Abstract

In recent years, the landscape of higher education has witnessed a significant shift towards diverse modes of study (Gilakjani, 2017; Munna & Kalam, 2021). Traditional face-to-face instruction is no longer the sole option for undergraduate students, as institutions now offer a range of alternatives such as online courses, and blended and hybrid models (Haleem et al., 2022). This expansion in the modes of study provides students with increased flexibility, access to resources, and opportunities for personalized learning experiences. However, the factors influencing students' choices among these various modes of study remain an area of interest and importance. This study aimed to explore the contextual factors influencing undergraduate students' choice of mode of study in a multi-mode teaching environment. It adopted a qualitative approach, employing semi-structured interviews to gather in-depth and nuanced perspectives from a diverse sample of undergraduate students. Through this qualitative exploration, this study uncovered the underlying themes that align with the constructs of Rogers’ (1995) Diffusion of Innovation (DOI) model, a well-established framework for understanding the adoption and diffusion of new ideas or technologies. The thematic analysis approach suggested by (Braun & Clarke, 2006) was chosen for this study, which led to the identification and interpretation of recurring patterns and themes within the interview transcripts. The six dominant themes that emerged from the analysis were examined in relation to the constructs of the decision-making unit and perceived characteristics of innovation of the DOI model. Overall, the study provides a nuanced understanding of the different contextual factors that influence students’ decision-making process in choosing a particular mode of study in a multi-mode teaching environment. The findings have practical implications for educational institutions aiming to optimize their mode of study offerings and enhance student satisfaction and engagement. By understanding the contextual factors that influence students'
choices, institutions can align their resources, support mechanisms, and pedagogical practices to cater to students' needs and preferences. Further research is suggested to validate and expand upon these findings, by reaching out to a larger and more diverse sample of students.
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Contextual factors influencing university students’ choice of mode of study in a multi-mode teaching environment: A thematic analysis

Chapter 1: Introduction and Background

The teaching and learning process in educational institutions has encountered a dynamic shift over the course of years (Broudy, 1988; Cohen, 1999; Munna & Kalam, 2021; Tedman & Tedman, 2007). Modes of teaching play a key role in ensuring the effectiveness of a teaching and learning process (Becker & Watts, 2001; Shirani Bidabadi et al., 2016). Due to the advancement of technology modern teaching and learning methods are significantly different from past practices (Gilakjani, 2017; Haleem et al., 2022). Teaching practices in educational institutions have come a long way shifting from traditional in-person format to distance education/ e-learning to finally reaching blended-learning techniques (Archibald & Worsley, 2019). In the early 1930s, learning practices were limited to transmitting facts without much focus on student engagement, but modern teaching methods involve student participation and knowledge-sharing activities (Chavoshi & Hamidi, 2019; Crompton, 2013). From earlier in-person teaching modes that required the synchronous presence of learners and educators in a classroom setup, the teaching trends have taken a dynamic route involving online platforms, multimedia tools, and information and communication technologies (ICT) (Aoki, 2012). Peñalvo and Pardo (2015) used generation as a metaphor to explain the evolutions in e-learning processes. They categorized the process into three generations, the third generation being the contemporary one that combines technological aspects and e-learning concepts. The technology aspect highlights the integration of a learning management system (LMS) with conventional e-learning practices (Garcia et al., 2021). The inclusion of technological tools bridged the gap between traditional face-to-face and e-learning
and made the teaching approach more flexible and inclusive for learners (Bernard et al., 2014; Panjaburee et al., 2022).

The emergence of Covid-19 shifted a lot of regular work cycles. In a post-Covid world where things are returning to normal, some educational practices adopted during Covid remain to be relevant (Alzahrani, 2022; Oda Abunamous et al., 2022). Online learning has been practiced for a while in academia. But with a shift from in-person to online we saw a revolution in the usage of different educational technologies and the introduction of different study modes (Fabriz et al., 2021; Stuart et al., 2022; R. Zhang et al., 2023). The paradigm shift is more evident in different blended learning approaches adopted by many educational institutions. During Covid online teaching methods were adopted by a lot of educational institutions minimizing the physical presence due to safety concerns. After Covid, there is a rise in hybrid/blended learning methods including a combination of online course delivery with face-to-face interactions (Chavoshi & Hamidi, 2019; Meydanlioglu & Arikan, 2014) in academia. The hybrid modalities provide more flexibility to students by offering in-person, synchronous online, asynchronous online, or HyFlex options all of which offer different combinations of online-offline activities (Beatty, 2019, p.22).

Adoption of teaching and learning methods depends on multiple factors including but not limited to course curriculum, faculty preferences and capabilities, student perception, learning environment, and technological infrastructure among other factors (Nortvig et al., 2018; Sharma et al., 2022).

There is no generic consensus in suggesting which kind of teaching mode best serves students. For different courses and learning environments, students react differently toward new teaching modes (Panjaburee et al., 2022; Vidal et al., 2021; Watson et al., 2023). While some students prefer the flexibility and cost-effectiveness of online teaching modes others may not prefer it for the lack of
interaction and technological complexities (Bagdatli & Ipek, 2022; Keskin & Yurdugül, 2019). Some studies concluded learners have a positive attitude toward e-learning systems (Al-Rahmi et al., 2019; Chen, 2014; Lam et al., 2014; Zhu et al., 2020). On the contrary, several studies pointed out learners’ preference for in-person learning over e-learning (Ladyshewsky & Taplin, 2013; Singh et al., 2021; Tan et al., 2022). Therefore, the learning preference varies in different setups depending on several contextual factors.

E-learning can be conducted either synchronously or asynchronously. For asynchronous methods, Keegan (1996) suggested the involvement of classroom instruction (CI). Synchronous e-learning involves real-time engagement via different video conferencing tools. Synchronous learning reduces the feeling of isolation among learners (Hrastinski, 2008). In asynchronous e-learning, educator-learner communication is maintained through discussion boards, emails, and other technical tools where none of the participants need to be online at the same time (Hrastinski, 2008). While many studies compared the learning experience in synchronous and asynchronous teaching modes during Covid (Fabriz et al., 2021; Stuart et al., 2022; R. Zhang et al., 2023), in a post-Covid era researchers are exploring different hybrid teaching modes incorporating both synchronous-asynchronous techniques (Mohammadi, 2023; Moorhouse & Wong, 2022).

1.1 Background and motivation:

Several studies compared the experience of e-learning vs in-person learning (Baber, 2020; Peat & Franklin, 2003; Shu & Gu, 2018; Singh et al., 2021; Wang, 2010) or focused on the adoption of e-learning (Al-Rahmi et al., 2019; Orton-Johnson, 2009; Szopiński & Bachnik, 2022; L. Zhang et al., 2010). But a very limited set of studies have focused on students’ perception of choosing a particular mode of study in a diverse environment where different teaching approaches are integrated. Some researchers doing quantitative studies tried to explore the factors that influence
students’ choice within a particular demography, or discipline or limited the study within the scope of online and in-person education (Bailey et al., 2015; Ladyshewsky & Taplin, 2013). Nevertheless, researchers are yet to explore the determinants for choosing a specific mode of study in a multimode teaching environment. By identifying the factors that influence students' mode of study preferences, educators can tailor their instruction to better meet students' needs and or preferences. This knowledge allows for the design and delivery of instructional materials and activities that align with students' preferred modes of learning, leading to enhanced engagement, motivation, and learning outcomes. Understanding students' preferences helps educational institutions allocate resources effectively and guide decisions related to infrastructure, technology, and instructional support, ensuring resources are utilized optimally. It also helps institutions address issues of equity and access. It enables educators to identify and mitigate barriers that may prevent certain groups of students from choosing their preferred mode of study. This knowledge can inform the development of inclusive policies, accommodations, and support services that ensure equal opportunities for all students.

Students who have the flexibility to choose their preferred mode of study are more likely to persist and remain engaged in their educational journey (Kortemeyer et al., 2023). By identifying the factors that influence their mode of study choices, institutions can create supportive environments that promote student retention and success. This study created a platform for students to share their opinions and the improvements they expect in the current learning environment. It aims to explore the perspectives of students from different social, cultural, and demographic backgrounds to understand which learning mode they find most useful and why. It looked further into whether their choices are subjective or impartial and which factors influence these decisions the most.
Findings of the research will be beneficial for current and future academicians to understand learners’ needs so they can design courses accordingly.

1.2 Rationale:

The e-learning dynamic has significantly changed, and new approaches are being introduced in the process including multiple blended learning approaches (Alammary et al., 2014). There is a gap in the literature in terms of addressing these different approaches from a student’s perspective using qualitative methods. Qualitative methods can uncover new insights relevant to blended learning adoption. As the study aimed to explore the individual insights and personal experiences of students in different blended learning teaching modes, semi-structured interviews were more appropriate for the research rather than focus-group, observation, or document analysis. Semi-structured interview is a flexible but focused approach that allows in-depth exploration of a research question. The open-ended format often helps to gain new insights and explore complex nuances that are otherwise hard to find within a pre-defined format. This approach helped to understand the context and perspective of students and the different factors that impact their choices for modes of study. For this study, the sample population consisted of undergraduate students at Carleton university. The five modes that are offered to undergraduate students in the Carleton registration portal during course registration were explored for this research (Carleton, 2023). A brief description of each mode is provided below:

- **Traditional In-person Mode:** Traditional in-person mode refers to the conventional method of teaching where students physically attend classes in a designated learning environment, such as a classroom or lecture hall, and interact face-to-face with instructors and peers. This mode of instruction has been the dominant form of education for centuries and has certain benefits and disadvantages. The traditional in-person mode offers advantages such
as real-time clarification of doubts, active discussions, and immediate feedback, which promote a better understanding of the subject matter. It also provides opportunities for personalized attention from instructors and social interaction among students, enhancing collaboration, teamwork, and the development of interpersonal skills (Bernard et al., 2004). However, traditional in-person mode may have limitations, including limited flexibility for students with other commitments and a one-size-fits-all approach that may not cater to diverse learning needs and or preferences (Owens & Price, 2010). Also, the safety concerns during Covid made it nearly impossible to continue the traditional teaching and learning practices.

- **Online Synchronous Mode:** A real-time, online course where the instructor and students meet via web conferencing tools, at scheduled days and times. Instructors and students share information, ideas, and learning experiences in a virtual course environment. Real-time interpersonal connection, on-time feedback, and a natural flow of communication are the main strengths of synchronous online learning (Blau et al., 2017). On the contrary, this mode is deemed to be less useful for complex discussion and deep-dive sessions (Hrastinski, 2010).

- **Online Asynchronous Mode:** An online course where the instructor and students share information, ideas, and learning experiences in a virtual course space. The online asynchronous section helps students to tackle different health, environment, distance related circumstances and continue their studies without external interventions (White et al., 2010). However, this format has certain limitations i.e., reduced interaction between instructor and students, lack of social presence, and less spontaneity compared to other formats of studies (Han, 2013; Karal et al., 2011)
• Online Combined Synchronous/Asynchronous: An online course where there is a mixture of synchronous meetings and asynchronous activities. Researchers have found that online synchronous mode helps students to learn practical skills that improve their learning experience, academic performance, and outcome (Ogbonna et al., 2019; Saviour et al., 2012), whereas cognitive development and meaningful idea creation are higher in asynchronous mode (Garrison, 2011; Hrastinski, 2008; Ogbonna et al., 2019).

• In-Person Section with Flexible Online/On-Campus Attendance (HyFlex): In the Hybrid-flexible (HyFlex) model, a single section is offered simultaneously to both on-campus and students studying online by the same instructor. In this format, courses need to be designed in a way that provides equal opportunities for classroom participation for both online and classroom students (White et al., 2010). Online students need to interact with the instructor and other students; and engage in the learning activity the same way as classroom students (Szeto & Cheng, 2016). Also, the course design should accommodate the online students so that their participation positively impacts classroom students (Szeto, 2015). In a hybrid-flexible model instructors need to pay more attention to provide equal opportunities to both online and classroom students and maintain the balance of their interactions (Bower et al., 2015).

As these five modes provide different levels of flexibility to students, it was interesting to figure out their opinions and concerns for each of these modes. This research aimed to shed light on the different factors that influence the choice of mode of study by exploring students’ individual experiences and preferences given that there are multiple modes. So, it explored students’ decision-making process through the overarching research question:
“What are the contextual factors that influence undergraduate university students’ choice of mode of study in a multi-mode teaching environment?”

In the pre-Covid setup, students were more accustomed to traditional learning methods with moderate use of technology. During Covid students had no other option than adopting online methods. In a post-Covid new normal setup where students have access to more innovative learning approaches that integrate previous methods and have the option to choose different modes for their courses, it was interesting to see how they assess these modes and make their selection. Moreover, analyzing how this selection was not constant and varied depending on several factors was another interesting aspect of this study. This study provides a new perspective by implementing a qualitative method to explore the research question, unlike the contemporary literature that is dominated by quantitative analysis. The findings of the research will be beneficial for students, educators, and authorities in understanding the perceptions of different teaching modes and how the design and structure of the teaching process can be improved.

The introductory chapter provided an overview of the background, motivation, and broader contextual setup for this study. In chapter 2 relevant literature is discussed concerning the evolution of teaching methods and the theoretical frameworks that are used to explore similar research areas. Chapter 3 outlines the research question and theoretical foundation namely Rogers’ (1995) diffusion of innovation (DOI) theory. Chapter 4 explains the three-phased research methodology framework and research instruments (participants, data collection, and data analysis approach). Chapter 5 represents the qualitative data analysis process and demonstrates the six dominant themes that emerged from the study through the data structure suggested by Gioia et al. (2013). Chapter 6 shows how the emergent themes align with the constructs of DOI theory. A broader categorization of codes is also presented in this chapter that aligns with existing literature and
supports the findings. Later on, the summary of findings revisits the research question and shows how the contextual factors are identified in relation to the research question. The remainder of the chapter shows implications for practice based on students’ suggestions. Chapter 7 recapitulates the main ideas of the study and outlines the contributions of the research followed by direction for future research and acknowledgement of limitations of this study.

**Chapter 2: Literature review**

From the early twenty-first century, the emergence of digital technologies has had a significant impact on various aspects of our lives, including work, leisure, and social connections (Moorhouse & Wong, 2022). Initially, the influence of digital technologies on education was limited, as the generic technologies available had limited practicality in the classroom (Cuban, 2001). However, in recent years, there has been a notable shift with the introduction of digital technologies specifically designed for educational purposes or with enhanced utility in the classroom (Haleem et al., 2022).

Technological advancements such as presentation software, learning management systems (LMS), and web-conferencing tools have begun to play a prominent role in the field of education (Moorhouse & Wong, 2022; Tay et al., 2017; Voogt et al., 2018). These tools have been tailored to cater to the specific needs of educators and learners, facilitating more effective teaching and learning experiences. Moreover, alongside these instructional tools, the administrative responsibilities of teachers are also becoming increasingly digitized (Shah, 2014). Inclusion of these innovative tools and strategies resulted in greater engagement in online and blended learning approaches both at institutional and individual levels (Alammary et al., 2014; Chigeza & Halbert, 2014).
Online learning communities have the potential to foster a sense of connection among learners and establish trust among students, enabling them to tap into each other as valuable resources for knowledge construction and growth (Cho & Tobias, 2016). However, it is important to note that such engagement does not occur automatically; the development of a learning community requires dedicated effort and time (Beth et al., 2015). Furthermore, participants must feel that they are engaging in meaningful human-to-human interactions that foster both professional and personal relationships. In this regard, the presence of an educator plays a crucial role in fostering student engagement (Cho & Tobias, 2016).

Several researchers have emphasized the significance of educators in scaffolding students' participation in asynchronous online discussions, thereby facilitating effective learning (Beth et al., 2015; Cho & Tobias, 2016). For instance, Beth et al. (2015) conducted a study on responsibility and generativity in asynchronous online discussions within a hybrid course and concluded that educators can structure online discussions in terms of both quantity (e.g., scheduling regular discussions and requiring a minimum number of posts) and quality (e.g., encouraging a conversational tone, providing contextual information, and addressing academic questions and comments to peers).

On the other hand, Mary et al. (2014) discovered that in blended courses with limited in-person classes, synchronous online classroom sessions that involve interaction and discussion can positively contribute to students' sense of connectedness with their educator and fellow peers. Overall, current literature suggests that while online learning communities have the potential to foster connectedness and trust among students, creating and nurturing such communities requires intentional effort. Educators play a critical role in guiding and facilitating student engagement through clear guidelines, improvising techniques, and fostering interactive discussions in both
asynchronous and synchronous learning environments (Cho & Tobias, 2016; Mary et al., 2014; Nortvig et al., 2018).

Researchers have used a wide range of theories to study the implication of different teaching and learning methods in educational institutions. The Technology Acceptance Model (TAM) is a widely used theoretical framework for understanding individuals' acceptance and adoption of technology. While TAM was initially developed for studying the adoption of information systems in business settings, it has also been applied to investigate the acceptance and use of technology in educational contexts, including teaching methods (Alshurafat et al., 2021; Chen et al., 2010; Scherer et al., 2019). Chen et al. (2010) investigated the relationships between perceived usefulness, perceived ease of use, attitude, and behavioral intentions toward LMS adoption among college students. TAM has been also applied to investigate the acceptance and usage of various educational technologies, such as educational apps, interactive whiteboards, or gamified learning platforms (Alshurafat et al., 2021; Panjaburee et al., 2022). Researchers have examined how TAM constructs influence teachers' or students' acceptance and adoption of these technologies (Scherer et al., 2019).

Alshurafat et al., (2021) used a combination of TAM, theory of reasoned action (TRA), and social capital theory (SCT) to study factors that positively or negatively impacted online accounting education during Covid. While investigating factors influencing tertiary students’ choice of mode of study in an Australian institution Ifenthaler et al. (2014) used the concept of intrinsic motivation as it relates to students’ area of interest and other relevant factors that influence their decision-making process. Raman et al. (2022) combined the self-determination theory (SDT) and the unified theory of acceptance and use of technology (UTAUT) to examine the influence of intrinsic motivation on behavioral intention and actual use of LMS in the blended learning environment.
Findings of the research showed intrinsic motivation moderately influences behavioral intention and actual use of LMS.

The DOI theory (Diffusion of Innovations) has been applied in recent years to study the choice of mode of study in various educational contexts. This theory focuses on how new ideas, practices, or technologies are adopted and spread among individuals or groups. Frei-Landau et al. (2022) used DOI theory to understand the mobile learning adoption process during Covid and revealed 12 themes that relate to the five stages of innovation adoption. Grgurovic (2013) considered the use of a learning management system (LMS) in a language program as an educational innovation and examined the innovation attributes outlined by Rogers's (1995) DOI model (relative advantage, compatibility, complexity, trialability, and observability). Similarly, Boland (2020) also used DOI theory along with social capital theory to explore the adoption process of LMS Blackboard technology at two universities. Their research findings showed that the concept of a specific innovation is communicated through social channels by the members and stakeholders and they need to ensure smooth transition for the members. This study also used DOI theory to understand the attributes of technological integration in the teaching methods and what are the factors that influence students’ choice of mode of study in a multi-mode teaching environment.

2.1 Modes of study:

There are many studies (Bernard et al., 2014; Chigeza & Halbert, 2014; Gonzalez-Gomez et al., 2016; Israel, 2015; Northey et al., 2015; Ryan et al., 2015) that focused on comparative analysis of face-to-face and online/blended learning to analyze which mode is superior to the other in terms of learning outcome, student satisfaction, course completion rate among other measures. But as discussed earlier most of these studies have categorized the teaching modes in three broad
categories namely face-to-face (F2F), online, and blended learning. Specific attention to different blended learning approaches is rare in the existing literature.

Although the explicit definition of blended learning remains debatable (Bernard et al., 2014; Chigeza & Halbert, 2014), the distinction between the three learning modes has reached a consensus among researchers. Face-to-face being the format that has been practiced for the longest time is known as the ‘traditional format’, whereas online and blended learning emerged as modern interventions (Adams et al., 2015; Chigeza & Halbert, 2014; Gonzalez-Gomez et al., 2016; Pellas & Kazanidis, 2015). The traditional format involves the synchronous presence of both students and teachers in a physical classroom which may or may not involve the use of educational tools and technologies (Bernard et al., 2014).

While some researchers view the classroom to be a crucial setup for learning that is not replaceable by a virtual environment (Stewart et al., 2011) others have argued that under different circumstances online learning can be an effective tool (Kear et al., 2012; White et al., 2010). Online learning represents contradistinction to physical learning as the physical classroom feature is usually replaced by online presence using web-based or other online tools making the setup independent of restrictions relating to time, space, distance, and pace (Bernard et al., 2014; Chigeza & Halbert, 2014; Israel, 2015; Northey et al., 2015; Potter, 2015).

In the past few years researchers have used the terms blended learning and hybrid learning interchangeably (Ryan et al., 2015). This study will also use the terms interchangeably as they share similarities in their approach to combining traditional classroom instruction with online synchronous and asynchronous learning components which is relevant to the research setup for this study. Motivated by Graham’s (2006) definition Bernard et al. (2014) defined blended learning as “the combination of instruction from two historically separate models of teaching and learning:
traditional F2F learning systems and distributed learning systems” (p. 91). Some researchers found blended learning to be superior when individually compared with F2F and online learning (Gonzalez-Gomez et al., 2016; Pellas & Kazanidis, 2015). Different researchers have concluded that blended learning optimally integrates (Israel, 2015) or combines the benefits (Adams et al., 2015) of online and F2F learning.

In a one-to-one comparison multiple studies showed that students in blended learning environments tend to achieve higher learning outcomes compared to that of traditional formats (Bernard et al., 2014; Gonzalez-Gomez et al., 2016; Northey et al., 2015; Ryan et al., 2015; Southard et al., 2015). On the contrary, Adams et al. (2015) showed in their finding that university students achieved less in hybrid microbiology courses compared to their peers who studied the same course in a F2F environment. The relative lack of interaction in a hybrid environment and the sense of isolation are some of the potential factors that affected these students. Similarly, Powers et al. (2016) conducted a study on students of an introductory psychology course in both hybrid and traditional formats and observed a continuous decline in the academic performance of students studying in the hybrid environment. Lack of face-to-face interaction and difficulty in understanding complicated concepts in a hybrid environment are possible reasons for this decline. However, Northey et al. (Northey et al., 2015) found the independent learning process to be positively impacting students’ learning capacity when they studied a blended education program. The involvement of web 2.0 technology in the program empowered the students to work independently and gain a deeper understanding of the subject matter.

To recapitulate a review of existing literature is not conclusive about one format being better than the others under different circumstances (Northey et al., 2015; Powers et al., 2016). Not to mention the effectiveness of a certain mode of study is subjective to several factors i.e., course structure,
course instructor, student involvement, learning environment and many other factors directly or indirectly related to the learning experience. This study will try to shed light on some of those factors that students perceive to be important when they are choosing a teaching method.

2.2 Blended learning approaches:

The optimal blended learning approach to adopt remains a subject of ongoing debate, as it is highly contingent upon various factors such as course curriculum, learning environment, contextual considerations, and the adaptability of students (Nortvig et al., 2018; Picciano, 2019). As a result, different design approaches have evolved. Alammary et al. (2014) identified three distinct design approaches:

1. Low-impact blend: it involves adding extra online activities to a traditional F2F course. A lot of educators take it as a first step to transform their traditional course into a blended learning format. Kaleta et al. (2007) observed this is more common among inexperienced teachers who simply add an extra online activity to the existing course activities. But such initiatives often fail to capture the essence of blended learning as it lacks the perspective of redesigning the course to fit into the blended model (Alammary et al., 2014).

2. Medium impact blend: in this format, some components of the traditional format are replaced by online activities under the assumption that the online activities will improve their effectiveness. Other components may remain the same or be subjected to change for aligning with the online activities (Twigg, 2003).

3. High-impact blend: this is the most extensive approach that requires a full redesign of the existing course. It involves examining each learning outcome and determining the best blended learning approach to reach that outcome (Harriman, 2004; Hofmann, 2006).
Some studies concluded that the pedagogical setup in blended learning made a difference as they found students in blended learning environments outperformed students who opted for self-study (Bernard et al., 2004; Means et al., 2013). The ultimate objective of adopting a blended learning approach is to ensure the best outcome for learners. That becomes a lot easier when a course is built from scratch keeping the learners’ needs in mind. But going straight to high impact blend possesses its risks. The wide variety of technological tools, a diverse array of delivery mediums, and the subjectivity of different models make it difficult for teachers to design a blended learning course (Alammary et al., 2014). This study will help teachers to gain insight into learners' perspectives and consider that for designing courses in the future.

Chapter 3: Research question and theoretical foundation

3.1 Aims and research questions:

Research Question: What are the contextual factors that influence undergraduate university students’ choice of mode of study in a multi-mode teaching environment?

Students’ learning experiences and outcomes depend a lot on how well they adapt to the learning environment (Adams et al., 2015; Bernard et al., 2004; Fabriz et al., 2021). Their likelihood of accepting the teaching mode impacts their academic performance. While a lot of studies have focused on the measures of student satisfaction and outcome (Baber, 2020; Baruth & Cohen, 2023; Fabriz et al., 2021; Ku et al., 2013) a very limited number of studies have highlighted the factors that influence students’ choice of mode of study in a multi-mode teaching environment. This study explored the contextual factors that students consider to be relevant to their academic needs, learning process, and learning goals.
Canadian universities comprise students from all over the world. The multicultural environment provides a great opportunity to explore the research question with a diverse range of students. The research aimed to find out the different contextual factors that students consider before choosing a mode of study where more than two modes are available. Then, the study tried to analyze those factors based on the five innovation characteristics outlined by Rogers (1995) namely relative advantage, compatibility, complexity, trialability, and observability.

3.2 Theoretical framework

Rogers’s (1995) Diffusion of Innovation (DOI) theory is chosen as the theoretical framework for this study as it reflects on the perception of end users in assessing a new technological implication. The DOI model supports complementing constructs like perceived usefulness and relative advantage that help to analyze users’ selection and adoption choices for new technology (Al-Rahmi et al., 2019). While the technology acceptance model (TAM), theory of reasoned action (TRA), and unified theory of acceptance and use of technology (UTAUT) provide reasonable explanations of user behaviors in using technology (Azizi et al., 2020; Davis et al., 1989; Venkatesh et al., 2012), this study refers back to innovation diffusion theory to understand how the new hybrid teaching methods get momentum and receive gradual acceptance. The DOI model explains the process by which individuals adopt innovations communicated through different channels in a social system over time (Al-Rahmi et al., 2019; Pinho et al., 2021; Rogers, 1995). As learning practices have evolved and are widely adopted across social settings it’s more apt to study the phenomenon through the broader perspectives of the DOI model.

Many researchers have used the DOI model to study e-learning adoption and effectiveness (Al-Rahmi et al., 2019; Chen, 2014; Zhang et al., 2010). It consists of five attributes that play a key role in the innovation decision and acceptance process namely knowledge, persuasion, decision,
implementation, and confirmation as shown in Figure 1. While in the original framework innovation adoption rate was considered an independent variable (Moore & Benbasat, 1991; Rogers, 1995), later on keeping the essence of the research others have considered it as a dependent variable (Agarwal & Prasad, 1997) in quantitative analysis. However, a deeper look into students’ perceptions and experiences from a qualitative lens is missing in the current research arena. As successful innovation in learning modes heavily relies on the perceptions of the end-users, the DOI model provides the appropriate constructs for this study.

![Communication channel diagram](attachment:image.png)

**Figure 1: Conceptual framework of Rogers’ (1995) DOI model**

DOI: Diffusion of Innovation

The DOI theory consists of five stages: 1) The Knowledge Stage involves the acquisition of cognitive knowledge, wherein the learner is exposed to the innovation, becomes aware of it (awareness knowledge), and seeks information on how to use it effectively (how-to knowledge), 2) The Persuasion Stage focuses on cognitions, as attitudes towards the innovation are formed during this phase, 3) The Decision Stage is where individuals decide whether to adopt or reject the innovation. The likelihood of adoption increases with prior opportunities to try it out, 4) The
Implementation Stage involves using the innovation and evaluating the outcomes. Users must receive feedback, assistance, and support from those leading the transition to reduce uncertainty among new users. 5) In the Confirmation Stage, users reflect on the process and its outcomes, seeking confirmation for their decision and their final attitudes (Rogers, 1995). In the first stage of innovation adoption, a potential user’s adoption decision is proportional to perceived effectiveness (PE) (Rogers, 1995). Rogers (1995) suggested, in the knowledge stage prior conditions (PCs) and attributes of individual decision-making unit (DMU) controls whether an innovation will remain attractive and useful for potential users. PCs include perceived requirements, previous/existing practice, innovativeness, and the social norms encountered by individual DMUs (Rogers, 1995). Individual DMUs are regulated by personality traits, socioeconomic characteristics, and communication manners (Chen, 2014; Rogers, 1995).

The DOI theory emphasizes the factors that influence the adoption and diffusion of innovations. In this case, it helps to study the online and blended learning modes including synchronous-asynchronous class activities using a learning management system and assess the different contextual factors that help students to make adoption decisions. Literature shows these contextual factors may include technological infrastructure, institutional support, personal preferences, work or family commitments, geographic location, course availability, social and peer influence, and cost considerations for different modes (Almaiah & Mulhem, 2018; Ozkan & Koseler, 2009; Seo & Gibbons, 2021; Teo & Wong, 2013). The study will explore the relevant factors within the research context and DOI theory provides a holistic approach in understanding the adoption and diffusion of technology within the social setting.
Chapter 4: Research design and methods

The methodology framework for this study was motivated by the three-phase framework suggested by Almaiah et al. (2020) in their study to explore critical factors that influence e-learning system usage during the pandemic. This study consists of three phases as shown in Figure 2. In phase 1, the semi-structured interview method will be used to explore students’ thoughts and perceptions regarding choosing teaching modes. In phase 2 the study will follow Braun and Clark’s (2006) stepwise thematic analysis namely: familiarization with data, generating initial codes, searching for themes, defining and naming themes, and producing the final report. The qualitative data will be analyzed using NVivo 12 software for thematic analysis. Finally, in phase 3 the study will explore how the identified factors relate to the constructs of the DOI model.

This research aims to understand students’ perceptions and preferences for choosing a particular mode of study in a blended learning environment. As qualitative methods reflect on participants’ experiences in a social setting, they add more meaningful contributions to studies that seek to
explore a social phenomenon. Similar sentiments are conveyed by Cronbach (1975) who suggests quantitative research techniques cannot fully comprehend the interaction effects in a social setting. A quantitative study would help to reach a more generalized conclusion. But this study aimed to go beyond that and explore the compelling reasons that play a role in a student’s learning experience that may or may not come out from a generic inquiry. This study aimed to shed light on those hidden factors that not only helped the students re-evaluate their choices but also helped to express their feelings and concerns regarding their academic journey. A qualitative approach emphasizes the importance of understanding the individual subjective experiences and acknowledges that cognitions and perceptions can be shaped by a wide range of contextual factors. Qualitative methods are used to gain new perspectives about things that are difficult to demonstrate quantitatively (Strauss & Corbin, 1990). To capture the contextual nuances that surround students' perceptions and experiences qualitative approach was deemed most suitable for this study.

Different qualitative approaches can be used to explore the research question. As the research aimed to collect open-ended data, a semi-structured interview approach was adopted to get an in-depth understanding of students’ perceptions and factors they analyze before choosing a particular mode of study in a multimode teaching environment. While focus groups, observation, and document analysis are valuable research methods, a semi-structured interview offers distinct advantages for understanding the factors influencing students' choice of mode of study. Semi-structured interviews have the potential to expand the research scope by including new insights from participants’ experiences (Rubin & Rubin, 2012). Moreover, along with the flexibility it offers the opportunity to have a deeper understanding of participants’ motivation and perception (Kvale, 1994).
Unlike focus groups that involve group dynamics, semi-structured interviews provide a one-on-one interaction, allowing for a deeper exploration of individual insights. The flexible nature of semi-structured interviews helps to tailor questions based on participants' responses, enabling deeper probing and clarification. Moreover, interviews provide a private and confidential setting, encouraging participants to share sensitive information that they may not feel comfortable discussing in a group setting. By capturing personal narratives and stories, semi-structured interviews uncover nuanced insights into participants' lived experiences, emotions, and motivations. While other methods have their merits, the individual focus, adaptability, privacy, and rich qualitative data obtained through semi-structured interviews make them particularly valuable in unraveling the complex factors that shape students' decisions regarding their mode of study.

Most of the participants in this study started their programs at Carleton during the lockdown therefore the only option available to them was online courses. But in a post-pandemic new normal setup, they have more options available to choose from. The exploratory design of the study helped to gain a better understanding of the adoption process in a blended learning environment from the student’s perspectives. The semi-structured questionnaire used for this study consisted of the following questions:

**4.1 Interview questionnaire:**

1. Are you aware of all the different teaching modes Carleton offers in the undergraduate program?
2. Which courses have you completed at Carleton?
3. What modes have you chosen for each of those courses? Why?
4. How did the choice work out for you?
5. Which mode would you recommend to others for the courses you have completed? Why?

6. Do you have any comments/suggestions for improvement of present teaching methods at Carleton?

7. Do you want to add anything else to this discussion?

Based on participants’ responses follow-up questions were asked on different aspects where participants provided more elaborate descriptions of their experiences. Further discussion often led to the expectations or concerns they have regarding the teaching mode or certain hidden factors that even they didn’t realize were important to them.

4.2 Data Collection

4.2.1 Participants

Participants were selected from the Sprott SONA research management system participant pool of Carleton University which comprises students from Bachelor of Commerce, Bachelor of Arts, marketing, and industrial design disciplines. The study included both domestic and international students from the research pool to examine possible variation in the thought process in choosing a particular mode of study. The study was announced in the SONA pool. Interested students who contacted the researcher for participating in the study received a demographic questionnaire and consent form via email. Based on the demographic questionnaire the final list of participants was selected. Respondents received partial course credit for their participation in the study.

The research followed a purposeful sampling method for selecting participants out of the research pool (Riazi, 2016). To portray a wider variety of students the sample size includes students considering different social variables including but not limited to gender, age, country of origin, and other relevant aspects. Data collection was continued till the saturation point was reached.
where repetition of similar ideas was observed. Nine (9) students were interviewed for the study using a semi-structured questionnaire. The questionnaire was developed based on existing literature and expert opinions and was approved by the university research ethics board. The participant profile is shown in Table 1:

Table 1: Participant Profile

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Category</th>
<th>Number of students (Total=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Male</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>5</td>
</tr>
<tr>
<td>Age</td>
<td>19</td>
<td>5</td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
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<td>2</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>1</td>
</tr>
<tr>
<td>Program of study</td>
<td>Bachelor of Commerce</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Industrial design</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Bachelor of Arts</td>
<td>1</td>
</tr>
<tr>
<td>Level of study</td>
<td>Level 1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Level 2</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Level 3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Level 4</td>
<td>1</td>
</tr>
<tr>
<td>Student status</td>
<td>Domestic</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>International</td>
<td>3</td>
</tr>
<tr>
<td>Nationality</td>
<td>Canadian</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>German</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Russian</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Indian</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Somali</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Indigenous (Cree)</td>
<td>1</td>
</tr>
<tr>
<td>Part-time work</td>
<td>Yes</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>5</td>
</tr>
<tr>
<td>Is English the first language</td>
<td>Yes</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>4</td>
</tr>
</tbody>
</table>
The interviews were conducted online from March 27 to April 10, 2023, using Zoom video communication tool and in English. Each interview duration was 45-60 minutes. All the interviews were recorded and safely stored for the duration of the study. Participants had the option to withdraw their participation within two weeks after the interview.

The interviews were later transcribed using NVivo 12 software. After data collection, each participant was given a pseudonym, and the transcripts were labeled with this code name. Interview transcripts were altered to remove all names and identifying information (e.g., where they work). The pseudonyms were saved in an Excel file along with the real name, interview date, and interview number.

4.3 Data analysis approach

Data analysis is a continuous, iterative process that is revised in the process of data collection (Strauss & Corbin, 1998). The interviews were analyzed following a thematic analysis approach (Braun & Clarke, 2006) where they were investigated from an interpretive and inductive perspective that will establish the ‘critical link’ between data collection and translation of data into meaningful information (Charmaz, 2014).

The study followed the qualitative coding process suggested by Saldaña (2015). In the first cycle of the coding process, the data was coded using a word or short phrase. In the second cycle, or focused coding level the already developed codes were reviewed for similarities or dissimilarities. Similar codes were merged in this stage. The first stage of coding tried to capture the broader themes associated with course selection and the subsequent stages tried to see if any dominant themes remain as prime factors of consideration for choosing different modes. Based on the primary categorization, coding schemes were further developed to answer the research question (Hsieh & Shannon, 2005).
Coding data is a cyclical act where the first stage of coding is rarely perfect and requires multi-stages in the process to refine the analysis (Saldaña, 2015). While looking for commonalities and patterns in the codes the study followed Stenner’s (Watts & Stenner, 2012, p. 136) suggestion: “At a basic level, pattern concerns the relation between unity and multiplicity. A pattern suggests a multiplicity of elements gathered into the unity of a particular arrangement”. While looking for patterns different coded data can be categorized in the same group because they share some commonality. The cyclical coding process helped to identify which codes were supported by the theoretical framework and which new codes emerged from the study. Words with similar meanings were identified and grouped as codes. Then codes with similar meanings were clustered together into different categories.

Chapter 5: Analysis

The study employed a thematic analysis approach suggested by Braun & Clarke (2006) to identify common patterns, recurring ideas, and emerging themes across the interview data. This analysis method allows for a comprehensive understanding of the participants' viewpoints and experiences, capturing nuances and variations within the data set. By exploring the themes derived from the interview data, this study sheds light on key factors, insights, and perspectives related to the choice of mode of study in a multi-mode teaching environment, contributing to the existing knowledge base, and generating new insights for future research and practice. The study took guidance from Saldaña (2015) and Mishra and Dey (2022) to look for abstract subtle patterns/processes emerging from the interview dataset. Following the coding process of open/initial coding and then second level/focused coding the study outlined aggregated dimensions/themes. Six dominant themes emerged from the study. Following the data structure format suggested by Gioia et al. (2013), the data structure for this study is shown in Figure 3:
### 5.1 Instructor profile:

Students tend to collect information on the course instructor before signing up for a class. Usually, they ask people who have already completed the course to hear about the professor. There are also online resources like ‘Rate my professor’ where they can see reviews and ratings of different professors. As Mike explained:

"Sometimes I'll talk to some people that have taken those classes before to see how the professor is or I'll go on like rate my professor to look at the reviews."
David decides not only the courses he will take but also the modes he will choose based on the instructor’s review:

“I would also consider the reviews that I’ve heard for certain instructors. If there's an instructor that I heard not good reviews about, I might consider going online classes just because I might not consider putting in the effort to gain a relationship with the instructor.”

In doing so Steve is considerate of the fact different professors have different strong suits:

“I feel like some courses and some professors just can structure classes better in person when others structure better online. So, I think maybe it's also the course structure and how the instructor feels doing it online or in person.”

Jane also factored in the fact that as courses are shifting back to in-person, instructor reviews during Covid might not be relevant so she also checks reviews before Covid for better understanding:

“...sometimes when you're looking at the ratings for a professor, they may have really good ratings and then you get to 2020 and all the ratings are suddenly really low. That shows the prof might be better in offline classes than online....I try to look before 2020 as well as I'm going to be doing this in person now”

Students often consider the instructor's expertise, teaching style, and effectiveness in delivering course content when making decisions about the mode of study. Students heavily rely on the instructor's reputation and ratings from previous students to gauge the quality of instruction. Reviews and ratings provide insights into the instructor's ability to engage students, provide clear explanations, and offer prompt and helpful feedback. Students acknowledge that different instructors may have varying strengths when it comes to structuring courses in online and in-
person formats. Some instructors excel in structuring courses online by effectively utilizing digital platforms, organizing online resources, and designing interactive activities that facilitate engagement and learning in a virtual environment. They may have a deep understanding of online instructional design principles, incorporating multimedia elements, and fostering online communication and collaboration. On the other hand, certain instructors may have a natural ability to structure courses in person, create a conducive classroom environment, develop engaging lesson plans, and facilitate active discussions and hands-on activities. They may possess strong interpersonal skills, be adept at creating a sense of community, and foster meaningful connections with students. Ultimately, the instructor's rating and reputation, whether based on online reviews or in-person experiences, significantly impact the mode of study students select, as they seek an optimal learning environment with high-quality instruction.

5.2 Convenience:

Convenience was one of the key factors that repeatedly came up in the participant interviews in different forms. The most common concern regarding convenience was related to commuting. Many students mentioned their commute to be a prime reason that regulates their choice of mode of study. Ann mentioned the challenges of using public transport for commute:

“It is much difficult to travel from our home to university as I have to travel by public transport and public transport here in Ottawa, it's not that good like buses get missed and we have to wait for buses. Every bus comes after 30 minutes. So sometimes even if I am punctual, I cannot reach there on time due to bus system here in Ottawa.”

Joe compares the class duration with the commute time to decide whether going for in-person class is worth his time:
“I guess now it's more of like, I'll only have one class. It's one hour long. It's just, you know, the commute is too long just to go all the way just for one hour.”

Peter also shared similar sentiments regarding commute while being asked what motivates him to choose a particular mode of study:

“The commute to Carleton also plays a factor in it, if this class is offline, I have to leave 90 minutes at least before the class starts, when you're factoring in the buses and everything because I live off campus, so definitely the commute plays a factor. So if it's an early morning class, I tend to lean toward online because I don't want to have to leave my house at 6:30 to get to Carleton for my 8:30 class when it could be online asynchronous, and I can do it throughout the week at my own leisure. So yeah, that's another reason the commute.”

Long hours of commuting and the unavailability/irregularity of public transport affect students’ daily routines in other ways as well. In comparison with online classes, Ann pointed out the impact of commuting on her sleep cycle:

“For my in-person classes, I have to wake up way before the classes start, like I have to wake up four to five hours before. In virtual classes, I was not sleep deprived.”

But it was interesting to see how the same inconvenience Ann experienced had a different impact on David. He considers the hardship of waking up early important to improve his lifestyle and hence prefers in-person classes over online:

“When I had online courses, I would just wake up like 10 to 15 minutes before the class. Meanwhile, nowadays I have to have a regular sleep schedule where I wake up at the appropriate time. It's a bit harder, but it definitely helps me get into a rhythm.”
Ben emphasizes productive hours of the day to schedule his in-person classes:

“I personally like to go for morning classes because if I go to like a later class, I feel like I won't be as interactive and focused, ready to listen, if I'm going to a morning class, I feel like I'm more ready for the day. Ready to learn.”

Students prefer online teaching modes for the flexibility it offers not only in terms of time but also in terms of pace. Peter explained how online mode is helpful in reviewing course contents:

“I can go through the recorded lectures. I find it really helped me because I can go back and forth and play it at my own speed and stop it and pause it when I need to. When you're in a live lecture, you can't do that”

To keep up with their busy schedule and maintain a healthy balance of online-in-person learning students tend to have a mix of different modes. But it depends on the availability of courses across different modes. According to Steve:

“I would not want to go to school like every day, even if I have to take some classes mostly in-person if I can find one online, I will choose that one.”

Along with course schedules, some students’ choice of mode also depends on their work schedule as they have to make time for their part-time jobs. Mike explained:

“And then I also may have time consideration because I've always tried to schedule my classes. So, I had either two or three full days off just so I'm able to work.”

Steve shared similar thoughts:

“I also have a part-time job, and that's why I like having that course online on a Monday. Helps me structure my schedule for both work and classes, so I only need to be in school for three days.”
The study shows convenience factors, such as commute, work schedule, and sleep cycle, significantly influence the choice of mode of study for students. Commuting time and distance can pose challenges for students attending in-person classes, especially if they live far from campus or have to rely on public transport. Some students have to change two to three buses or travel by bus and train to reach campus. So, unavailability/delay in public transport creates a lot of trouble for them. Opting for online or blended modes of study eliminates the need for daily commuting, saving time and reducing stress. Similarly, students with work commitments may find it easier to fit online classes into their busy schedules, as they can access course materials and participate in discussions at their convenience. Moreover, students who have to wake up too early for class prefer online or blended learning as their preferred mode. Students also consider the productive hours of the day in choosing courses. Being able to study and engage with course content at their preferred time of day or night enhances their ability to focus and absorb information effectively. Considering these convenience factors helps students select a mode of study that aligns with their personal and professional commitments, ultimately supporting their overall academic success.

5.3 Interaction:

Students expressed their concerns about limited interactions with instructors and peers in online teaching mode. Starting in a university for the first-time students have certain expectations regarding networking and communications that were not met due to lack of interaction in the online teaching mode during Covid. So, once things are returning to normal students tend to register for more in-person classes as they feel it’s easier to interact with instructors and peers in in-person classes. As Ben shared:

“I guess going to a different school, you would want to be able to go to the school and meet the professors in person, get to know them. But being online, it felt like there was almost a barrier in
front of you and the professor and other students to like, communicate and get to know each other
and fully like be able to talk and interact with them and get a better understanding of the
lessons…..when I first did the course online, I really struggled because there was absolutely no
interactivity at all.”

David finds it easier to reach out to the professor in case he has any queries in an in-person class
rather than in an online class:

“I find it's quite a bit easier to ask questions in person because while you're directly seeing the
prof and often times they will, like, roam around the classroom, and then you can ask them yourself
without disrupting the flow of the other students.”

On the other hand, Jane feels the opposite. She feels more comfortable in an online setup as it
gives her a sense of privacy:

“I feel more shy to participate when it's in person because like all the people are physically there.
So to like, raise your hand and then everyone's looking at you, whereas when it was online, I
probably participated more, feels like it's less pressure because like, yeah, all those people are
there, but like their camera is off, they're probably not even paying attention.”

But most students agreed for group projects in-person classes are better as sometimes it is harder
to get responses from people online. David shared:

“I would say it's easier to get everybody involved when it's in person because when it's an online
only class, it's quite easy to avoid people. You just have to set your notifications to silent and just
send nothing into the email or group chats that we have.”

Lack of interaction in an online mode creates a sense of isolation in students. As Jane explained:
“I really don't like it. I think I don't know if you've had this, but like when you're just in online class, like everyone has their camera off and like they put you into a breakout room to like, do some activity. But like nobody talks and it's just like, you are there alone, it's not nice.”

For Joe, in-person interaction creates a wholesome experience as he gets a better understanding of what’s being said through the gesture and body language of the speakers:

“...but maybe when you know you're interacting with a person, you're it's not just you get feedback from many things, it's not just what they're saying. Also, from how they're acting, what they're looking at, their body language, all that. So maybe in person, it's more you can sense more.”

For Peter the technical issues he faced online in doing group projects made him incline more towards in-person interaction. He also feels people are less responsive and accountable online whereas in-person interactions are seamless:

“I definitely prefer in-person for the interactions going through the Zoom breakout meetings. Last year was very difficult, especially when we have group projects and stuff. It's really tough to get everyone on the same page when we're all online because most of the time not everyone shows up and it's much more difficult to like, keep people accountable. But when you're in person even talking to professors, it's a lot easier being a logistical face-to-face and ask a question rather than writing a long email. You have to wait for the response. Maybe by the time they respond you already have the answer to your question. Same with talking to peers ....I think definitely in-person is my preference for class activities.”

Preferences for class interaction can vary among students, with some preferring online interactions while others favor in-person interactions. Students who prefer online class interaction may appreciate the flexibility and convenience it offers. Online platforms allow for asynchronous
discussions, allowing them to contribute at their own pace and engage with their peers from diverse geographical locations. These students may find comfort in expressing their thoughts through written communication and appreciate the ability to carefully craft their responses. On the other hand, some students thrive in in-person class interactions. They value the immediate feedback, non-verbal cues, and real-time exchange of ideas that come with face-to-face discussions. These students may find that in-person interactions enhance their understanding, deepen their connections with classmates, and create a more vibrant and dynamic learning environment. Recognizing and accommodating these different preferences is crucial for creating inclusive learning environments that cater to the diverse needs and preferences of students.

5.4 Learning environment:

The choice of mode of study is highly influenced by the learning environment. Often students don’t have the right setup in their homes to focus on online classes. Like Ben mentioned:

“I've had some problems during COVID. I was with my family. We were all in one house. It was a bit difficult to be in one isolated area to just be focused on class. It used to stress me out.”

Joe also shared similar insights:

“I didn't like how where I slept and ate. All that was also where I studied and had my classes, everything. So, I just like to keep them a bit separate.”

The classroom setup motivates Sarah to attend her classes:

“I just like being able to go to class, sit in a class and then learn and then be able to leave without just sitting in one place on my computer.”
Students also put great emphasis on the university experience both inside and outside of class. For Peter, it’s important to enjoy the break in between classes:

“The biggest reason I like the in-person class is being able to go on campus. There's lots of stuff to do. Even if you have a break in between classes, there's plenty of places to relax. And I think the in-person is mostly about getting that university experience more so than the actual classes themselves.”

Steve has similar preferences:

“…coming to university to view an actual lecture. So, I guess it's kind of the feeling of the university experience that is important to me”

The social aspect of in-person mode is highly important for students as it gives them opportunities to talk to people and make friends. David, Joe, and Mike shared their experience with online and in-person interactions and preferred in-person for socializing.

“I prefer about in-person classes is that it allows me to make friendships much more easily.” (David)

“I'm also more social like a social person, I like talking to people. I like it. You get to be more connected to your classmates when it's in person.” (Joe)

“I'd say that I had trouble online as nobody else wanted to talk because I'm pretty social and I would reach out to anybody if I was in a breakout room, I find it easy to talk to people. But some people would just not respond or I'd go into a breakout room and I'd start talking and nothing would happen. That's annoying.” (Mike)

Steve feels the comfort level is higher in-person compared to online:
“...it just feels more comfortable in person, let's say, because online you would have to stay muted, for example. And like, you know, because of all the technical difficulties, it's important to respect the silence and you kind of expect the professor to just speak and maybe it can be a little awkward when they ask a question and no one's answering. And again, with like video conferences, some people are not as comfortable showing their faces, for example, on Zoom and stuff. However, in person, it's kind of expected that everyone's doing it, so people are naturally more comfortable because they show up for classes. So, I would say it's like those little differences just in the overall experience.”

Sarah likes to meet her friends and have face-to-face interaction:

“I definitely prefer in-person contact just because it's a lot nicer to be able to see your friends or talk about something.”

The learning environment, the opportunity to interact with other students, and the classroom setup all play significant roles in determining the choice of mode of study. In a traditional classroom setting, students have the advantage of immediate face-to-face interaction with their peers, fostering collaboration, discussion, and social engagement. The ability to engage in spontaneous conversations with classmates during breaks or after class can enhance the learning experience and build a sense of community. Additionally, the physical classroom setup, with its layout and proximity of students, allows for non-verbal cues and social dynamics that contribute to a rich learning environment. However, in certain cases, an online or blended mode of study can also offer opportunities for interaction through discussion boards, virtual group activities, and video conferencing. The availability of digital platforms and tools can facilitate communication and collaboration. Ultimately, students look for modes that create a conducive learning environment that promotes meaningful interactions and supports the educational goals of the students.
5.5 Course type:

Multiple students mentioned they choose the mode of study based on the difficulty level of the course. For example, if it’s a course including mathematical problems like economics, finance, or statistics then they will prefer to do it in-person because it helps them to do the practice problems in class and ask questions if they have any confusion right away. On the other hand, if it’s a theory-based course where they have to read slides/books then they prefer online asynchronous classes to go through the content in their own time. Like Jane mentioned:

“what kind of course it is matters, because if it's a math course, then I will go in person because there they do like practice problems and things in class........whereas if it was something that was just more like theory based, then a lot of the time that I will just like, read the textbook on my own time and like, kind of do my own notes.”

The only contradiction to this idea was presented by Sarah who thinks online asynchronous lectures help in both theoretical and mathematical courses as she can go through that in her own time and pace her learning accordingly:

“...if I had the option to take a math-based course, I think I would take it online just because sometimes it's a little bit easier to keep up with it than in class ....I have the option to replay or pause videos. And that was really helpful when it comes to learning a bit more mathematical and theoretical subjects.”

It is also important to see if the course is more interactive compared to theory-based lectures. Students prefer to do the courses in person if they have to participate in class and interact with the professor to understand the concept. Peter explained:
“...if marketing and entrepreneurship, for example, were offered online, I would choose the in-person method for those because they're hands-on. You really have to be there. It's very interactive where the professors are working with the students.”

Certain courses may be better suited for in-person mode due to their practical or hands-on nature. For example, industrial design courses that require studio work may require students to be physically present to access the necessary equipment and resources. On the other hand, theoretical or lecture-based courses may blend well with online or blended formats, as the content can be effectively delivered through virtual platforms and digital resources. Additionally, the level of interactivity and collaboration required in a course can also influence the choice of mode of study. Courses that heavily rely on group work and discussions may benefit from an in-person or blended format, whereas courses that emphasize individual study and self-paced learning may be more suitable for online delivery. Therefore, considering the nature and requirements of the course is crucial in determining the most appropriate mode of study to ensure optimal learning outcomes for students.

5.6 Technical issues

From the pandemic to this new normal setup, students went through a learning curve in terms of using the technology tools in attending their classes. Students mentioned the challenges they faced with the learning management system “Brightspace”. David conveyed his disregard for Brightspace because of the difficulty he faced in loading course contents. But he also mentioned that his experience improved over time:

“I didn't really like Brightspace during the first year, the first two semesters, because I found that Brightspace just wasn't very reliable in terms of loading correctly. I found out that the assignments were missing or some presentations were missing. I think it's gotten a lot better in the past year.”
Mike compared the in-person and Brightspace exam experiences:

“In-person exams are better as I've had a lot of challenges with Brightspace, there's been some exams that have been rescheduled because of Brightspace not being able to handle the load of all the people on there. And any time there’s a technological failure from Brightspace. It's annoying. I get a little upset about it because I feel like it's such a like a small thing that should have been managed beforehand, especially when it comes to writing exams.”

Students also faced issues with the video conferencing tool used to deliver online classes. Zoe encountered issues in attending online classes using the Zoom video conferencing tool:

“Zoom is always updating, and every time I'm opening it, it's like, you have to get the new version or whatever it is every time, every single time.”

David faced issues with his internet connection that affected his class attendance:

“There have been times where my internet connection wasn't stable, so I couldn't attend certain classes.”

Technical difficulties can impede the smooth delivery of course materials, making it difficult for students to access online resources, submit assignments, or participate in interactive activities. Technical issues can significantly disrupt online and blended teaching modes, posing challenges for both instructors and students. Unreliable internet connectivity, hardware malfunctions, and software glitches can interrupt live virtual classes, causing disruptions in communication and hindering the flow of instruction. These technical issues can lead to delays, audio or video distortions, and even complete disconnections, resulting in frustration and decreased engagement for both parties involved. If students repeatedly face these technical issues, it impacts their choice
of mode of study and they select the mode that possesses the least technical difficulty (Alshurafat et al., 2021; Azizi et al., 2020).

Chapter 6: Discussion

The purpose of this study was to identify factors that influence students’ choice of mode of study in a multi-mode teaching environment. The result of the study showed six dominant themes that influence students’ adoption process. The identified themes: instructor review, convenience, interaction, learning environment, course type, and technical issues align well with the Diffusion of Innovation (DOI) model in understanding students' choice of mode of study.

The Diffusion of Innovation (DOI) model serves as a comprehensive framework for understanding the adoption and diffusion of new ideas, products, or practices. Within this model, the "Perceived Characteristics of the Innovation" section specifically focuses on the key attributes that influence individuals' decision-making processes. The specific attributes considered within this section include the relative advantage, compatibility, complexity, trialability, and observability of the innovation. The relative advantage assesses whether a particular mode of study is perceived as more beneficial compared to other options; compatibility examines the extent to which the mode aligns with students' existing values, needs, and prior experiences; complexity refers to the perceived difficulty of adopting and using the mode of study; trialability assesses the degree to which students can experiment with the mode on a limited basis before committing fully; observability considers the extent to which the outcomes and benefits of the mode are visible and easily identifiable (Anthony et al., 2022; Goh & Sigala, 2020; Grgurovic, 2013).

By focusing on the perceived characteristics of the innovation, how these attributes interact with various contextual factors can be analyzed. By exploring the interplay between these contextual
factors and the perceived characteristics of different modes of study, it can be observed why students choose specific modes and how these factors influence their decision-making processes. Therefore, from the broad framework of the DOI model, the perceived characteristics of innovation were focused within the scope of this study.

6.1 The constructs of DOI theory:

6.1.1 Relative Advantage:

The construct of relative advantage refers to the perceived benefits and advantages of adopting an innovation. Flexible scheduling, reduced commuting, and effective time management were integrated as convenience factors that students assess to identify the relative advantage of choosing a particular teaching mode.

Flexible scheduling allows students to have control over their learning experience by providing options to choose when and where they study. Students have certain preferences regarding productive hours of the day or the mode that best suits their learning style. By offering flexibility to schedule courses according to their needs, a study mode caters to the diverse needs of students and enables them to create a personalized learning schedule that suits their circumstances.

Reduced commuting is another key convenience factor that regulates students’ choice of mode of study. By eliminating the need to travel to a physical campus, students can save time, money, and energy that would have been spent on commuting. This reduction in commuting not only provides convenience but also increases accessibility, allowing students from different geographical locations to participate in educational programs without the constraints of distance.

Effective time management is facilitated by study modes that provide structured and well-organized learning materials. This factor is particularly beneficial for individuals with other
responsibilities, such as work or family commitments, as it allows them to fit their studies into their busy schedules. A study mode that acknowledges and accommodates these commitments by providing flexible deadlines, asynchronous learning opportunities, or additional office-hour options can attract and retain students who require a mode of study that fits their lifestyle.

Students are more likely to choose a mode of study if they believe it offers a superior learning experience compared to the other modes available and helps them to maintain their busy schedules, work commitments, and personal responsibilities. The flexibility and convenience offered by a mode make it a good choice for students.

6.1.2 Compatibility:

Compatibility addresses the alignment between innovation and existing values, experiences, and needs. Students believe their experience in a study mode depends a lot on the instructor teaching the course. Instructor profile plays a significant role as positive reviews and reputation encourage students to adopt and embrace these new modes of study. Students try to know more about the instructor’s profile to see if the instructor’s teaching style in a certain mode is compatible with their learning style. Students are also well aware of the fact that different instructors have different strengths, some instructors are good at designing courses online, some are more comfortable in offline courses, and some prefer a mix of both. Positive reviews from previous students act as social proof and influence the decisions of prospective students. Students are more likely to choose a mode of study if they see others benefiting from it and perceive it as compatible to meet their expectations.

Course type is another theme that connects with compatibility. Students may perceive the difficulty level of certain subjects or courses as better suited for in-person instruction, where immediate clarification and face-to-face interactions can simplify complex concepts. On the contrary, certain
theoretical courses that don’t require active engagement as much are preferred to be online as students prefer the flexibility to review the content in their own time.

6.1.3 Trialability:
Trialability refers to the ability to experiment with and test an innovation before fully adopting it. Technical issues, one of the themes, relate to trialability as they may create obstacles and challenges that require troubleshooting and testing. Some students complained about the difficulty they faced with learning management systems and web-conferencing tools when things went fully online during Covid. But in the post-pandemic setup, they feel more comfortable trying out new technological features in their learning activities as they have already gained some experience using information and communication technologies. Students may initially encounter technical issues but with the trialability feature, they may be more willing to persist and explore solutions to improve their experience with online or blended learning.

By addressing technical issues and providing adequate support and resources, educational institutions can enhance students' ability to try out the study mode and make informed decisions regarding its adoption. This may involve providing technical assistance, training, and resources to overcome barriers and ensure that students can explore and experience the benefits of the new study mode without hindrance.

6.1.4 Complexity:
Complexity refers to the perceived difficulty or complexity of understanding and using an innovation. Technical issues and challenges also refer to the complexity construct of DOI theory and can act as barriers to adoption, highlighting the effect of lack of interaction and the need for technical support and infrastructure. The different technical issues students discussed through the
interviews were: navigating the learning management system, dealing with Zoom breakout rooms, internet connectivity issues, and in-person and online syncing issues in HyFlex mode.

Addressing technical challenges is crucial in minimizing the perceived complexity of the study mode. By providing robust technical support, clear instructions, user-friendly interfaces, and adequate training, educational institutions can help alleviate the complexities associated with the use of technology in the study mode. In addition, simplifying processes, offering accessible resources, and ensuring reliable and intuitive technology infrastructure can enhance students' confidence, reduce the perceived complexity, and facilitate the adoption and usage of the study mode.

6.1.5 Observability:

Observability refers to the visibility of the results and benefits of innovation. The learning environment aligns with the observability and trialability construct in a way that helps students to connect to the learning community and learn more about their experience in different modes. It helps students to observe the influence and outcomes of different modes of study in the learning journey and motivates them to try out different teaching modes.

Interaction, one of the themes, aligns with observability as it provides opportunities for students to observe and experience the benefits of engaging with peers and instructors. In-person classes offer immediate feedback, real-time discussions, and visible outcomes, making the benefits of interaction more prominent.

The importance of interaction also aligns with the ‘communication behavior’ characteristic of the decision-making unit of the DOI theory as students are more likely to adopt a mode of study that allows for meaningful engagement and collaboration with peers and instructors. Course type is an
important consideration as it influences students' perceptions of the advantages and suitability of
different modes of study. On the other hand, by examining these themes through the lens of the
DOI theory, researchers and educators can gain insights into students' decision-making processes
and facilitate the successful adoption and integration of innovative modes of study.

DOI theory emphasizes the importance of interpersonal communication in the diffusion process of
innovations. In the structure of teaching modes, the level and nature of interaction directly
influence communication behaviors among individuals within the Decision-Making Unit (DMU).
In traditional in-person classes, face-to-face interaction enables immediate feedback and real-time
discussions fostering rich and dynamic communication. This type of interaction facilitates the
exchange of ideas, clarification of concepts, and the building of social connections. In online and
blended learning, interaction is facilitated through various digital platforms, such as discussion
boards, video conferencing, and collaborative tools. While the nature of interaction may be
different from in-person classes, students still engage in communication behavior by actively
participating in virtual discussions, sharing ideas, and providing feedback. The level of
interactivity and the communication behavior exhibited by individuals within the DMU influence
the diffusion of innovation, as effective communication helps in disseminating information,
addressing concerns, and promoting the adoption and acceptance of new teaching modes.

6.2 Broader categorization of codes:

From the existing literature review, several factors including pedagogical, social, economic,
cultural, and technological factors were found to be influencing students’ learning preferences
(Almaiah & Mulhem, 2018; Almaiah et al., 2020). Pedagogical factors refer to the teaching
methods and approaches used in a course, and how they complement the student's learning style
and preferences. For example, some students may prefer a more hands-on approach, while others
may prefer a more lecture-based format (Chavoshi & Hamidi, 2019). Social factors include the opportunity for interaction with instructors and peers, as well as the presence of a sense of community in the course. Students may choose a particular teaching mode because it allows them to connect with instructors and peers in a meaningful way fostering a sense of community that enhances their learning experience (Alshurafat et al., 2021). Economic factors include any cost/expense or economic variable related to a teaching mode (Olitsky & Cosgrove, 2014). It can include the cost of attending a certain mode of study like an in-person commute or the cost of online tools setup. It can also include economic decisions that influence the choice of study, for example, students may have part-time/full-time jobs and they may choose a mode that offers the flexibility to work on their jobs. Cultural factors influence societal expectations around education and teaching. In some cultures, there may be strong emphasis and expectations on traditional classroom-based instruction, while others may be more open to innovative teaching modes (Alshurafat et al., 2021). Adapting teaching modes to align with societal expectations is crucial for acceptance and successful implementation. Technological factors refer to the use of technology in the course, including the availability of resources such as online lectures, digital tools, and discussion forums (Chavoshi & Hamidi, 2019). Students may choose a teaching mode that incorporates technology in a way that is flexible and effective, or they may prefer a more traditional approach that does not rely heavily on technology. Therefore, within a university setting where a diverse range of students are presented with different teaching modes, their considerations may vary based on their past experiences and perceptions. This study aimed to explore those variations and see if they fall within the different categories discussed in the existing literature.

The six dominant themes that emerged from the study present the repetitive patterns of the codes. A more inclusive approach helped to incorporate all the codes into broader categories like
institutional, pedagogical, economic, individual, and technological factors. This way the codes that may have appeared once or twice in the transcripts but hold significant value in individual experience were brought forth. In the first stage of coding the transcribed data was coded based on words or short phrases. This resulted in a long list of codes. The initial codes were further revised to integrate similar codes. Focused coding was used for words or phrases that represent similar meanings and regroup them. The focused coding approach also helped to identify codes that have conceptual or thematic alignment. To make the data analysis more meaningful and manageable frequently used inter-related codes were merged into individual categories that broadly represent the data. The coding summary is shown in Figure 4.

Figure 4: Coding summary
6.2.1 Institutional factors:

Institutional factors play a crucial role in shaping the teaching and learning experience, and several key factors can significantly impact the effectiveness and accessibility of different teaching modes (D. M. A. Almaiah & Mulhem, 2018; Kaleta et al., 2007; Shu & Gu, 2018; Zhu et al., 2020). Instructor support is a critical institutional factor that influences the success of teaching modes (Teo & Wong, 2013). This study showed that the level of support and guidance provided by instructors across different modes can greatly impact students' learning outcomes and satisfaction. Clear communication, prompt feedback, and availability for consultation contribute to a positive learning experience. Another institutional factor is the availability of different teaching modes (Saghafi et al., 2014). Offering a range of modes, such as online, in-person, or blended learning, provides flexibility and accommodates diverse student needs and preferences (Kaleta et al., 2007; Ozkan & Koseler, 2009). During the interviews, students complained about the lack of options in many courses, so they did not have the flexibility to choose. Like Ann, David, and Steve shared:

“In my courses, only in-person was available, so I had no option, if I had an option, I would choose virtual.” (Ann)

“I didn't really have a choice between that. Given the choice I tend to prefer in-person courses” (David)

“I would appreciate the opportunity to take a class both in-person or online. So if I really need to take it online, I can't do that.” (Steve)

The learning environment is another important institutional factor (Saghafi et al., 2014). In line with the contemporary literature, this study also found a supportive and engaging learning environment, both physically and virtually, fosters student motivation, collaboration, and active
participation (Bower et al., 2015; Stewart et al., 2011). Well-designed learning spaces, access to resources, and a sense of community promote effective learning experiences (Baguma & Wolters, 2021). Lastly, technical support is a critical institutional factor for online and technology-enabled teaching modes (Pham et al., 2019; Shee & Wang, 2008). Robust and timely technical support services, including troubleshooting assistance, access to reliable technology, and training resources, ensure that students and instructors can effectively navigate technical challenges and fully engage in the learning process (M. A. Almaiah et al., 2020). By addressing these institutional factors, educational institutions can create an environment conducive to successful teaching and learning across various modes.

### 6.2.2 Pedagogical factors:

Pedagogical factors, such as course format and teaching style, significantly impact the learning experience and outcomes for students (Almaiah & Mulhem, 2018; Almaiah & Alyoussef, 2019; Mtebe & Raisamo, 2017). Course format refers to the overall structure and organization of the course, including its delivery mode and instructional design (Mtebe & Raisamo, 2017). Different course formats, such as traditional lectures, seminars, workshops, or project-based learning, offer distinct approaches to engaging students and delivering content (Almaiah & Alyoussef, 2019). Each format has its strengths and limitations, and the choice of course format should align with the learning objectives and the needs of the students. Teaching style, on the other hand, pertains to the instructor's approach to teaching and facilitating student learning (Cheng & Chau, 2016). This study also found that course format encompasses instructional strategies, methods, and techniques employed by the instructor to engage students, promote critical thinking, and create an interactive learning environment. A well-suited course format combined with an effective teaching style can
enhance student engagement, facilitate active learning, and cater to different learning preferences and needs. Students also felt instructor support varies across different modes. Ben pointed out:

“I've had way more better experiences with professor interactions and support in person. In online we've had just a small little support system to resume. But being able to get a prof and just talk to them one on one is just a way better experience being in person.”

And Mike shared similar insights:

“I find that almost every professor's able to teach better in person, they are more helpful in-person”

By considering pedagogical factors, educators can design courses and adopt teaching styles that align with the desired learning outcomes and create meaningful and effective learning experiences for students (Almaiah & Alyoussef, 2019; Cheng & Chau, 2016; Mtebe & Raisamo, 2017).

6.2.3 Economic factors:

This study found ‘work schedule’ to be an important economic factor that impacts students' ability to choose and engage in different modes of study. Many students have multiple responsibilities, including part-time or full-time employment, to support themselves financially during their education. The flexibility of the work schedule becomes a critical consideration when deciding on the mode of study. Some students may prefer online or blended learning modes that offer more flexibility in scheduling their classes and coursework around their work commitments. This allows them to balance their financial needs with their educational goals. On the other hand, students with more rigid work schedules may find it challenging to attend in-person classes or commit to fixed class times. This finding is also supported by the literature that suggests students tend to schedule
their classes in a way that aligns with their work schedules (Garrido-Cumberra et al., 2023; Shea et al., 2006). Transport expense appeared to be another economic factor that Ann mentioned:

“...being an international student it’s hard for me to get a car and it’s very expensive to travel by other means like taxi or uber if the public transport is not available”

The economic factors of the work schedule can influence the feasibility and accessibility of different modes of study, as students need to consider their financial obligations and available time to dedicate to their studies. Institutions and educators should be aware of these economic factors and strive to provide flexible scheduling options and support services that accommodate the diverse needs of students with varying work schedules.

6.2.4 Individual factors:

Several individual factors play a significant role in shaping students' choices and experiences in their mode of study. Commute is an individual factor that can heavily influence a student's decision (Bagdatli & Ipek, 2022). Students who have long commutes may opt for online or blended learning modes to minimize travel time and expenses (Legrain et al., 2015). Convenience is another individual factor that was observed to be important in this study. Students may consider their circumstances and preferences, such as maintaining a sleep schedule, choosing courses during their productive hours of the day, choosing modes that help them to focus, and selecting a mode of study that offers flexibility and convenience. This finding also aligns with the present literature that suggests students prefer to have the flexibility to choose the pace, timing, and mode of study based on their personal needs and or preferences (Ozkan & Koseler, 2009; Pituch & Lee, 2006; Utomo et al., 2017). Learning style appeared to be an important factor that influences how students prefer to engage with course materials and interact with instructors and peers. Some students may thrive
in online environments that provide self-paced learning opportunities, while others may prefer the structure and immediacy of in-person interactions (Pashler et al., 2008). Interaction is another key individual factor that impacts students' choice of mode of study. In line with previous research (Beyth-Marom et al., 2005; Reisetter et al., 2007) this study also found that some students thrive in collaborative and interactive learning environments, which may influence their preference for in-person or blended modes that allow for face-to-face discussions and group work. Career development and academic performance are individual factors that some students found to be important when selecting a mode of study.

Like David shared:

“...you really want to build a rapport with the prof because they can help you with certain extracurricular activities, such as building a portfolio for when you graduate. They can also serve as a reference if you ask them nicely. And there's also been opportunities in the past where a former instructor hires a former student based on their previous rapport when they're working, say, in a company”

Some students prioritize in-person learning to gain practical skills and networking opportunities, while others may prioritize online learning to balance their studies with work or other commitments. Academic performance consideration was also seen to influence a student's mode of study, as they opted for modes that align with their learning strengths and preferences. Students' previous academic performance in a certain mode helps them to decide whether they will continue in the same mode or choose a different option. As Anna mentioned:

“In my first year online courses I scored really well, and in my second year it was a like sudden switch to in-person so I didn’t score good as much as I did in my first year.”
Ben also shared:

“I noticed once everything went online, my grades kind of went low, low because I'm just more of an in-person, better learner.”

Recognizing and accommodating these individual factors is crucial in providing personalized and effective learning experiences that meet the diverse needs and goals of students (Bower et al., 2015; Seidel et al., 2020).

6.2.5 Technological factors:

Technological factors significantly impact students' experiences and choices in different modes of study. The complexity of the Learning Management System (LMS) is one such technological factor that repeatedly appeared to be relevant to the choice of mode of study. The usability and functionality of the LMS can influence students' ability to navigate course materials, access resources, and participate in online activities. A user-friendly and intuitive LMS can enhance students' engagement and satisfaction. However, if the LMS is complex or lacks clear instructions, it may hinder students' learning experience and impede their progress (Boland, 2020; Garcia et al., 2021; Jere, 2020).

Accessibility issues in online classes are another technological factor that affects students. Online learning platforms should be designed with accessibility in mind to ensure that all students, including those with internet connectivity issues, can fully engage in the learning process. This involves providing alternative formats for content, ensuring compatibility with assistive technologies, and addressing any barriers that may hinder students' access to materials or interactions. Interactivity issues in breakout rooms, a common feature in online classes, are also technological factors that can impact student experiences. Breakout rooms are designed to
facilitate small group discussions and collaborative activities. However, technical glitches or limitations, such as poor audio or video quality, unreliable connectivity, or difficulty in accessing breakout rooms, can hinder effective communication and collaboration among students. Ensuring the smooth functioning of breakout rooms and providing technical support can help mitigate these interactivity issues and promote meaningful engagement (Selvaraj et al., 2021). Institutions and instructors need to be cognizant of the complexity of the LMS, ensure accessibility in online classes, and address interactivity issues to optimize students' technological experiences and foster effective learning outcomes (Azizi et al., 2020; Garcia et al., 2021; Selvaraj et al., 2021).

6.3 Summary of findings

This study sought to answer the following research question:

“What are the contextual factors that influence undergraduate university students’ choice of mode of study in a multi-mode teaching environment?”

This study answered the research question in a two-fold analysis. Through thematic analysis, six dominant themes were identified: instructor profile, convenience, interaction, learning environment, course type, and technical issues. These themes represent the most common factors students consider to be important when they are choosing a teaching mode. But from a more detailed view, there were codes in the transcripts that held a significant impact on individual experience but were not common for all participants i.e., instructor support, availability of modes and transport expenses. To accommodate those fragmented but important factors a broader categorization of codes incorporated all the different codes that emerged in the study. This holistic approach helped to identify five broad categories that integrated the institutional, pedagogical, economic, individual, and technological factors that are relevant within this research context. Further research can confirm if these contextual factors remain relevant for other research settings.
The thematic analysis revealed that the most common theme that repeatedly came up in the interviews was ‘instructor profile’ which relates to the characteristics, qualifications, and teaching style of the instructors involved in the different modes of study. Students consider factors such as instructors' expertise, responsiveness, and ability to facilitate engagement and interaction in their decision-making process. The second theme ‘convenience’ encompasses factors related to the flexibility, accessibility, and time management aspects of the different modes of study. Students consider factors such as scheduling flexibility, ability to balance work and personal commitments, and ease of accessing learning materials and attending classes when making their mode of study choices.

The ‘interaction’ theme depicts the level and quality of communication and collaboration available in different modes of study. Students value opportunities for collaborative learning, peer interaction, and meaningful engagement with instructors. The presence of interactive discussions, group projects, and feedback mechanisms influence their mode of study preferences. The fourth theme ‘learning environment’ relates to the overall learning experiment and resources available in different modes of study. Factors such as physical learning spaces, online platforms, and technological support contribute to students' perceptions of the learning environment and influence their mode of study preferences.

‘Course type’ encompasses the nature and requirements of specific courses offered in different modes of study. Factors such as course content, level of difficulty, alignment with students' academic goals, and relevance to their future career aspirations impact their mode of study choices. Lastly, the theme ‘technical issues’ addresses the technological aspects and challenges associated with different modes of study. Factors such as internet connectivity, access to necessary hardware
and software, understanding of tools and technology used in academic activities, and technical support influence students' preferences and decisions regarding their mode of study.

These themes were identified from the repetitive pattern of codes within the transcripts. But there were some unique factors that students mentioned based on their individual experiences. The broader categorization of codes inferred from the study provides a comprehensive understanding of all the common and individual factors. It outlined the institutional, pedagogical, economic, individual, and technological factors that emerged to be influencing students’ decision-making process in choosing a particular mode of study in a multi-mode teaching environment. Educational institutions have varying policies, resources, and support structures for different modes of study. For example, one institution may prioritize online learning and provide extensive technological support, while another institution may have a strong focus on face-to-face instruction (Sharma et al., 2022). Similarly, pedagogical factors are context-specific as teaching methods and approaches can differ across disciplines, programs, and institutions. The effectiveness and appropriateness of different pedagogical strategies may depend on the subject matter being taught and the desired learning outcomes (Chavoshi & Hamidi, 2019). Economic factors are regulated by the cost of education, availability of financial aid, and the socioeconomic background of students. Individual factors being the most diverse category reflect the unique preferences, learning styles, and circumstances of students. Technological factors relate to the availability and accessibility of technology and support structures within an educational setting.

By identifying and exploring the contextual factors this study provides a deeper understanding of students’ perception of different teaching modes. It also emphasizes how the themes are highly context-specific and the impacts and influences may vary for different research setups. The findings of this study will help future researchers see the bigger picture and explore the adoption
of teaching mode following a more versatile approach. They will also offer valuable insights for educational institutions to improve their mode of study offerings, support services, and overall learning experiences to better meet the needs and preferences of students.

6.4 Implication for Practice:

This section outlines the valuable insights and recommendations provided by students to enhance the learning experience in different modes of study. Students are at the forefront of the educational process, and their perspectives and suggestions are crucial in shaping the future of teaching and learning. Gathering feedback directly from students helps to gain valuable insights into their needs, preferences, and suggestions for improvement. This section aims to highlight the voices of students and present their recommendations to improve the learning experience in various study modes. Their valuable input serves as a guide for educational institutions, instructors, and policymakers to make informed decisions and implement effective strategies that promote student engagement, satisfaction, and success.

Combination of synchronous-asynchronous content:

The inclusion of both synchronous and asynchronous content in courses is of utmost importance as it offers a comprehensive and flexible learning experience for students. Students from different disciplines regardless of their preference for a certain mode of study raised the point that it would be helpful to have a balanced combination of synchronous and asynchronous content for their courses.

Synchronous content, such as live virtual classes, real-time discussions, and in-person interactions allow for immediate interaction and engagement with instructors and peers. It provides a sense of community and facilitates dynamic exchange of ideas. Synchronous sessions also enable students
to receive instant feedback, ask questions, and clarify concepts, fostering a deeper understanding of the subject matter. However, there are certain situations when students cannot keep up with the pace of a synchronous class so, they need a little more time to have a better understanding of the concepts. Sarah suggested:

“Some courses have difficult chapters that are difficult to understand in one go, and it’s sometimes hard to tell the professor to slow down. Videos of those lectures would help me to review the content in my own time.”

Asynchronous content plays a vital role in accommodating diverse learning styles and schedules. It provides students with the flexibility to access course materials, lectures, and assignments at their own pace and convenience. Asynchronous content allows learners to revisit materials, review complex concepts, and engage in self-paced learning. This mode also caters to individuals with personal or professional commitments, making education accessible to a wider range of learners. The option to review asynchronous video lectures, slides, or notes helps them to grasp the concepts without disrupting the flow of the class. Like Jane mentioned:

“...the practice videos really helped me, as I don’t always ask questions in the class as I feel that might interrupt the lecture.”

The combination of synchronous and asynchronous content in courses strikes a balance between real-time interaction and self-directed learning. It ensures that students have opportunities for immediate engagement and feedback while also having the flexibility to navigate their learning journey according to their individual needs. By incorporating both modes, instructors can cater to a variety of learning preferences, enhance student engagement, and create a more inclusive and effective learning environment.
A gradual transition from online to in-person:

The sudden shift to online education brought forth numerous challenges, including isolation, lack of social interaction, and reduced student engagement. A gradual transition back to in-person education recognizes the importance of human connection and fosters a supportive and collaborative learning environment. In-person interactions facilitate meaningful relationships, peer-to-peer learning, and mentorship opportunities that are essential for personal and academic growth.

The sudden shift to online education resulted in learning gaps for some students. In the new normal setup, students are again feeling rushed to get back in-person. After being used to online education for the last few years it’s sometimes hard to do all the courses in-person. Multiple students complained about the lack of availability of options for teaching mode. Some courses are only offered online and some courses are only offered in person. As Peter explained:

“I think there should be more online options, I think the drastic switch from last year where I had no option last year, obviously, like most people. All my courses were online last year. But then all of a sudden, to this year, 95 percent of courses are in-person. There was kind of a drastic switch where I think they should have maybe made it a little more gradual and then going forward offering a little more online options, like where they're still offering the in-person option but also an online option for some classes would be beneficial, I think.”

Also, in HyFlex mode students need departmental permission to do the course online. So, depending on the program requirement students often don’t have the option to choose. According to Mike:
“I just wanted to mention about how I feel like the university is very restrictive with the course offerings that they have. Because as much as I see the benefit of in-person learning, they always add in if you need departmental permission to be able to do a HyFlex or online version of that class. And I feel like it's a little bit of a negative aspect that carried with that because it's very restrictive and unnecessary...it seems like the university has the option to be able to give the in-person or give the option for online. But there they want to be, the ones to decide whether your situation is meaningful enough to merit that. And I don't think that it's fair for a university to be the one deciding that if they're going to offer online, I think they should offer online. If they're not, they shouldn't. I think it's a little arbitrary. I don't know the selection process, but I feel like it'd be a little bit too arbitrary.”

Universities are more than just places for knowledge dissemination; they are also hubs for cultural exchange, networking, and extracurricular activities. A phased transition allows institutions to gradually reinstate campus life, extracurricular activities, and community engagement, ensuring the holistic development of students. This gradual restoration preserves the vibrant and enriching campus experience that universities are known for, which contributes to their long-term sustainability and reputation.

As universities navigate the path to a post-pandemic future, a gradual transition from online to in-person education emerges as the prudent and holistic approach. By prioritizing safety, addressing psychological and social well-being, enhancing learning outcomes, bridging learning gaps, and preserving institutional integrity, this transition ensures the best possible educational experience for students. A thoughtful and measured approach will enable universities to create a sustainable future, combining the strengths of both online and in-person education to meet the evolving needs of students in a rapidly changing world.
More interactivity in classes:

Interactivity plays a vital role in all modes of classes, serving as a catalyst for student engagement, active learning, and knowledge retention. Whether in a digital or physical environment, the incorporation of interactive elements is essential for creating dynamic and effective educational experiences. This study shows how students prioritize interaction with instructors and peers in different modes. Peter complained about some courses not being interactive enough for students:

“Some of the professors teaching methods don't really come across very well, and they tend to have more students just opting to stay home and read the lecture slides later, because that's basically all the professors do during the class. I find that some of those bigger lectures are all that's happening is just reading off lecture slides. There are not many interactive portions. There are not many examples that are like to have to go to the lecture to experience them.”

One interesting part of this study was when asked about their favorite course some students gave an example of an online course whereas their preferred mode of study is in-person. Upon further questioning, they explained that certain online courses were so interactive that they didn’t feel isolated. The instructors made sure that the learning experience was dynamic and engaging for students as opposed to other courses that required limited participation from students’ end.

Interactivity in both online and in-person classes helps foster a sense of community and connection among students and between students and instructors. Collaborative activities, discussion boards, and virtual or physical group work facilitate peer-to-peer interaction, enabling students to learn from one another's experiences and viewpoints. In-person classes provide face-to-face interaction, which helps build rapport and a supportive learning environment. Online classes, through
synchronous discussions and virtual platforms, create opportunities for meaningful connections and a sense of belonging among students.

Interactivity in online classes offers unique advantages in terms of flexibility and adaptability. Online courses can facilitate asynchronous discussions, allowing students to engage at their own pace and convenience. This flexibility accommodates different learning styles, time zones, and individual preferences. In-person classes, on the other hand, provide immediate feedback and real-time adjustments to instructional strategies based on students' reactions and needs, fostering a dynamic and adaptable learning environment.

**Chapter 7: Conclusion**

Every mode has pros and cons, while online can be a flexible and time-saving option it cannot provide the university experience to some extent. While in-person can be engaging it poses certain constraints like commute, time management, etc. Blended modes like HyFlex try to integrate the best of both worlds but often lack structure. Students will not be so intransigent regarding a specific choice of mode of study if the learning experience is more interactive and accommodating for them.

Regardless of the mode of study, when students are actively engaged in the learning process, it enhances their understanding, retention, and overall satisfaction. In online learning, interactive elements such as live video discussions, virtual group projects, and interactive multimedia resources create opportunities for engagement and collaboration. Students appreciate the flexibility of online learning while still being able to actively participate and connect with their peers and instructors. In-person classes, with their immediate feedback, real-time discussions, and hands-on activities, provide an environment conducive to interactive learning. Students value the
opportunity to interact face-to-face, engaging in lively discussions and benefiting from the collective wisdom and diverse perspectives of their classmates. Blended learning, combining online and in-person elements, offers certain unique features, allowing students to engage in interactive online activities while also benefiting from the dynamic interactions of in-person sessions. When interactivity is prioritized, students develop a deeper connection to the subject matter, experience greater motivation, and feel a sense of ownership over their learning, regardless of the chosen mode of study.

Understanding the factors that influence students' choice of mode of study can greatly benefit instructors and educational authorities. By being aware of these factors, instructors can better cater to the needs and preferences of their students, leading to improved engagement, participation, and overall learning outcomes. Knowledge of these factors allows instructors to design and deliver courses that align with students' individual circumstances, learning styles, and technological capabilities. For example, instructors can provide various teaching materials and resources that accommodate different modes of study, such as online and in-person components. Additionally, instructors can adapt their teaching strategies and methodologies to enhance interactivity and promote effective communication, whether in face-to-face discussions or online forums.

Recognizing the factors influencing students' choice of mode of study also enables educational authorities to make informed decisions when designing curricula, allocating resources, and planning institutional policies. It allows for the creation of a learning environment that is inclusive, flexible, and responsive to the diverse needs of the student population. Ultimately, a comprehensive understanding of these factors empowers instructors and authorities to support students in their academic journey, leading to a more enriching and successful educational experience.
7.1 Limitations

The study is limited in terms of sample size and research setting as it reflects the perception of a small sample of students in one university. In a different setup or context, the outcome may vary from the propositions in this study. However, the findings of this study will be relevant to any research setup in providing context and reference. Students' learning experience is highly subjective and so is the coding process. To minimize potential bias the study was reviewed by experienced qualitative researchers and adjustments were made based on their feedback. A bigger sample size involving multiple disciplines will be more appropriate for future research where researchers can investigate the factors that influence changes in students’ preferences and the impact of these changes on their learning outcomes or explore whether certain factors hold more weight in specific fields of study and how these factors influence students' decision-making process. Researchers can also look into how students' perceptions of technology affect their choice of study mode and their subsequent learning experiences.
Appendix:

Appendix A: Code Table

<table>
<thead>
<tr>
<th>Codes</th>
<th>Subcode</th>
<th>Subcode</th>
<th>Quotes</th>
<th>Participant name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutional factors</td>
<td>Instructor profile and support</td>
<td>Instructor review</td>
<td>“I would also consider the reviews that I've heard for certain instructors. If there's an instructor that I heard not good reviews about, I might consider going online classes just because I might not consider putting in the effort to gain a relationship with the instructor.”</td>
<td>David</td>
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<td></td>
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<td></td>
<td>“Sometimes when you're looking at the ratings for a professor they may have really good ratings and then you get to 2020. And all, the ratings are suddenly, really low. That shows the prof might be better in offline classes than online……..I try to look before 2020 as well as I'm going to be doing this in person now”</td>
<td>Jane</td>
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<td>“Sometimes I'll talk to some people that have taken those classes before to see how the professor is or I'll go on like rate my professor to look at the reviews.”</td>
<td>Mike</td>
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<td></td>
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<td>“if the option is given to me I try to see if I know the teacher is going to teach their course based on previous courses videos. Sometimes I do find that helpful.”</td>
<td>Sarah</td>
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<td></td>
<td>Instructor support</td>
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<td>“I've had way more better experiences with professor interactions and support in person. In online we've had just a small little support system to resume. But being able to get a prof and just talk to them one on one is just a way better experience being in person.”</td>
<td>Ben</td>
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<td>“I find that almost every professor's able to teach better in person, they are more helpful in-person”</td>
<td>Mike</td>
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<tr>
<td>Available modes</td>
<td></td>
<td></td>
<td>“In my courses, only in-person was available, so I had no option, if I had an option, I would choose virtual.”</td>
<td>Ann</td>
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<td></td>
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<td></td>
<td>“I didn't really have a choice between that. Given the choice I tend to prefer in-person courses”</td>
<td>David</td>
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<td></td>
<td></td>
<td></td>
<td>“I would appreciate the opportunity to take a class both in-person or online. So if I really need to take it online, I can't do that.”</td>
<td>Steve</td>
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<tr>
<td>Learning environment</td>
<td></td>
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<td>“I've had some problems during COVID. I was with my family. We were all in one house. It was a bit difficult to be in one isolated area to just be focused on class. It used to stress me out.”</td>
<td>Ben</td>
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<td>“I didn't like how where I slept and ate. All that was also where I studied had my classes, everything. So, I just I like to keep the a bit separate.”</td>
<td>Joe</td>
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<td></td>
<td></td>
<td></td>
<td>“I just like being able to go to class, sit in a class and then learn and then be able to leave without just sitting in one place on my computer.”</td>
<td>Sarah</td>
</tr>
</tbody>
</table>
| Socializing | “I prefer about in-person classes is that it allows me to make friendships much more easily.”
“I'm also more social like a social person, I like talking to people. I like it. You get you're more connected to your classmates when it's in person”
“I’d say that I had trouble online as nobody else wanted to talk because I'm a pretty social and I would reach out to anybody if I was in a breakout room, I find it easy to talk to people. But some people, would just not respond or I'd go into a breakout room and I'd start talking and nothing would happen. That's annoying.” | David
Joe
Mike |
| Mental health | “From my cultural background of me being an indigenous person, it's hard to get out of my own comfort zone to tie up to other people. It’s even harder in online. I would feel isolated, and it used to stress me out”
“...there's definitely like valuable things about going in person and learning, just like being around people like is better for my mental health” | Ben
Jane |
| University experience | “the biggest reason I like the in-person being able to go on campus. There's lots of stuff to do. Even if you have a break in between classes, there's plenty of places to relax. And I think the in-person is mostly about getting that university experience more so than the actual classes themselves.”
“...coming to university to view an actual lecture. So I guess it's kind of the feeling of the university experience that is important to me” | Peter
Steve |
| Technical support | “The technical staff are really fast and helpful” | Ann |
| Pedagogical factors Course format | “I would say that the course which are difficult and requires really serious attention should be in person. And they're like subjects like theory and all that should be virtually.”
“what kind of course it is matters, because if it's a math course, then I will go in person because there they do like practice problems and things in class..........Whereas if it was something that was just more like theory based, then a lot of the time that I will just like, read the textbook on my own time and like, kind of do my own notes.”
“if I had the option to take a math based course, I think I would take it online just because sometimes it's a little bit easier to keep up with it than in class ....I have the option to replay or pause videos. And that was really helpful when it comes to learning a bit more mathematical and theoretical subjects.”
“it's the heavier subjects, especially math related, like economics or finance, I would want to do that in person. And then if it's more like reading focused or theory focused where I just need to keep up with the content. I don't mind doing, online.”
“...depending on the difficulty of the class, if it's a more advanced subject, I probably want to take it in person just | Ann
Jane
Sarah
Mike |
<table>
<thead>
<tr>
<th>Individual factors</th>
<th>Commute Convenience</th>
<th>Commute Time</th>
<th>Sleep schedule</th>
<th>Familiarity with peers</th>
<th>Weather</th>
<th>Flexibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching style</td>
<td>“I’ve definitely learned the concept better on my own for some courses, just like maybe like the teacher's teaching style just doesn't really match with like what my learning style is sometimes.”</td>
<td>“It is much difficult to travel from our home to university as I have to travel by public transport and public transport here in Ottawa, it's not that good like buses get missed and we have to wait for buses. Every bus comes after 30 minutes. So sometimes even if I am punctual, I cannot reach there on time due to bus system here in Ottawa.”</td>
<td>“For my in-person classes, I have to wake up way before the classes start, like I have to wake up four to five hours before. In virtual classes, I was not sleep deprived.”</td>
<td>“Back home, I know like a majority of all the people in the community. So it's very like friendly. You can easily talk to anybody. But once I come here, it's like leaving your comfort zone and it's very difficult to interact with other people and communicate and make friends with them online.”</td>
<td>“In winters it's too difficult to like travelling in mornings because it's too cold and like heavy snow falling all that.”</td>
<td>“I personally like to go for morning classes because if I go to like a later class, I feel like I won't be as interactive and focused, ready for like. To listen, if I'm going to a morning class, I feel like I'm more ready for the day. Ready to learn.”</td>
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<td></td>
<td>“I definitely felt as though the professor who was teaching the HyFlex class or the tutorial. Sometimes it was a little bit more rushed. You had to make sure that both sections of the class online and in person had to be answered. So it's a little less seamless. Maybe it took a little longer”</td>
<td>“if it's an early morning class, I tend to lean toward online because I don't want to have to leave my house at. 6:30 to get to Carlton for my 8:30 class when it could be online asynchronous and I can do it throughout the week at my at my own leisure.”</td>
<td>“When I had online courses, I would just wake up like 10 to 15 minutes before the class. Meanwhile, nowadays I have to have a regular sleep schedule where I wake up at the appropriate time. It's a bit harder, but it definitely helps me get into a rhythm.”</td>
<td>“I feel like some courses and some professors just can structure classes better in person when others structure better online. So, I think maybe it's like also the course structure and how the instructor feels doing it online or in person.”</td>
<td>“I guess having courses that have the option to be both in-person or online presents a pretty big advantage because some days some students, even myself, I feel burnt out and I don't want to go to class. So having the option to be online would</td>
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help because I wouldn't have to wake up early for the commute. I won't have to as physically engaged like the teacher can't call upon me if I'm online and on a screen as it. I guess it doesn't make me worried about what I have to dress for. I don't feel any pressure”

“I can go through the recorded lectures I find really helped me because I can go back and forth and play it at my own speed and stop it and pause it when I need to. When you're in a live lecture, it's you can't do that”

“I would not want to go to school like every day, even if I have to take some classes mostly in-person if I can find one online, I will choose that one.”

Learning style
“I noticed once everything went online, my grades kind of went low, low because I'm just more of an in-person, better learner.”

Focus
“I focus more when it's in person, if it's online, I tend to daydream a lot and maybe zone out. I just don't really listen.”
“If I'm in person, I'll focus more than if I'm online.”

Interaction
“I guess going to a different school, you would want to be able to go to the school and meet the professors in person, get to know them. But being online, it's felt like there was almost a barrier in front of you and the professor and other students to like, communicate and get to know each other and fully like be able to talk and interact with them and get a better understanding of the lessons.”
“When I first did the course online, I really struggled because there was absolutely no interactivity at all.”

“I would say the easier to get everybody involved when it's in person, because when it's an online only class, it's quite easy to avoid people. You just have to set your notifications to silent and just send nothing into the email or group chats that we have.”

“I find it's quite a bit easier to ask questions in person because. While you're directly seeing the proof and oftentimes they will, like, roam around the classroom and then you can ask them yourself without disrupting the flow of the other students.”

“I feel more shy to participate when it's in person because like all the people are physically there. So to like, raise your hand and then everyone's looking at you, whereas when it was online, I probably participated more, feels like it's less pressure because like, yeah, all those people are there, but like their camera is off, they're probably not even paying attention.”

Technical issues
“I didn't really like Brightspace during the first year, the first two semesters, because I found that Brightspace just wasn't very reliable in terms of like loading correctly. I found out what the assignments were missing or like some presentations were missing. I think it's gotten a lot better in the past year.”
“There have been times where my internet connection wasn't stable, so I couldn't attend certain classes.”
<table>
<thead>
<tr>
<th>Topic</th>
<th>Comments</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time management</td>
<td>&quot;In in-person it's difficult to manage my time because we have to work, we have to attend classes and then we have to submit assignments and all that.&quot;</td>
<td>Ann</td>
</tr>
<tr>
<td>Career development</td>
<td>&quot;…you really want to build a rapport with the prof because they can help you with certain extracurricular activities, such as building a portfolio for when you graduate. They can also serve as a reference if you ask them nicely. And there's also been opportunities in the past where a former instructor hires a former student based on their previous rapport when they're working, say, in a company&quot;</td>
<td>David</td>
</tr>
<tr>
<td>Academic performance</td>
<td>&quot;In my first year online courses I scored really well, and in my second year it was a like sudden switch to in-person so I didn’t score good as much as I did in my first year.  &quot;I noticed once everything went online, my grades kind of went low, low because I'm just more of an in-person, better learner.&quot;</td>
<td>Ann</td>
</tr>
<tr>
<td>Work schedule</td>
<td>&quot;I've always tried to schedule my classes so that I had either two or three full days off just so I'm able to work part-time.&quot;  &quot;I have a part time job, and that's why I like having that course online on a Monday. Helps me structure my schedule. So I only need to be in school for three days. So I have time for my job too.&quot;</td>
<td>Mike</td>
</tr>
<tr>
<td>Transport expense</td>
<td>&quot;…being an international student it’s hard for me to get a car and it’s very expensive to travel by other means like taxi or uber if the public transport is not available&quot;</td>
<td>Ann</td>
</tr>
</tbody>
</table>
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