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Article abstract

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The Differential Nature of Remote Learning Among University Students

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ABSTRACT

One of the many drastic effects of the COVID-19 pandemic in early 2020 was a sudden shift to remote learning for post-secondary students. Remote learning is an ongoing practice at many educational institutions, for which the impact on students is yet to be understood. This study aims to build a foundation for that understanding, with a particular focus on addressing the effects on students who were working concurrently with their studies during the pandemic. A survey was conducted, gathering 181 responses from undergraduate computing students attending Mount Royal University. The survey queried the students' experience with work-school balance during the pandemic, their feelings about online classes, the perceived positive and negative aspects of learning online, and whether they would choose online classes in the future in the absence of any pandemic-related concerns. The results show a clear perception of increased flexibility (88%) coupled with an increase in the students' ability to manage their time (61%). Given that 74% of respondents report that online classes are more convenient than in-person classes while only 22% report a negative impact on their performance, this study concludes that online learning opportunities may correlate with an easing of stress on post-secondary students without significantly impacting academic performance for certain personality types. However, other students report negative experiences with respect to their mental health.

Keywords: remote learning, post-secondary education, mental health

INTRODUCTION

The public health crisis spawned by the spread of coronavirus (COVID-19) in early 2020 also triggered a crisis in the education sector. As public health officials and governments around the world established guidelines and enacted emergency policies, productivity was forced to retreat behind the safety of computer screens, setting the stage for an unintended global experiment. White-collar workers and students alike were thrust into a world of teleconferencing and digital workflow tools, where minimizing human contact was the top priority, a challenge to both their productivity and their mental health. Pre-pandemic research on remote work and remote learning is all but moot given its previous relatively low prevalence. Only 2.9% of US workers worked remotely in 2017 (Wang et al., 2021, p.17). Moreover, there was a built-in selection bias in the pre-pandemic era that saw workers who were already predisposed to preferring remote working conditions naturally being the most likely to opt in and be successful in such an environment (Wang et al., 2021, p.18). This is in stark contrast to the scenario under study, where, in 2020, approximately 70% of US workers were given no choice but to work from home (Pew Research Center, 2020). With the full range of human personalities forced into a novel humanless working environment, the importance of this field of research skyrocketed almost overnight. Where previous research focused on whether we ought to encourage remote work, research is now needed on how to maximize its effectiveness (Wang et al., 2021) while minimizing any harmful effects on those it has been imposed upon.

This study focuses on the effects of remote learning on post-secondary undergraduate students, some of whom were also working throughout or through a portion of the pandemic. Whether the students were concurrently engaged in paid employment alongside their online studies was an important factor considered in the survey questions. However, given that this study focuses on students' preferences regarding remote learning and the effects on their education, whether students' employment was remote or not was deemed to be outside the scope of the study.

Two research questions that arise in this study are as follows:

1.   How does the experience of remote learning during the pandemic differ between post-secondary undergraduate students who were working concurrently with their online studies and those who were not working in terms of their educational outcomes and overall satisfaction?

2.   How have online classes impacted students, particularly working students?

To address these questions, we obtained ethics approval from Mount Royal University's (MRU's) Human Research Ethics Board (HREB) and conducted a survey among students enrolled in the Computer Science or Computing Information Systems degree programs at MRU. The survey aimed to collect relevant data regarding the effects of remote learning on these students, specifically considering the influence of concurrent paid employment. Subsequently, we coded

and analyzed the data to derive meaningful insights, which will be presented in the results section of this study.

Regarding the results obtained in this study, it is essential to recognize that the pandemic was an additional mental stressor and should not be considered identical to the stress of coping with learning remotely while having minimal human contact, specifically with respect to the students' education. Thus, it is easy to imagine some of the stress-related questions being answered differently in a counterfactual world where the school was online, but students were also free to socialize in person outside of their school time in the absence of a global health emergency. The pandemic, therefore, was a compounding stressor that adds to online-learning-specific stress.

This paper begins with a review of related literature on remote learning and its impact on post-secondary education. We then outline the methodology of our survey, including survey design, data collection, and analysis techniques. We then present the results, highlighting the experiences and preferences of students engaged in remote learning while concurrently working. The subsequent sections offer a comprehensive discussion of the findings and a conclusion that summarizes the key results, emphasizing their significance and suggesting avenues for future research. Our study serves as a valuable resource for researchers and practitioners, emphasizing the need to adapt educational approaches to meet the changing needs of students in the digital era.

RELATED WORK

The UNESCO Global Education Coalition reports that, at the peak of the COVID-19 pandemic in April 2020, nearly 82% of the world's enrolled students were affected by school closures (UNESCO, n.d.). A global survey was conducted in 2020, which included 30,383 students—the most extensive and far-reaching study on the topic at the time. It found that 43% of global students believe their workload had increased in the transition to online classes (Aristovnik et al., 2020). This survey also found a distinction between undergraduate students and graduate students, where the former found increased difficulty in their ability to focus through the online learning process as a whole, not just in online lectures. In contrast, graduate students felt their performance improved (Aristovnik et al., 2020). Confidence in computer skills was deemed to be a relevant factor in the reported success of students in online classes, which is notable in its application to our study, given that the students surveyed are in programs dedicated to more advanced technological proficiency. In terms of mental health, Aristovnik et al. (2020) found that the positive emotional keywords students associated with their experience through the pandemic were "hopeful" (39%), "joyful" (30%), and "proud" (27%). However, those words seemed to be outweighed by the negative emotional keywords, which were "boredom" (45%), "anxiety" (40%), "frustration" (39%), and "anger" (26%). It should be underscored that these feelings were generally in response to questions regarding the pandemic and would not necessarily be limited to the students' feelings about online classes. The groups

experiencing the most considerable negative emotional impacts were female students, undergraduate students, and students who also reported having financial problems (Aristovnik et al., 2020). This is an important point since while it may be evident that financial stressors would exacerbate negative emotions and that the younger undergraduate students are less experienced with the stress of academic life, it is not immediately apparent that female students would be more significantly affected by the pandemic than their male counterparts.

Kamarianos et al. (2020) raise the concern of students getting left behind in the fog of emergency online education policies due to varying degrees of technological readiness. The authors note that despite the perception of Generation Z (Gen Z), which the article defines as those born after 1998, as being technologically proficient practically from birth with respect to their apparent digitally based social habits, empirical studies show that this generation has a "high degree of technological diversity" just as the generations that preceded it (p. 2). This potential disparity between assumption and reality may result in educational policies that widen the gap for chances of success based on the pre-existing digital skills of students.

While the above concern should be kept in mind, the results of a survey of 331 post-secondary students conducted by Kamarianos et al. (2020) were encouraging. An evaluation of Greek Gen Z students at the University of Patras in the spring of 2020 showed that they adapted successfully to online learning and reported low difficulty with the switch due to their "digitally native" skill sets (p. 3). The most negative consequence, which may be somewhat surprising, is that this generation still prefers to communicate with their teachers and peers in person, which, of course, is limited in an online environment (Kamarianos et al., 2020). The study concludes that the current and incoming generation of post-secondary students show a strong ability to adapt to new digitized learning methods. However, this generation of students ought not to be viewed as monolithic but as complex, thus it is important to recognize individual learning needs (Kamarianos et al., 2020).

Moreover, another study conducted in mainland China around the same time evaluated the psychological effects of the COVID-19 pandemic on 509 college students using the Zung Self-Rating Anxiety Scale and the Center for Epidemiologic Studies Depression Scale. Results showed that student levels of depression and anxiety rose significantly throughout the early pandemic period (Liu et al., 2020). The authors note that while people in their early twenties are at lower physical risk from COVID-19, people at this stage of life are uniquely primed to have additional stresses turn into more profound anxiety and depression issues due to a confluence of factors, including pressure from their studies, finances, social life, and most notably, an "immaturity of psychological development" (Liu et al., 2020, p. 3). Similar arguments are made by Zimmerman et al. (2021), Gruber et al. (2021), and Wang et al. (2021). In agreement with the findings of Aristovnik et al. (2020), as discussed above, Liu et al. (2020) found that female students felt a more significant impact on the metrics of "feelings of unease due to risk exposure" (p. 2) and a "sense of panic stemming from the epidemic situation" (p. 3). However, all

students experienced statistically significant increases in depression and anxiety levels during the pandemic compared to the non-pandemic national averages in China (Liu et al., 2020). A study conducted by the University of Nevada (Zimmerman et al., 2020) and another conducted in Italy (Moccia et al., 2020) found similar results, including the gender divide, suggesting that geographic culture is not an influencing factor for pandemic-related mental health.

These findings are significant to studies that focus on the mental health impacts of online learning because it is necessary to attempt to parse anxiety caused by online schooling versus anxiety caused by the pandemic. Of course, no individual would likely be able to untangle their own sense of anxiety and quantify it based on causation, but careful questioning and comparison of datasets can provide insight into the mental health impacts of remote learning in the absence of a threat to physical health. Information such as this will be crucial in determining to what degree post-secondary educators ought to proceed with online learning now that in-person options are available.

METHODOLOGY

In this study, we employed a methodology that involved the design and administration of a survey to gather data on the effects of remote learning on post-secondary undergraduate students, specifically those enrolled in the Computer Science and Computing Information Systems degree programs at MRU. Prior to conducting the survey, we designed a comprehensive questionnaire consisting of 31 questions, carefully constructed to capture the relevant aspects of students' experiences in remote learning environments while considering their concurrent paid employment.

To ensure the ethical conduct of our research, we obtained the necessary ethics approval from the appropriate governing body, allowing us to proceed with data collection. The survey was then administered to the targeted student population, and responses were collected for subsequent analysis. The collected data included both quantitative and qualitative information. For the qualitative data, four open-ended questions were included in the survey. These responses were carefully coded to identify recurring themes and patterns, enabling a deeper understanding of the students' experiences and perspectives. The quantitative data obtained from the remaining questions were subjected to statistical analysis techniques to derive meaningful insights.

Through a rigorous process of data coding and analysis, we examined the responses to gain a comprehensive understanding of the effects of remote learning on the surveyed students, considering the influence of their concurrent paid employment. The results obtained from this analysis serve as a basis for the subsequent discussions and conclusions drawn in this study.

Specifically, our survey consisted of three demographic questions, 24 close-ended, and four open-ended questions—designed using the cognitive model (Verschaffel et al., 2020; Sudman et al., 1997). Given the pandemic conditions and

the fact that most classes were online, it was determined that only an online version of the survey would be produced. Therefore, participants were recruited via online posters and during online lectures. In February 2022, students attending various courses under the Department of Mathematics and Computing umbrella at MRU were surveyed regarding their experiences with and feelings about remote learning during the COVID-19 pandemic.

Following a brief demographics section, there was a series of nine questions pertaining only to those who were working students at any point during the pandemic. The next section contained 15 questions regarding students' feelings about online learning and a self-assessment of their performance through the experience, almost all of which were designed as Likert-scale rating questions. Finally, students were given the opportunity to express in their own words the positive and negative aspects they experienced while learning online, as well as any other experiences or challenges they wanted to include regarding online learning and/or being a working student. The close-ended questions were processed using Microsoft Excel pivot tables, and the open-ended responses were analyzed for common word/phrase frequencies using a Java program custom-built by a hired coder.

ETHICAL CONSIDERATIONS

All participants were informed of the purpose and scope of the survey. Participation was voluntary and anonymous. Participants were informed that they might skip any question they did not feel comfortable answering. They were asked to digitally consent to the submission and analysis of their anonymized data before the commencement of the survey. Ethical review for this study and approval of it was overseen and granted by MRU's Human Research Ethics Board (HREB).

RESULTS

The survey had 181 respondents, 87% of whom self-identified as male and 12% self-identified as female (see Figure 1). Seventy-five percent of respondents were between 18 and 23 years old, while the remaining 25% were 24 years old or older (see Figure 2). All but one of the respondents were affiliated with the Department of Mathematics and Computing.

Salmani, K., Conley, J., Uzoka, C. (2024). The differential nature of remote learning among university students. *Imagining SoTL, 4*(1), 20-38. https://doi.org/10.29173/isotl673

Figure 1

Gender Demographics

Figure 2

Age Demographics

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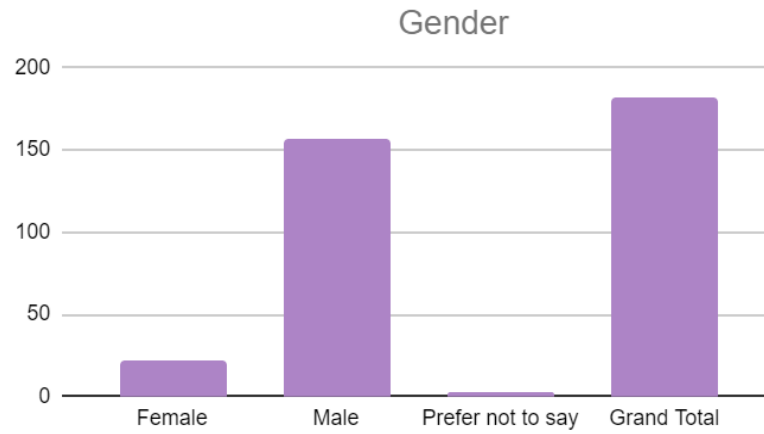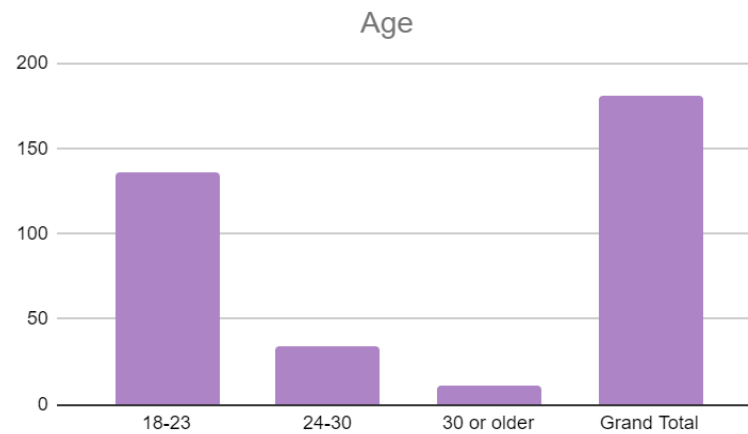
Since the surveyed students were either in the Computer Science or Computing Information Systems degree programs at MRU, there may also be some selection bias in the responses given the stronger tendencies towards introversion for computing students (Chandler et al., 2003) compared to another disciplinary group, such as communications students, or compared to the general population. This caveat is important because the results show a significant split between those who report being happier and more successful in their educational pursuits in an online learning model and those who wished for a return to in-person classes as soon as possible.

This is not necessarily to argue that a large percentage of those surveyed were simply made happier by having fewer interactions with people daily, but just that the absence of those interactions had less of a negative impact on them than it otherwise might have had on population consisting of more extroverts than introverts. This negative effect being a muted one, coupled with the time saved from the lack of needing to commute and the flexibility afforded by the nature of digitized courses, yielded a perceived net benefit to many in the surveyed group that may not be applicable in the same proportion over larger, more diverse populations. This is somewhat indicated by the fact that a surprising number of students responded that they would consider registering for courses delivered in a similar online style (59%) or hybrid style (53%) in future semesters, irrespective of having any concerns over communicable pathogens.

The survey posed a blend of questions that both address mental health directly (anxiety levels, comfort with participating in class, level of distraction, etc.) along with questions that infer impacts on mental health through realized consequences (impact on grade-point-average, needing to quit a job due to course load, changes to perceived course difficulty, etc.). Additionally, 57% of the respondents found themselves more distracted in an online class as compared to an in-person classes (likely due to the natural lack of accountability that comes with a muted microphone and a turned-off camera that is common in online lectures), while 43% reported finding themselves equally or less distractible in online classes. Of particular importance to this specific set of students is the effectiveness of their programming courses. Forty-four percent found the online programming versions easier, 30% found them more challenging, and the remaining 26% saw no difference in the degree of difficulty based on delivery type. Given the finding that students are so evenly split on their preference towards online versus traditional learning modes, we recommend that future research be conducted to pinpoint what common characteristics drive certain students towards their preferred learning method.

It is interesting to note that 43% of participants were not MRU students prior to the pandemic, meaning that at the point of taking the survey a significant percentage of the respondents were more familiar with online learning models than with in-person learning models when it comes to their university experience.

Working Students

Crucial to the purpose of this study was to understand how many students were

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working during the pandemic and whether this variable appeared to have an impact on these students' impressions of their remote learning experience compared to those who were not working. We learned that 62% of students had a full- or part-time job prior to the pandemic (that is, before March 2020), and 60% were working students at the time of taking the survey, indicating a net decrease of 2% of students holding jobs during the pandemic as compared to prior to it. In addition, 76% of students answered in the affirmative to at least one of these two questions, indicating that the "working student" component of this survey was applicable to over three-quarters of respondents. We wanted to understand how students were responding to the combined stresses of working while attending university and thus learned that 22% of working students reported dropping a course due to their job commitments, while 21% reported quitting their job in order to keep up with their course load. This suggests that a significant number of students struggled to balance work and school commitments. Of those who did not have a job before the pandemic, 30% were working at the time they took the survey, and of those who had a full- or part-time job before March 2020, 25% were no longer working at the time they took the survey.

Interestingly, exactly 50% of respondents felt that working during the pandemic was easier, while the other 50% felt it to be harder. This may be indicative of a personality split as it pertains to work-style preferences. It may also be a result of the type of work students were employed in, where certain jobs were easier to adapt to the pandemic conditions while others were made more challenging by them. It was also important to determine any changes to how much time students were committing to work before the pandemic versus during it. Sixty-seven percent of respondents worked the same number of hours or a fewer with the onset of the pandemic, while 33% were working more hours as compared to before the pandemic. Since this finding does not match the figure that half of the respondents found working to be easier during the pandemic, the fact that two-thirds had the same or reduced hours likely means that the number of hours available to them was not in their control and that the biggest factor was in how the pandemic affected demand for the business they worked for. Thirteen percent of the working students either agreed or strongly agreed with the statement that they had skipped more classes specifically because of their job than they typically needed to skip prior to the pandemic. Comparatively, 48% of all students agreed or strongly agreed with the statement that they had skipped more classes (for any reason, not just for reasons relating to their job) than they typically skipped prior the pandemic.

Online Courses

The impetus for our focus on assessing the impacts of remote learning on students has largely been out of concern for students in an attempt to quantify just how negatively the experience has affected their mental health. However, this is also an opportunity to assess negative aspects of the status quo of in-person classes when taking into account the positive aspects students may have experienced while learning remotely. A personality division and division in perceived experience is

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evident in the result that 44% of respondents agreed or strongly agreed that they spent less time on courses following the start of the pandemic, while 42% disagreed or strongly disagreed.

Attendance

One of the worries of not requiring students to come to campus in order to attend lectures is that they may have been less likely to mentally commit their day to lectures, resulting in more skipped lectures. As it turns out, 48% of respondents suggested that they had been skipping lectures (irrespective of having a separate job) more often than they otherwise were prior to the pandemic. This may be due to the fact that many online lectures were recorded and posted online for students to review later, allowing students more flexibility in deciding how necessary it was to attend live sessions when they knew they would be able to catch up at a more convenient time.

Online Delivery Methods

Of natural importance to educators is understanding the optimal delivery method for their instruction with respect to holding synchronous (scheduled) lectures or asynchronous (pre-recorded and posted) lectures. There is a lot to be said about the freedom and flexibility that comes with being able to schedule your own lecture time as a student. However, many might admit that they need the accountability that tends to come with a live class in order to optimize their chances of success. As such, 28% of respondents preferred synchronous lectures, 17% preferred them to be asynchronous, and 55% preferred a hybrid combination of the two. It is important to note that it was common for live lectures to be recorded and posted online for students to review later, whether that was because students missed the live version or were simply using these lectures for review. It is possible that some of the students who reported skipping lectures more often during the pandemic meant that they were skipping the live version and catching up later by viewing the recording.

Performance

Perhaps the most positive revelation from the survey was the number of students who reported that their grade-point average (GPA) had remained the same (45%) or even improved (32%) throughout their online learning experience. While overall mental health is still something to be concerned with, it is relieving that over three-quarters of students remained mentally healthy enough to at least keep up with their academic obligations. Despite this, only 31% agreed that online teaching tools are more effective than the tools available for in-person instruction. However, another 30% were indifferent, meaning that they feel both types of tools are equally as effective.

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Mental Health

A series of questions was designed to get an indication of the students' mental health patterns through the process of learning online. Seventy-four percent of respondents agreed that online classes were more convenient than in-person classes, 88% agreed that online classes provide more flexibility, and 61% agreed that their time management was improved while taking classes online. These three important figures combine to indicate a reduction in stressors that pertain to how students were able to handle their studies while taking classes online. Following this theme, 53% of students noticed themselves feeling less anxious in their classes when taking them online. There may be something to be said for being able to focus only on the content of the class without the extra layer of self-consciousness that comes with being in a public setting. Forty-two percent also reported feeling more comfortable participating in their online classes. Part of this may have to do with the fact that most online classes encourage participation via a chat box, a form of communication that millennials and Gen Z tend to feel most comfortable with. Unfortunately, and as might be expected, 76% did not agree that there were fewer distractions while attending lectures at home. Learning from home, thus, must be viewed as a double-edged sword.

Programming Courses

Of particular concern to the authors of this study was how students felt about taking their programming courses online as compared to their non-programming computing courses and non-computing courses generally. These courses were singled out not only because they form the core of the two degree programs being surveyed, but also because they are unique in that they are a "how-to" class where the student acquires not just knowledge but a functional skill. It is therefore crucial that this skill development is not hindered by delivery methods as future programming classes build on previously acquired programming skills. Thirty-nine percent of students felt that their programming courses were actually easier in the online format, while 33% disagreed. Interestingly, 44% felt that their programming courses were easier online than were their other online courses, while 30% disagreed. The skew towards the feeling that programming courses can be adapted more easily to online formats may have to do with the fact that the instruction often involves reviewing code or watching the instructor write code, which is very conducive to the shared screen format of online learning. Therefore, it may be prudent for programming instructors to conduct shared screen meetings even when students are physically in the same room with the instructor.

Common Themes

The survey included several open-ended questions to capture the qualitative experiences and opinions of the students. To provide a glimpse into the richness of the students' responses, we present a select sample of their answers in Table 1 and Table 2. These tables highlight the diversity of perspectives and provide illustrative

examples that offer valuable insights into the students' experiences with remote learning. The most common words associated with the positive aspects of online classes were "commute" (presumably the lack thereof) (44%), "flexibility" (26%), and "time" (11%). On the negative side, the most common words were "distraction" (43%), "interaction" (in the sense of it being more difficult to interact with instructors and peers) (28%), "isolation" (9%), and "motivation" (in the sense of motivation being harder to find at home) (9%). When coding answers to open-ended questions, we categorized keywords like "distractions," "lack of attention," "interruptions," and other similar words under the "distraction" category. This helped us identify and address factors that may affect the coding process and find solutions to minimize their impact.

Table 1

A Sample of Students' Comments

Student #1	*"Taking courses from home allows more time to work on other assignments that would normally be spent commuting."*
Student #2	*"Lectures being recorded is one of the best features as it allows students to go back and watch a lecture and try to fully grasp a subject that might be harder. The videos allow for working at one's own pace and you do not need to stress if you miss or don't fully understand something."*
Student #3	*"I'm unable to form meaningful connections with classmates and professors."*
Student #4	*"Although online learning may be great for others, it has not been a good experience for me. I have experienced mental health issues for the first time in my life during this pandemic because of school. Everything can get so overwhelming. I didn't realize how impactful and healthy going to school for me was prior to the pandemic."*

Student respondents were also given the opportunity to add anything else they felt had not been covered and were encouraged to leave a comment about any yet-to-be-mentioned difficulties or challenges they faced, or further positive aspects they wanted to make known. Included was a section for students generally and a section specific to working students. Table 2 includes selected comments received from all students.

Table 2

Additional Student Comments

Student #5	*"After going back to in-person classes after having been online for the past year, I found my GPA dropping when compared to online classes where my GPA was higher."*
Student #6	*"I can work and attend online classes at the same time."*
Student #7	*"I could watch a recorded lecture during my break at work."*
Student #8	*"A positive experience I have with online classes is that I am able to go to the gym, eat a proper meal, catch up on homework, etc. right after finishing my classes, instead of having to endure a 1 hour 30 min commute back home. This overall left me in a much better physical, mental, and academic state."*
Student #9	*"Having classes online makes it easier to balance work and school."*
Student #10	*"Working and attending classes in the same space is stressful."*

The selected comments were chosen not for their extremity, but rather as succinct or eloquent representations for one of two prominent opinions/experiences with remote learning. The view that in-person learning and online learning formats both have their pros and cons was almost nonexistent. Respondents tended to have a firm and extreme stance towards one or the other in fairly even distribution.

Future Possibilities

Finally, the survey asked the students directly about what mode of class delivery they would opt for in the future if given the choice. Fifty-nine percent of students agreed that they would take classes online even after the pandemic, while 27% disagreed, and 14% were indifferent. Fifty-three percent also indicated that they would be interested in a model that alternated online lectures with in-person lectures once per week.

DISCUSSION

The present study aimed to investigate the theoretical implications of remote learning on working students and to address the research questions raised earlier. Our findings provide valuable insights into the challenges and experiences faced by working students during the pandemic, shedding light on the potential impacts of remote learning on their academic and professional lives.

We sought to examine the impact of remote learning on the work-study balance of students. Surprisingly, our results indicate that there was not a substantial difference in the number of working students before and during the pandemic. This finding suggests that the proportion of students juggling work and academics remained relatively stable despite the transition to remote learning.

However, a closer examination of our data reveals that a considerable proportion of working students encountered significant challenges in managing their academic and work responsibilities during the pandemic. More than 20 percent of working students reported struggling to balance their academic coursework and job commitments to such an extent that they were compelled to make difficult choices. Some of these students had to drop a course, reduce their work hours, or even quit their jobs altogether to cope with the demands of remote learning.

Conversely, it is noteworthy that approximately one-third of the working students reported an increase in their work hours during the pandemic compared to the pre-pandemic period. This finding highlights the diverse responses of working students to the challenges posed by remote learning. While some students reduced their work commitments to accommodate their studies, others had to devote more time to their jobs, potentially impacting their academic performance and overall well-being.

In addition to the findings on work-study balance, our study also revealed a split in opinions among students regarding the difficulty of working during the pandemic. This divergence in perspectives may stem from the various types of jobs and their unique demands. Some students may have experienced increased work pressure due to the pandemic's impact on their industries, while others may have found their work to be more manageable as they adapted to remote work arrangements.

Considering the diversity of experiences reported by students, it becomes evident that a one-size-fits-all approach to remote learning may not be the most effective solution. Instead, our analysis of the received data suggests that a hybrid learning model, particularly for certain courses such as programming, could be welcomed by both working and non-working students. Introducing a hybrid model that combines elements of in-person and remote learning can offer students the best of both worlds. For those who value flexibility, remote learning provides the freedom to study at their own pace and from any location. On the other hand, the hybrid approach ensures that students do not miss out on essential social interactions with their classmates and instructors, which can foster a sense of community and enhance the learning experience.

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In line with a study conducted by the Pew Research Center (2020), which revealed that 54% of workers expressed a desire to continue working from home post-pandemic, our survey found a similar percentage of students expressing strong preferences for continuing their educational pursuits from the convenience of their homes. This parallel suggests that there is substantial demand among students for online learning options, mirroring the desire seen in the professional workforce.

Similar to the findings reported by Aristovnik et al. (2020), our study also reveals that a significant proportion of students, more than 40%, perceived an increase in their workload as a result of transitioning to online learning during the pandemic. More precisely, 44% of respondents reported needing to spend less time on courses while learning online, whereas 42% required more time. This aligns with the concerns expressed by students regarding the challenges associated with remote learning, including adapting to new technological platforms, managing time effectively, and maintaining motivation and engagement without the structure of in-person classes. Acknowledging this increased workload is crucial for educational institutions and instructors to address and provide adequate support mechanisms to ensure students can thrive in an online learning environment.

As with the findings reported by Kamarianos et al. (2020), our study also demonstrates that students were able to effectively adapt to online classes, and, as a result, their academic performance, specifically measured by their GPA, was not significantly impacted. This suggests that despite the challenges posed by the transition to remote learning, students were able to overcome obstacles and maintain their academic achievements. These findings highlight the resilience and adaptability of students in navigating online learning environments and emphasize the importance of providing appropriate resources and support to facilitate successful learning outcomes in virtual settings.

However, the division of opinions regarding online learning presents a challenge for educators in course design. The results indicate that there is ample justification to offer online versions of classes, considering the significant desire expressed by students and evidence suggesting that online learning positively impacts their overall mental health without compromising their academic performance. However, it is worth noting that students who prefer traditional methods often share similar mental health motivations for their preference. Hence, instructors may explore hybrid models by making informed decisions about specific lectures, tutorials, or labs that could be shifted online. This approach can be based on factors such as the suitability of the topic for an online format or the expectation of a shorter meeting that does not warrant the physical presence of a large group in a world where virtual options are normalized and easily accessible.

However, scheduling complexities arise when students have a mix of in-person and online courses. As institutions adapt to the post-vaccine era of COVID-19, many are offering a combination of instructional methods across different courses. As a result, students with unfortunate schedules may face challenges when they have an online course immediately before or after an in-person course. This situation necessitates traveling to campus and finding a quiet place to attend their

virtual lecture while ensuring they arrive on time for their in-person lecture. Such a scenario defeats the purpose of having online lectures, as students miss out on the benefits of in-person interactions while still needing to be physically present on campus in spite of having a virtual lecture, creating a potential "worst of both worlds" situation.

Nevertheless, much like the finding that 54% of workers want to continue working from home post-pandemic (Pew Research Center, 2020), our survey found that a similar percentage of students have strong feelings about continuing to take classes from home. The split in opinions regarding online learning poses a problem for educators in designing courses. There is clearly more than enough desire on the part of students to justify continuing to offer online versions of classes, in addition to evidence that online options benefit the overall mental health of those who prefer them without negatively affecting their performance. However, students who prefer traditional methods seem to largely prefer them for the same mental health reasons. Instructors may experiment with hybrid models by making judgements about individual lectures, tutorials, or labs that could be shifted online, either because the online format suits the needs of the topic better or simply because they expect that day to be a shortened meeting that does not justify the students' travel in a world where virtual options are available.

In general, the benefits of online learning are clear based on the preferences students expressed. As offices around the world are forced to rethink how they schedule their staff due to similar levels of preference for remote work, post-secondary institutions will need to follow suit and adapt their learning models if they wish to continue preparing students for entry into the workforce, as it may very well be a virtual one.

CONCLUSION

We are confident that the results of our study will serve as an invaluable resource for future researchers in the field of remote learning and its impact on post-secondary education. The insights gained from our research have the potential to benefit various stakeholders, including post-secondary advisors and curriculum committees, educators, and instructors. By understanding the preferences, challenges, and educational outcomes of students who experienced remote learning while balancing their employment, these findings can inform the design of new courses or modifications to existing ones. This will enable educational institutions to better meet the evolving needs of the new generations of students, ensuring that the curriculum aligns with the realities and demands of the digital age. The implications of our research extend beyond our specific study cohort, providing valuable insights that can contribute to the ongoing improvement and enhancement of remote learning practices in higher education.

In summary, many results were close to being evenly split between students who thrived in the online learning environment and those who indicated a decline in academic success or mental health, if not both. The open-ended questions also yielded extreme positive and extreme negative feelings about remote learning.

However, the most telling results were that respondents agreed remote learning creates more flexibility (88%), is more convenient (72%), and allows them to manage their time better (61%). Consequently, 59% of students would consider online-style courses if given the option in the future.

Our research strongly advocates for the integration of online courses as a permanent option in the future of education, especially for students with specific personality traits or preferences that align with remote learning. As the dynamics of post-pandemic education evolve, our study underscores the considerable advantages of offering online courses beyond the temporary context of the pandemic.

If post-secondary institutions provide a long-term option for online classes, students will gain access to unparalleled flexibility in their learning journey. This approach allows students to customize study schedules to meet their individual needs, benefiting those with various commitments like part-time jobs or personal responsibilities. The freedom to adapt their learning environment contributes to a more balanced and personalized educational experience.

Additionally, a hybrid-delivery approach, combining both online and in-person elements, emerges as a compelling solution. This model offers the best of both worlds, as it preserves the convenience and adaptability of online classes while recognizing the crucial role of social interactions in the learning process. The importance of social connections cannot be understated as they positively influence students' performance and overall mental well-being.

By embracing the permanence of online courses and adopting a hybrid model, educational institutions demonstrate a commitment to catering to the diverse needs and preferences of their student body. This adaptive approach not only enriches the learning experience, but also fosters academic success and nurtures positive mental health outcomes for students.

In the evolving landscape of post-pandemic education, it is imperative for educators and institutions to recognize the potential benefits of these innovative approaches and adjust their teaching strategies accordingly. By embracing these changes, we pave the way for a more inclusive, dynamic, and impactful educational system that empowers students to thrive in the face of various challenges.

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