

COVID-19: Challenges on Undergraduate Research Students to an Online Learning Mode

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ABSTRACT

The profound impact of Coronavirus Disease 2019 (COVID-19) affects people's health, work, lives, and how people learn. The switch from the current physical learning to a new system poses several challenges. This research focuses on identifying the challenges faced by the students in adapting to an online learning mode and how these challenges impacted the completion of their dissertations. An initial list of the challenges faced by students in completing the dissertation was identified from the literature review. This list was followed by developing a questionnaire survey distributed to thirty-seven (37) Quantity Surveying students who registered for the dissertation subject in semester two (2), session 2020/2021. The data obtained were analysed descriptively. Results show that the primary concern is not about having a suitable device to be used during the learning process but more on the other factors such as the inability to access the right software for data analysis, difficulty in collecting the data due to the movement restriction, a quiet place to study, stable internet connection, difficulty to stay focused and motivated to do the research, time management, stress and did not know where to go for help. The implications of the findings imply that the university should take necessary action based on the identified challenges in reducing the effects on the students.

INTRODUCTION

Coronavirus Disease 2019 (COVID-19) is an infectious respiratory condition caused by coronavirus that causes Severe Acute Respiratory Syndrome (SARS-CoV-2). Phylogenetic analysis revealed that the disease initially came in bats before being transmitted to humans. The disease was first discovered in Wuhan, China, in December 2019 (Chaplin, 2020). The World Health Organization (WHO) has declared a pandemic of

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COVID-19, which has created a danger to public health. This pandemic has successfully forced the global shutdown of many activities, including educational activities, which has resulted in online learning becoming the primary platform for universities to educate their students.

Online learning refers to asynchronous and synchronous learning environments that use various devices connected to the Internet to facilitate learning (Singh & Thurman, 2019). Bartley & Golek (2004) and Evans & Haase (2001) defined online learning as a type of distance education or learning over the Internet. According to Hoic-Bozic et al. (2009), online learning is defined as online courses. Online learning is a form of distance education that allows students and educators to be located anywhere in the world. In contrast, the entire teaching and learning process is delivered online in a virtual environment.

Many people's lives have been impacted immediately due to the decision to change the learning mode. It also brought about inequalities between students who had sufficient resources and technological means and those who needed access to these resources and technological means. Hodges et al. (2020) and Bozkurt & Sharma (2020) state that effective online education consists of online teaching and learning, boosting several research works, principles, prototypes and theories, ethics and evaluation of benchmark concentrations on quality online course design, teaching, and learning, as well as a variety of other factors. Adequate strategic preparation, trust establishment, thinking in processes, amalgamation, and reinforcement of all parties involved separate, collaborative, and organizational knowledge are all required to successfully conduct an online education (Cameron & Green, 2019).

LITERATURE REVIEW

Due to the global pandemic, a sudden shift from face-to-face learning to online education has presented some challenges. According to Kopp et al. (2019), there are five common issues in digital transformations in higher education institutions. These are change, pace, technology, competencies, and financing. Additionally, some researchers have noted that online learning is perceived as having less interactivity than face-to-face learning due to a lack of social presence, social interaction, and student satisfaction (Bali & Liu, 2018). Issues with online learning arise when lecturers and students need more digital literacy, resulting in effective online education with insufficient interaction and engagement.

The transition from face-to-face to entirely online education raises several concerns, especially about students' difficulties, particularly in subjects like Academic Research. Academic research is currently taught and supervised online. Supervision is an interactive process in which the supervisor and the student communicate (Wood & Louw, 2018). Interaction is critical in determining the supervisory process's quality (Da Costa, 2016). The supervisory role becomes even more critical in the current environment, as supervisors are expected to foster a culture of productive interaction with their supervisees (Easton, 2003). Due to the absence of face-to-face interaction between the student and supervisor, it takes work to establish a quick rapport. This difficulty can result in students feeling isolated due to their physical separation from their supervisor, which further erodes their confidence in the quality of their work. Butcher & Sieminski (2006) emphasise the value of face-to-face interaction between students and supervisors, stating that it increases motivation, builds confidence, and improves knowledge.

Additionally, students must collect data for their studies using an online platform. Due to the risk associated with conducting face-to-face interviews and observations, it is no longer possible for students to conduct fieldwork in the current state. Experiment-based studies may be complex due to government restrictions imposed in response to the pandemic. Additionally, each student will be assigned a supervisor to guide and supervise their research. Students are encouraged to meet with their supervisors regularly to discuss their research and ensure they are on track. However, students cannot meet with their supervisor to

discuss their work in the current situation. Supervision was conducted online, which imposed additional burdens on students and was detrimental to the supervisor.

RESEARCH METHODOLOGY

The research begins with a preliminary study, including a review of the relevant literature to identify several challenges students face when engaging in online learning. This research then examines the issues that students worldwide face regarding online learning. The issues under consideration are not limited to the Academic Project subject but also other subjects. The literature review process will examine books, academic journal articles, research papers, conference proceedings, industry and organizational reports, and a thesis.

The research then proceeds with a questionnaire survey to conform to the identified challenges for the students. Understanding the challenges and how they impacted the completion of the dissertation is essential to the researcher in proposing a suitable adaptive strategy to improve the dissertation. The list of challenges from the literature review was then used to design the questionnaire survey. The questions were designed to include only close-ended questions, with measurements that included the range of nominal and ordinal scales. Non-probability sampling methods through convenience sampling are chosen for this research because the sample, Quantity Surveying (QS) students, is easily reached for the response. Thirty-seven (37) questionnaires were given to the QS students registered for the dissertation subject in semester two (2) in years 2020 and 2021, to identify the challenges in completing the dissertation. Questionnaires were distributed using students' email addresses that were used to register for the subject. Descriptive analysis was carried out for data analysis as it is a means to examine the situations to describe the norm (Walliman, 2017).

Findings from the survey will be used to propose a suitable adaptive strategy to improve the quality and impact in the completion of the dissertation by the students. In proposing a suitable adaptive strategy, each challenge will be re-reviewed (literature) again to determine its scope, type, and impact on the dissertation. Reviewing each of the challenges will also be considered as a basis for identifying the suitable adaptive strategy for each challenge.

RESULTS

A total of thirty-seven (37) questionnaires were sent to all the QS students who are completing their dissertation in semester two (2), session 2020/2021. The questionnaire was sent to the student's email using the Google form. A duration of two (2) weeks was allocated for them to respond to the questionnaire survey. A total of 100% of responses were received in this survey. 76% of the respondents are female, and 24% are male. 49% of the respondents are of Chinese ethnicity, followed by 48% of Malay ethnicity and 3% of Indian ethnicity.

Respondents were asked to rate the challenges they faced and how these challenges impacted the completion of their dissertation based on the 5-point Likert-type scales that vary from 1=never to 5=always. Table 1 shows the ranking of the challenges faced by the QS students in completing the dissertation during the pandemic.

Table 1. Challenges in completing the dissertation during the pandemic

Rank	Challenges	Percentage
1	Low motivation	87%
2	Lack of opportunity for sharing, collaborating, and interacting with peers and experts	66%
3	Unable to interact with peers to discuss the research	64%
4	Elevated stress level	61%
5	Issues with available infrastructure (software, hardware)	56%
6	Difficulty in analysing data due to the technology/software/applications issue	53%
6	Difficulty accessing secondary resources (books, theses, journals, etc.)	53%
8	An unsuitable place to study	51%
8	Communication issues	51%
10	Unstable internet connection	48%
10	Difficulty in collecting data to travel restrictions	48%
12	The lack of sense of connection with the supervisor	33%
13	Feeling isolated	27%
14	Difficulty with the technology/ software/applications when preparing the data collection tool	21%
15	Frequent software problems that interfered with their research work	19%
15	Frequent hardware problems that interfered with their research work	19%

Source: Authors, 2023

Of all the sixteen (16) challenges listed, having lower motivation was ranked as the significant challenge faced by the QS students in completing their dissertations during the pandemic. 87% of students have this issue. Ranked at number two (2) is the need for more opportunities for sharing, collaborating, and interacting with peers and experts, with 66%. Unable to interact with peers to discuss the research was ranked third, with 64% of the students having this problem. 61% of the QS students experienced elevated stress levels in completing their dissertations during the pandemic, and this challenge was ranked fourth. Ranked in fifth place is issues with available infrastructure (software, hardware), with 56%. Ranked sixth place was difficulty analysing data due to the technology/software/applications issue and difficulty accessing secondary resources (books, theses, journals, etc.), where 53% of the students have both problems. About 51% of the students need help with communication and having an unsuitable place to study, where these two challenges were ranked at number eight (8). Another two (2) challenges were ranked at number 10: unstable internet connection and difficulty collecting data due to travel restrictions with 48%. About 27%, ranked thirteenth of the QS students, felt isolated in completing their dissertation during the pandemic. Ranked fourteenth was the difficulty with the technology/ software/applications when preparing the data collection tool; 21% of the students experienced this issue. The last two (2) challenges were ranked fifteenth, with 19% frequent software problems that interfered with their research work and frequent hardware problems that interfered with their research work.

All these challenges faced by the students will impact their dissertations. Figure 1 shows how all the listed challenges impacted the completion of the student's dissertation.

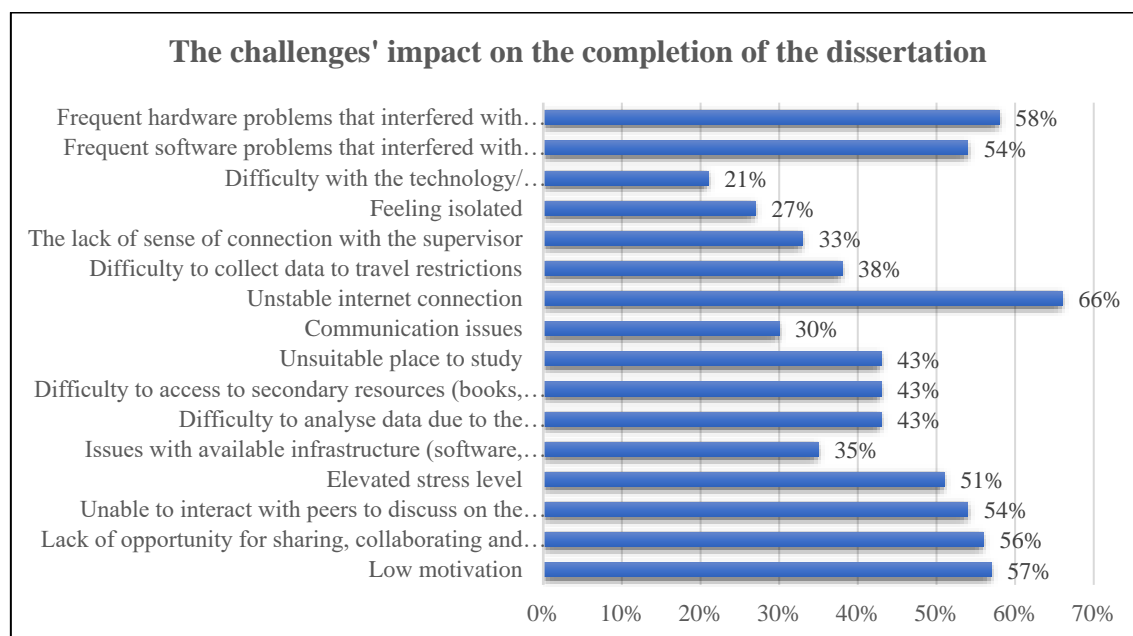


Fig. 1. The challenges' impact on the completion of the dissertation.

Source: Authors, 2023

From the listed challenges, respondents were asked to identify how the challenges severely impacted completing their dissertation. Most of the students, about 66% of them, agree that the unstable internet connection severely impacts completing their dissertation. This challenge is followed by frequent hardware problems that interfered with their research work 58%, low motivation 57%, and a lack of opportunity for sharing, collaborating, and interacting with peers and experts 56%. 54% of the students agree that frequent software problems that interfered with their research work and inability to interact with peers to discuss the research severely impacted completing their dissertation. Elevated stress level also severely impacts 51% of students completing their dissertation. Another 43% of the students agree that unsuitable places to study and difficulty accessing secondary resources (books, theses, journals, etc.) also severely impacted completing their dissertation. The difficulty in collecting data due to travel restrictions also has caused a severe impact on 38% of the QS students. 35% of the QS students agree that the issues with available infrastructure (software, hardware) also have caused a severe impact on them. Another 33% of the students agree that the lack of a sense of connection with the supervisor has posed a severe impact on completing their dissertation. The communication issue also has caused a severe impact on about 30% of the QS students. On top of that, about 27% of the students agree that feeling in isolation also caused a severe impact on them. Only 21% of the students agree that the difficulty in analysing data due to the technology/software/applications issue severely impacted completing their dissertation.

DISCUSSION

With the sudden switch to an online learning mode earlier in 2020, many universities did their best with their available technology. Thus, this research was conducted to find out the actual situation faced by the students in completing their dissertations. Findings from this research will reveal what worked, what did not, and what can be improved.

A stable internet connection is vital in researching as it requires students to refer to other sources of information such as online journals and proceedings, e-books, official websites, etc. An unstable internet connection will interfere with the research work as the students may need help accessing specific websites and downloading articles and software they need. According to Chang & Fang (2020), 60-70% of educators agree that network stability and speed are essential in accessing online learning resources. In this research, about 48% of the students experienced unstable internet connection issues. This issue has made students face difficulties in finding resources as their accessibility to online resources is limited. The poor network problem is common in developing countries where the ICT and telecommunications systems are not well established (Aboagye et al., 2020).

Furthermore, the data collection process also may be affected due to the poor network. According to Chandratre (2020), issues during online interviews are poor video quality, poor audio, difficulty maintaining eye contact, video interruption, and call termination. All these issues impact the student's dissertation, with 66% of the students stating that the technological aspect significantly impacted their dissertations. Besides the stable internet connection, the issue with hardware and software may also jeopardise the quality of the dissertation. Students may need help preparing the data collection tools and analysis when they have an issue with the hardware and software. Research conducted by Crawford et al. (2020) shows that the absence of suitable hardware and software was identified as the barrier to the learning process.

Other issues that significantly impact the students' dissertation completion during the pandemic are low motivation to do the research and stress. These factors should not be ignored as they lead to severe problems and affect their physical, mental, and emotional health. The changes in their education style and uncertainty about the future can cause anxiety, stress, and depression (Rajkumar, 2020; Ronnie et al., 2021; Rossi et al., 2020; Tandon, 2020; Xiong et al., 2020; Mseleku, 2020). Furthermore, students who had family members who were impacted by the COVID-19 pandemic were found to have a low motivational level in completing their studies online mode (Cao et al., 2020; Husky et al., 2020; Son et al., 2020; Wu et al., 2020; Zolotov et al., 2022; Mseleku, 2020). These factors severely and significantly impact the student's research work, as reported by most of the students in this survey.

The closure of physical education may slow down the spread of the infection (Glass et al., 2006), but this may eventually increase the social isolation of students and affect their psychological well-being and mental health (Bavel et al., 2020). Results from this survey show that most students experienced a lack of opportunities to interact, collaborate, and share with peers and experts. The absence of physical meetings made it difficult for the students to build trust, which made it difficult to explain problems they encountered using email. All this further makes them feel to be in isolation. The reduction of social interaction, lack of social support, and feeling isolated are among the factors that may affect the student's mental health negatively.

One of the crucial parts of the dissertation is analysing the collected data. The application of statistical software has become essential in data analysis due to its enormous contribution to the development of research in this century (Naskar & Das, 2018). The standard software used for data analysis by undergraduate students is Statistical Package for the Social Science (SPSS) software. This software is freely available for all University of Malaya students to download and use on campus. Other software such as Statistical Analysis System (SAS) and Minitab Statistical Software (MINITAB) is also available for the students to download on campus. However, this batch of students has not been on campus since April 2020; thus, their accessibility to the software provided for them by the university has become limited. Therefore, some of the students may purchase the software on their own to do the analysis. However, only some students can afford to buy the software. Some students are using the trial version software to solve this problem. Trial version software is usually limited in terms of functionality and accessibility.

As online learning took place, a proper and suitable place to study became essential in creating a conducive student environment. However, not all students have a suitable place to study. This issue could be due to the space constraint in their house. Some students may not have the privilege of having their separate reading room to study. Research conducted by Kapasia et al. (2020) shows that 44.4% of students needed a suitable environment to study. A conducive environment may help the students' work, especially when doing their dissertation (Chang & Fang, 2020; Mseleku, 2020).

The travel restriction imposed by the Malaysian government affected some of the students in collecting data. The switch between Movement Control Order (MCO), Enforced Movement Control Order (EMCO), Conditional Movement Control Order (CMCO), and Recovery Movement Control Order (RMCO), which have different travel restrictions, making it harder for the students to collect the data. Thus, some students have to choose a study sample within their capability. This approach can be considered sample bias, which may influence the research findings. Thus, it will further affect the analysis's internal and external validity because results from a biased sample may not generalise to the population (Martínez-Mesa et al., 2016). From the survey, students stated that the difficulties in getting the right resources had caused a severe and significant impact on their dissertation.

CONCLUSION

Students were affected by the COVID-19 pandemic in terms of their social lives, research opportunities, living conditions, and physical and mental health. These effects were caused by different facets of the pandemic, including difficulties traveling and moving out of the campus. These personal experiences magnified the challenges students faced while conducting research during this challenging time. This study has shown that the pandemic has affected students in completing their dissertations from many different angles with varying degrees. Much has been reported on the need for more suitable devices for online learning, but findings from this research show that this is not the primary issue. The significant challenges students face in completing their dissertations are the inability to access the right software for data analysis, a quiet place to study, and a stable internet connection.

Furthermore, students found it challenging to stay focused and motivated to do the research, time management, and stress and did not know where to go for help. This issue is something that the university should look into, as all these issues can affect the student's emotional and mental health. This survey also shows that the psychological issue significantly impacts the completion of the student's dissertation. Proactive action by the university is necessary for improving the student's experience during online learning by focusing on the student's needs and leveraging suitable strategies. This problem can be improved by providing free software that can be downloaded from their home, conducting a seminar on time management, and involving the counselling department to assess issues relating to the student's well-being and emotional and mental health.

RESEARCH IMPLICATION

Findings from this research contributed to the body of literature on the impact of COVID-19 on undergraduate research, particularly in Malaysia. The findings can complement the existing studies on the effect of COVID-19 on the education sector. Furthermore, findings from this research can serve as the foundation and formulate suitable strategies for minimizing the challenges faced by the students. Universities management should focus on the challenges that have a high impact and help the students strive through the pandemic in case it happens again.

LIMITATION AND FUTURE RESEARCH

The sample selection used in this study only focused on Quantity Surveying students from a single university due to the difficulty of accessing the contact information of students from other universities during the pandemic. Therefore, the results cannot be generalised, leaving room for further research through a conclusive research design. Future research can consider investigating the challenges faced by students from other universities in Malaysia using a triangulation approach and broader samples.

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AUTHORS' CONTRIBUTIONS

All authors involved in carried out the research, wrote and revised the article, conceptualised the central research idea and provided the theoretical framework, review and approved the article submission.

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