, which correlated with students' increased feelings of anxiety across seven countries due to COVID-19. About a quarter of students in China also experienced anxiety due to COVID-19, not only because of COVID-19 restrictions, but also due to other factors regarding the pandemic.[5] Financial stress, disruption of daily routines, and unplanned study setbacks were positively associated with anxiety levels.[5,11] Financial stress and unemployment due to COVID-19 concerned many students who struggled to pay for their living expenses.[15] Globally, during the pandemic, a disproportionate amount of youth faced unemployment, compared to the rest of the population.[4]

In conclusion, addressing the multifaceted challenges brought by the COVID-19 pandemic on students' educational experiences is imperative. This study has sought to contribute to this understanding. As disruptions can occur unexpectedly, it is crucial for universities to enhance their preparedness, recognising the diverse impacts on students' well-being and learning.

2 Methodology

2.1 STUDY DESIGN

The internet-based survey was conducted in China, Ghana, Ireland, Malaysia, the Netherlands, South Korea, and the United States amongst university students at higher education institutes between 26th October 2020 and 19th January 2021. The data collection dates differed per country (Table 1). Most of the questions in the survey were closed-ended, with several questions where students could choose to give a closed-ended or open-ended response, and two questions for which there was only an open-ended response. The survey covered questions regarding how COVID-19 impacted the students' overall wellbeing with topics such as mental health, perceived financial stress, diet, physical activity, sleep quantity and quality, safety concerns, and education quality. Survey questions concerning COVID-19 were not validated, but were reviewed and agreed upon by researchers at all implementing institutions. One of the open-ended

questions asked: "*What is the most important thing that [name of university] could do to support/help you as a student during the COVID-19 pandemic?*". This paper draws upon this question in its analysis.

2.2 RECRUITMENT AND ETHICS

Recruitment varied between countries; some focused solely on one institution, some on multiple. Official university communication channels, as well as emails or social media, were used to advertise the survey. Institutions that participated in the survey can be found in Table 2. Compensation for the participants differed per country (Table 1). Participants had to be enrolled in a university degree at the time they participated (undergraduate or graduate/ professional; domestic or international) and be at least 18 years old. The study was approved by the Committee on Human Research, Publication and Ethics, KNUST (Kumasi, Ghana); the Institute of Technology Sligo Research Ethics Committee (Sligo, Ireland); the International Medical University Joint Committee on Research and Ethics (Kuala Lumpur, Malaysia); the Leiden University Faculty of Governance and Global Affairs Ethics Committee (The Hague, South Holland, Netherlands); the Bowling Green State University Office of Research Compliance (Bowling Green, OH, USA); the Indiana University Institutional Review Board for the Protection of Human Subjects (Indiana, PA, USA); and the Michigan State University Human Research Protection Program (East Lansing, MI, USA). All participants indicated their consent to participate.

2.3 DATA ANALYSIS

The majority of the data collected were in English. A few responses were translated by native-speakers from Korean and Mandarin to English. The data were cleaned and individually coded by three separate coders, using an integrated approach.[23] Coding was done manually with assistance of data analysis software. After coding, all data were reviewed and discussed by the coders for consistency in content categories. The coders reported over 95% consistency in identifying the same content across each case. All coded category terms were clarified and agreed upon between the coders before, during, and after the analysis. Survey responses that failed to answer the question were counted as an invalid response, and themes which came up less than three times in the overall data were not included in a code. When several themes were part of a participant's response, the response was counted towards several different codes. All codes were compared amongst survey participants to potentially detect differences or similarities between different demographic groups.

3 Results

3.1 SURVEY PARTICIPANTS

Table 3 outlines the demographic characteristics of the survey participants (N=1392). The average age of participants was 22.2 years (SD 5.39), with most participants in their first year of study. The majority identified as female (69.9%), about a third (27.2%) identified as male, and 2.8% identified as transgender, genderqueer, other, or chose not to disclose. In most participating countries, participants were domestic students (overall 82.2%); only the Netherlands had more international students than domestic students (60.6% international). Most students had hybrid (39.2%) or all-online (55.7%) classes at the time of the survey. China was the only exception; it did not have a lockdown, and 39.8% of the participants indicated they had all-in-person classes (Table 1). When asked if their academics had been negatively impacted by the pandemic, 36.8% of the students stated that this was the case, while 28.8% did not perceive that their academic performance had changed because of the pandemic, 22.6% were not sure and 11.8% stated that their academic performance had improved because of the pandemic. The majority of the students (69.6%) voiced that their motivation to learn had decreased because of the pandemic. This was consistent in all countries, except for China, the only country that did not have lock down policies in place at the time of the survey, where only 29.6% of the students felt like their learning motivation had decreased because of the pandemic.

3.2 OPEN-ENDED QUESTION

Out of the 1392 students who participated in the survey, 251 did not respond to the open-ended question "*What is the most important thing that [name of university] could do to support/help you as a student during the COVID-19 pandemic?*". The survey results included 108 invalid responses (7.8%), when students responded but did not answer the question, and 844 valid responses, (60.6%) when students expressed that their university could do something to help or support them. Just over 10% of the students (n=189, 13.6%) expressed that there was nothing the university could do for them or did not know what the university could do, or that the university was already doing what they could. The analysis of the other valid responses revealed six main themes which were addressed by students: Mode of Instruction, Financial Matters, Teaching and Learning, Technical Issues, University COVID-19 Policies and Communication, and Students' Mental Well-Being. These themes were further divided into a total of 15 codes. The definitions for each code can be found in Table 4.

3.3 MODE OF INSTRUCTION

Overall, there was disagreement amongst the students whether classes should be fully online, hybrid, or in-person.

3.3.1 Online

Those who wished to go fully online with all classes, and specified their answers, said they were concerned about contracting COVID-19 if they had to come to in-person classes. Students with Teaching Assistant jobs complained that they were "forced" to teach in-person when they did not feel comfortable. A female student from Ohio, U.S., stated, "Let me take all of my classes online. Not require me to be a TA [in-person]."

3.3.2 Hybrid

Others said that they had trouble concentrating and following along in the online class format, and, therefore, wished for stricter COVID-19 policies on campus in order to make hybrid classes possible. Many of those students further specified they would like to have labs, internships, or field placements in-person with protective measures against the spread of COVID-19 in place. A female student from Ireland suggested: "If at any stage we are able to have lectures in college I would prefer this as I find it very hard to concentrate looking at a computer screen. I find myself looking on my phone as much as I try not to [...]". A female student from Ohio, U.S., stated, "The hybrid learning environment has been very helpful. I would like to see a hybrid dietetic internship at [Bowling Green State University]. That would fit my current needs very well".

3.3.4 In-Person

Among those students who wanted their classes to be in-person and specified why, two reasons were expressed often. The first was that students did not think that the tuition fee was appropriate for the quality of education they received through online classes (further explained in *4.4 Financial Matters*). Another common response was that students expressed that their majors were simply not possible in the online format: "My music education requires in-person instruction. Until that is possible, my education will be substantially affected negatively" (male student from Michigan, U.S).

3.4 FINANCIAL MATTERS

3.4.1 Need for Financial Support

In all participating countries, students expressed concerns about tuition. Some students with comparably high tuition, like in the U.S., claimed that their online education was not worth the price they were paying, and they wanted the tuition fees either to be reduced or waived. A female student from Ohio, U.S., complained: "Stop charging us the same prices for online classes as you would for [in-person] classes. It's bullshit and no one has that kind of money to just sit at home for 8 hours a day and teach themselves their own school work. Teachers are posting YouTube videos as lectures for hard courses. No one can focus at home or at a library on a computer for 8 hours a day. [...] It's bullshit we're paying the same amount of money to basically teach ourselves."

Other students claimed they were in need of scholarships because the economic consequences of the pandemic rendered them or their parents jobless and no longer able to afford tuition. A student from Ireland expressed: "Assess each student on an individual basis, a lot of students will be struggling financially, no summer work last summer and a lot of their parents lost jobs etc" and a male student from Ghana suggested: "[...] Support us with scholarship, grants and funds to help curb the financial burden or menace resulted by the pandemic". Furthermore, some students expressed that they wanted the option to pay their tuition fee with more flexible payment options. In Ghana, specifically, students complained about not being able to access classes because of a lack of personal funds to buy mobile data for their devices, which is both a financial as well as a technical problem.

3.5 TECHNICAL ISSUES

3.5.1 Technical Support

Students indicated a need for technical support, citing various reasons. Firstly, students expressed that professors could benefit from training on how to properly use technology as well as have needed equipment. A male student from Ohio, U.S., pointed out: "Support professors with adequate workshops and supplying them with the proper equipment (microphones, webcams, etc.) to be able to properly approach online learning environments". Furthermore, students seeking technical assistance expressed a desire for additional online learning platforms, diverse academic resources, and opportunities for non-academic activities to foster online interactions and create a sense of "campus feeling". A female student from Ghana indicated she would like "[m]ore learning materials such as virtual books and videos teaching subjects", and a female student from the Netherlands suggested "[m]ore virtual meetups, group discussions about how to cope, effective coping strategies that have worked for others. More community feeling through meetups."

3.5.2 Internet Connection and Access

Furthermore, students communicated that they would like professors to be more lenient with

internet issues. As previously stated, this was a specific issue in Ghana, where many students commented that they needed mobile data to access class, as well as technical equipment. One male student from Ghana said: "If they can provide me with a good laptop that will help me with my learning online, I'd appreciate it".

3.6 TEACHING AND LEARNING

3.6.1 Teaching Strategies

There was no consensus regarding the structure of the classes, and views on elements such as the format of lectures and attendance requirements varied. Students commented that the content and structure of online classes needed improvement. Very commonly students wished that the classes should be "more engaging" to keep students "on their toes". A female student from Ohio, U.S., stated: "[s]ome of the classes are very repetitive with in class activities and assignments, it makes it challenging to stay engaged when you are just doing the exact same thing every single class. Makes me less motivated to pay attention in class".

Some students expressed their desire to have pre-recorded lectures, others voiced the opposite, and the same was reported for required attendance: some students were in favour while others were not. Several students demanded classes to be at a slower pace and to receive more detailed instructions on activities as well as assignments. Other students were opposed to having exams in an online setting. Some students also voiced that they did not appreciate that professors shifted assigned class teaching time slots, students wanted teachers to adhere to the schedule they were given. Lastly, some students directed criticism at teachers who opted to use video platforms like YouTube instead of personally teaching and explaining course content.

3.6.2 Professors' Availability and Academic Support

Many students across all countries that participated claimed that they needed extra academic support in the online learning setting. They specifically asked for teachers to be more available, for more office hours options, and for teachers to "check in with students" and understand their personal situations regarding the COVID-19 situation. A female student from Ohio, U.S., proposed: "Have a staff member reach out to students individually. I've had professors check up on people as an entire class body, but nobody has reached out to me individually to see how I'm doing. Taking the time would show students that the university cares about us as individuals". Some students also claimed that it would help them academically if they were able to take a semester off more easily.

3.6.3 Leniency

Students suggested that in general, they would like their professors to be more lenient and academic policies to be more relaxed. Many students conveyed that they would like leniency regarding grading and assignment deadlines. Students also asked for pass/fail grading. A female student from South Korea requested to "make exams a bit easier, students barely have the motivation to study".

3.6.4 Lowering Workload

Many students also indicated that they would generally like a decreased workload. Some defined that they would like less assignments. When reasons were given, students often indicated online learning and COVID-19 restrictions would make studying more time-consuming. A female student from the Netherlands clarified: "Quit it with the small tasks such as continuous posting on discussion boards; it's stressful, tiring, and it doesn't add much to our learning experience. Or, if instructors insist on having a discussion board open, give students space, e.g. allow every student to not post 2-4 times so that they can have some breathing space in case they're just having a really [bad] day / week". Another female student from Ireland stated "[...] Also to stop presuming that giving us extra work helps and emphasising the importance of attendance. In our college we cannot pass our degree [i]f our attendance is low but it is difficult to attend online lectures when you['re] work[ing] constantly due to the pandemic". Another female student from Ohio, U.S., complained: "Lower the workload. Just because it's online doesn't mean I need two assignments due a day for each class."

3.7 UNIVERSITY COVID-19 POLICIES AND COMMUNICATION

3.7.1 Policies and Rules

Many students wanted their university not only to implement COVID-19 hygiene measures, but also to enforce those. A male student from the Netherlands commented: "Leiden University should do more to ensure the safety of people who live on their campuses by enforcing punishments for those breaching COVID-19 rules and regulations to ensure compliance, as opposed to just hoping people will follow rules". Students also wanted their universities to take on more responsibility and offer testing for students, do more contact tracing, clean the classrooms better, provide hand sanitiser and personal protective equipment, enforce mask wearing and communicate those rules better. This applied for all university buildings, including on-campus housing. Especially in China, numerous students urged their universities to take a more active role in monitoring students' health status. For

instance, a student suggested: "when we [enter] the school gate, we [should] show our health [...] code".

Furthermore, many students who were in favour of in-person and hybrid classes wanted universities to have better measures for these classes in place, and provide COVID-19-safe study spaces. A female from Ireland wanted "[m]ore study space and more space for students to be safe on campus and not out in the cold in between classes". Some students voiced that they did not want to be forced to wear masks, although this was a rare answer and only the case in the U.S.

3.7.2 Communication

Students voiced that they would like their university to communicate COVID-19 policies and rules accurately and in a timely manner, as well as reporting COVID-19 cases. A student from Malaysia said, "Provide early announcement to amendment so that early planning can be done such as transportation and accommodation."

3.7.3 Housing

Housing was not a major theme that arose from the data, although some students pointed out concerns about housing in relation to the pandemic. A female student from Ohio, U.S., asked to "[n]ot take away [her] housing". Other students shared that their housing situation was not a good learning environment, a student from Ghana commented: "Online learning in our various homes is not the best at all. Not every home is rosy and some situations at home greatly affect mental health. It is better to be in school, in a school environment for academic work". This was also the case for a female student from Ireland, who requested "more support[...] for physical spaces to study away from living [situation]".

3.8 STUDENTS' MENTAL WELL-BEING

3.8.1 Activities and Connecting with Others

Students complained that because of COVID-19 regulations, a crucial part of their university experience was missing and wished for more social events. Some students said they wanted more social events in-person, others suggested for universities to have a virtual campus. Students also pointed out that they would like to have more opportunities to get to know people at university and feel as if they were part of the student community. A female student from Indiana, U.S., commented "[S]ometimes people need to be around people. [E]ven introverts. [H]aving no activities in-person, creates a different environment. This is the first time in my education (I have 60 post graduate credits) that I did not meet with my cohort and enjoy company outside of class. I know very little about my classmates, even though we are all in the same courses". A female student from the Netherlands said "I know they are trying a lot. More fun activities could be helpful where students can just forget school for a moment".

3.8.2 Emotional Needs

Students pointed out repeatedly that they would like more mental health support services available because they were feeling more stressed than before COVID-19, and students generally wanted staff from the universities to be more empathetic about their personal situations. A female student from Ireland stated: "Perhaps understanding that students have varying levels of anxiety relating to the COVID-19 pandemic and some may be more affected than others" and a female student from Michigan, U.S., commented: "[...] I barely remember what day it is anymore". Some students specified that they would like more counselling options and to know how to access them, in order to "relieve anxiety" and "help with mental health concerns". Some students also pointed out that "mental health days" would be helpful for them.

4 Discussion and Future Implications

The findings identified several areas of concern relevant to universities formulating policies and adapting to the challenges posed by COVID-19 and similar learning situations. A multitude of topics were uncovered in the survey, which summarise students' needs globally in seven different countries on four different continents. These encompassed the mode of instruction, teaching strategies, financial matters, technological support, protective measures against COVID-19, and mental health issues. While some concerns might have predated the pandemic,[26] their intensity was heightened by the unprecedented shift to remote learning. Addressing these challenges requires universities to align policies, teaching methods, and support systems with the evolving realities of student learning.

Even in the post-pandemic period, a return to "normalcy" demands heightened support for students, as pandemic-induced gaps and inequalities may persist.[3,32] The future implications highlighted in this study underscore the importance of integrating student perspectives into decision-making processes, fostering collaboration between students and university policy-makers. While the inclusion of students in education policy is broadly defined, engaged students are seen as actively taking responsibility for their own learning journey, are collaborative, and are more enthusiastic and active learners.[1] The level of student involvement in their studies encompasses factors such as motivation, the depth of their intellectual understanding, and their overall commitment to academic pursuits.[1] In

this paper, a multitude of issues were brought forth that hindered students from showing this engagement during the height of COVID-19. Whilst the scope of this paper makes it impossible to give in-depth suggestions for future policies for each of the issues addressed by the students, the following suggestions attempt to summarise the most pressing needs of students that universities should consider when adapting to learning situations like during the COVID-19 pandemic:

4.1 IMPROVE COMMUNICATION TO FOSTER TRUST AND ENSURE STUDENT SAFETY

Effective communication is essential for fostering trust and ensuring the safety of students during times of crisis, particularly in the context of the COVID-19 pandemic. Student requests for online and/or hybrid classes highlight a perceived inadequacy in universities' efforts to create a secure learning environment. This deficiency is partly attributed to the absence of clear hygiene protocols, such as guidelines for wearing masks, cleaning classrooms, ensuring ventilation, and maintaining social distance. This study indicates that communication strategies play a critical role in building confidence and delivering quality education, particularly in the challenging landscape of the pandemic.

4.2 TECHNOLOGY

For future learning situations in which online learning is the only resort for universities, the survey underscores the need for universities to enhance their technological infrastructure to ensure equitable access to online resources, adding to what previous research has suggested.[22] Faculty training is identified as a crucial component for delivering effective online education. While some of the participating institutions' faculty did receive such training, it was optional, and its effectiveness might not have met the expectations of the students. As the crisis period concludes, investing in the transition of educational resources, such as library materials, to online platforms is recommended. Transforming from in-person to online education may be more difficult in some settings than in others, and especially for individuals and universities in low socioeconomic settings.[9] While we live in a digital world, there is no one-fits-all model, and each university needs to make sure that all students get the same learning opportunities and are not disadvantaged by technological inequalities. This counts for material resources as well as skill-based technological inequalities, and universities can combat this by lending out technological equipment when it is available,[27] and give crash courses on technological and online teaching skills to academic staff.[29]

4.3 MENTAL HEALTH

Acknowledging and addressing the mental health needs of students is imperative. The study reveals that many students struggled mentally during online learning, with prior studies reinforcing this concern.[7,8,15,24,31] Universities emerge as essential players in facilitating access to mental health care services, given the potential lasting negative effects of COVID-19 restrictions on mental health. The connection between counselling and academic success underscores the mutual interest of students and universities in ensuring that mental health care services are readily available, even in the absence of visible disruptions.

4.4 EDUCATIONAL PROGRAMS

Expectations of educational achievements and programmatic content may need to be revised during prolonged periods of crisis. Students said they needed more engaging and slower classes. In general, online learning makes it harder for students to focus and their minds wander more easily.[16] Students also voiced that they wanted their professors to be more available, and that the online learning setting required more support. Self-study with recorded video teaching is less effective than when there is student-teacher interaction,[34] and in the survey, students indicated that providing YouTube videos as tutorials did not motivate learning during lockdowns. This links back to a previous recommendation: training on how to teach using digital tools. Teachers who were willing to take a "longitudinal perspective" in their teaching strategies and were empathetic towards students were best prepared for effective online teaching.[10] Teachers may have to rethink which topics and assignments are most essential and should have priority in the curriculum. Universities need to consider how much work is manageable for students in online learning, and what decreasing the workload would mean for the quality and scope of education.

4.5 FINANCIAL SUPPORT

Many students expressed in the survey that their need for financial support increased due to the pandemic or requested a lowered/waived tuition fee. Financial hardship was already experienced by students prior to the pandemic in different countries globally,[6,18,25] but the circumstances some students found themselves in because of the pandemic added to this hardship. Forty percent of all students in the U.S. lost a job due to the COVID-19 pandemic,[2] parents may have lost jobs, and the global economy has been impacted negatively by the pandemic.[20] Universities need to be quicker to support students with the financial ramifications of education, for instance by providing individual

financial advice and counselling to assist students and contribute to reducing dropout rates. This not only advantages the students but also benefits the institutions, as they gain from the enrollment of each tuition-paying student. The COVID-19 pandemic fueled inequality and enlarged gaps between those that can afford higher education and those who cannot.[14]

5 Conclusion

Even after the pandemic, the findings of this study can be important reminders that some issues experienced by the students during COVID-19 may persist and that going back to pre-pandemic education may not automatically happen once remote learning is no longer necessary. Extra academic, mental health, and financial support may be needed for students to level the playing field. Each student may have different challenges in this return to "normalcy". Universities need to not only plan for short-term disruptions but also take into account the longer-term consequences. It is recommended that universities form task forces with all key stakeholders, including students, to review success and failures of COVID-19 policies. From there, strategies could be developed so that the educational, financial, and well-being needs of students and faculty are considered.

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8 Appendix

8.1 TABLE 1. SURVEY DETAILS PER COUNTRY

Country / University	**Time survey was conducted**	**Incentive to participate**	**Mode of Instruction**	**Countries' COVID-19 Measures**
China	26th October - 20th November 2020	No incentives	Online or/and in-person	No lockdown measures
Ghana	30th October 2020- 19th January 2021	After completing the survey, 20 participants were selected at random and gifted with 10 GHS phone airtime each (1 GHS= 0.17 USD)	Online	No lockdown in the country during the time of the survey, but schools were in lockdown until 18th January 2021
Ireland	26th October- 30th November 2020	No incentives	Online classes mostly, some hybrid than online as there would have been some essential practicals being run in-person	Lockdown, citizens had to stay within 5km of home and avoid all non-essential travel
Malaysia	26th October- 11th November 2020	Everyone who completed the survey received an RM5 Grab Food voucher	Online	Shelter in place orders
The Netherlands	29th October- 30th November 2020	Participants who completed the survey were entered into a lottery to win a 10€ gift card from Bol.com. 1 out of 10 students had a chance of winning. Every 50th student had a chance to win a 25€ gift card for Bol.com	Online and hybrid	The country was in a semi-lockdown. Hospitality businesses were closed, shelter in place orders were in place and meeting with others was limited to small numbers
South Korea	26th October- 12th November 2020	A Starbucks Coffee Korea e-card worth 10,000 ₩ (= about 8.50 USD) was provided per each participant via email or cellphone	Online and hybrid	Shelter in place orders
U.S.- Ohio	26th October 2020 to 20th November 2020	All participants who completed the survey were entered into a raffle for 1 of 20 Amazon gift cards ($25 each)	Online with students meeting synchronously for live lectures, online with students participating in course activities asynchronously, hybrid with mix of	No shelter in place orders, but curfew from 10pm-5am and mask mandate

Country / University	Time survey was conducted	Incentive to participate	Mode of Instruction	Countries' COVID-19 Measures
			in-person meetings and online activities	
U.S.- Pennsylvania	2nd November- 20th November 2020	The incentives for participants chance to win 1 of 20 Amazon gift cards ($25 each)	Online and hybrid	No official shelter in place orders, people were encouraged to wear masks, social distancing and reduced size of in-person gatherings
U.S.- Michigan	26th October- 30th November 2020	$10 Amazon gift card for all participants who completed the survey	Online	Shelter in place orders

8.2 TABLE 2. PARTICIPATING INSTITUTIONS

Country	Institution
China	Hangzhou Normal University
Ghana	Kwame Nkrumah University of Science and Technology
Ireland	Athlone Institute of Technology (AIT) Institute of Technology Sligo (IT Sligo) Letterkenny Institute of Technology (LYIT) Trinity College Dublin (TCD) University of Limerick (UL) Waterford Institute of Technology (WIT) Institute of Technology Tralee (ITT) Dublin City University (DCU) University College Dublin (UCD) Hibernia College National University of Galway (NUIG) Technological University Dublin (TUD/TU Dublin) Cork Institute of Technology (CIT) Galway-Mayo Institute of Technology (GMIT) University College Cork (UCC) Griffith College Dublin
Malaysia	International Medical University
Netherlands	Leiden University College
South Korea	Hanyang University, Chungnam National University Seokyeong University University of Seoul in South Korea
United States of America	Bowling Green State University, Ohio Indiana University of Pennsylvania, Pennsylvania Michigan State University, Michigan

8.3 TABLE 3. PARTICIPANT DEMOGRAPHICS

	China (N=108)	Ghana (N=129)	Ireland (N=153)	Malaysia (N=101)	Netherlands (N=94)	South Korea (N=105)	Michigan, U.S. (N=166)	Ohio, U.S. (N=412)	Pennsylvania, U.S. (N=124)	Overall (N=1392)
Age										
Mean (SD)	19.1 (6.28)	21.3 (2.43)	23.7 (6.25)	20.8 (2.19)	19.8 (1.42)	24.5 (5.31)	23.3	22.4 (5.79)	23.3 (6.76)	22.2 (5.39)
Median [Min, Max]	18.0 [18.0, 89.0]	21.0 [18.0, 35.0]	22.0 [18.0, 53.0]	20.0 [17.0, 27.0]	20.0 [17.0, 26.0]	23.0 [19.0, 58.0]	22.0 [18.0, 36.0]	21.0 [18.0, 61.0]	21.0 [17.0, 60.0]	21.0 [17.0, 89.0]
Missing	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.6%)	0 (0%)	0 (0%)	1 (0.1%)
Gender										
Male	26 (24.1%)	72 (55.8%)	23 (15.0%)	23 (22.8%)	22 (23.4%)	45 (42.9%)	33 (19.9%)	107 (26%)	28 (22.6%)	379 (27.2%)
Female	77 (71.3%)	57 (44.2%)	128 (83.7%)	75 (74.3%)	70 (74.5%)	60 (57.1%)	126 (75.9%)	291 (70.6%)	89 (71.8%)	973 (69.9%)
Transgender	2 (1.9%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.6%)	1 (0.2%)	0 (0%)	4 (0.3%)
Genderqueer	1 (0.9%)	0 (0.0%)	1 (0.7%)	1 (1.0%)	1 (1.1%)	0 (0.0%)	4 (2.4%)	9 (2.2%)	4 (3.2%)	21 (1.5%)
Other	0 (0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (1.1%)	0 (0.0%)	1 (0.6%)	4 (1.0%)	3 (2.4%)	9 (0.6%)
Not disclosed	2 (1.9%)	0 (0.0%)	1 (0.7%)	2 (2.0%)	0 (0.0%)	0 (0.0%)	1 (0.6%)	0 (0%)	0 (0%)	6 (0.4%)
Year										
Undergraduate	5 (4.6%)	115 (88.4%)	124 (81.0%)	66 (65.3%)	76 (80.9%)	77 (73.3%)	162 (97.6%)	370 (89.8%)	105 (84.7%)	1099 (79.0%)
Graduate	80 (74.1%)	13 (10.1%)	29 (19.0%)	32 (31.7%)	16 (17.0%)	24 (22.9%)	4 (2.4%)	40 (9.7%)	17 (13.7%)	255 (18.3%)
PhD	23 (21.3%)	2 (1.6%)	0 (0.0%)	3 (3.0%)	2 (2.1%)	4 (3.8%)	0 (0%)	2 (0.5%)	2 (1.6%)	38 (2.7%)
Enrollment Status										
Full Time	103 95.4%)	125 (96.9%)	29 (19.0%)	35 (34.7%)	32 (34.0%)	28 (26.7%)	4 (2.4%)	42 (10.2%)	19 (15.3%)	417 (30.0%)
Part Time	1 (0.9%)	4 (3.1%)	19 (12.4%)	23 (22.8%)	33 (35.1%)	5 (4.8%)	13 (7.8%)	55 (13.3%)	14 (11.3%)	167 (12.0%)
Other	2 (1.9%)	0 (0%)	23 (15.0%)	24 (23.8%)	23 (24.5%)	19 (18.1%)	24 (14.5%)	81 (19.7%)	18 (14.5%)	214 (15.4%)
Missing	2 (1.9%)	0 (0%)	82 (53.6%)	19 (18.8%)	6 (6.4%)	53 (50.5%)	125 (75.3%)	234 (56.8%)	73 (58.9%)	594 (42.7%)
Dom. vs Intern.										
Domestic	85 (78.7%)	126 97.7%)	133 (86.9%)	91 (90.1%)	37 (39.4%)	54 (51.4%)	98 (59.0%)	400 (97.1%)	120 (96.8%)	1144 (82.2%)
International	23 (21.3%)	3 (2.3%)	20 (13.1%)	10 (9.9%)	57 (60.6%)	51 (48.6%)	68 (41.0%)	12 (2.9%)	4 (3.2%)	248 (17.8%)

8.4 TABLE 4. THEMES, CODES AND CODE STRUCTURES

Theme	Code	Code Structure
Mode of Instruction	Online	"all classes online /remote ", "allow classes over zoom so i can quarantine to go home to see family", "no office hours in-person / teaching assistant in-person / teaching in-person"
	Hybrid	"hybrid (option)" "allowing students to choose", "flexibility with classes"
	In-Person	"in-person classes", "going back to normal", "i am only paying tuition for in-person", "office hours in-person"
Financial Matters	Need for Financial Support	"provide financial aid", "tuition refund", "reduce tuition", "only pay for instructional fees", "i need a scholarship", "flexible tuition payment options", "return money", "don't cut work hours", "I'm not paying for less quality"
Technical Issues	Technical Support	"proper equipment", "help using technology [mainly for professors]", "be understanding with internet issues", "online learning platforms", "online resources"
	Internet Connection and Access	"increase data bundle package", "free internet service", "free airtime and data bundle ", "data [supply]",
Teaching and Learning	Teaching Strategies	make: "engaging classes", "slower classes", "structured classes", "similar to in-person classes", "required attendance", "pre recorded lectures", "better quality of instructions" ; "no exams", "no repetitive classes", "no pre recorded lectures"
	Professors' Availability and Academic Support	"make prof. available", "help students", "office hours", "motivate students [academically]", "make it easier to take semester off", "check in with students"
	Leniency	"professors being lenient", "lenient with grades", "flexibility", "lenient with late assignments", "pass/ fail options", "being understanding"
	Lowering Workload	"less (home)work", "lower workload"
University COVID-19 Policies and Communication	Policies and Rules	"enforce mask policy", "test more", "contact tracing", "clean the classrooms", "more regulated rules that apply to all students", "make campus safer, "don't make us wear masks"
	Communication	"COVID-19 updates", "inform us early", "report cases accurately", "transparency on all university related COVID-19 policies"
	Housing	"housing", "accommodations"
Mental Well-being	Activities and Connecting with Others	"connection with others", "activities besides school", "virtual campus", "opportunities to get to know people", "social events", "community", "talking in-person"
	Emotional Needs	"mental health [support / days]", "stress", "being empathic", "counselling", "[spring break]"