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Improving Student Engagement in Online Learning: A Case Study of a Graduate Program in Canada

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Abstract

The landscape of higher education has undergone a transformative shift towards online learning globally since COVID-19. Student engagement in online learning emerges as a pivotal area of inquiry due to its critical role in learning outcomes and academic success. While extensive research has explored student engagement in traditional face-to-face settings, there remains a notable gap in understanding engagement in online learning environments, particularly at the graduate level. Adopting an integrated framework of improvement science and an online student engagement framework, this study examines the engagement experiences of graduate students in a fully online program offered by a Canadian university, utilizing a qualitative case study methodology. Through the lenses of cognitive, emotional, behavioral, collaborative, and social engagement, this study is guided by the holistic analysis of improvement science. Pedagogical, organizational, and socio-structural factors are identified as closely linked to student engagement in online learning. Strategies are proposed to improve interaction, provide personalized support, and cultivate a sense of community, while policy recommendations advocate for learner-centric approaches and quality assurance mechanisms. This study provides a better understanding of online student engagement, offering valuable insights for educators, policymakers, and institutions striving to improve the online learning environment for graduate students in Canada and beyond.

Keywords: student engagement, online learning, higher education, improvement science, case study

Summary for Lay Audience

Since the onset of the COVID-19 pandemic, many universities have shifted to online learning. This change has highlighted the need to understand how students engage with online courses, as their engagement is crucial for effective learning and academic success. While there is extensive research on student engagement in traditional classrooms, less is known about how students engage in online settings, especially at the graduate level.

This study examines how graduate students in an online program at a Canadian university experience and engage with their courses. It looks at various aspects of engagement, including how students think and learn, their feelings and motivation, their participation and actions, their collaboration with others, and their social interactions.

Through a survey and interviews, the study finds that several factors influence student engagement in online learning. These factors include the teaching methods used, the organization of the courses, and the social dynamics within the online learning environment. To improve online learning, the study suggests enhancing interactions between students and instructors, providing personalized support for students, and fostering a sense of community among students.

Additionally, the study recommends policies that focus on the needs of students and ensure high-quality online learning experiences. Overall, this research provides valuable insights for educators and universities on how to improve online learning for graduate students in Canada and beyond.

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This research was primarily conducted and written in the aftermath of the COVID-19 pandemic, a period during which the entire world continued to grapple with the consequences of this crisis. The pandemic significantly impacted everyone's lives, leading to city lockdowns and advisories for people to stay at home. Schools were closed, causing a radical and systemic shift to online learning around the globe. Suddenly, online learning became the predominant approach employed by almost all educational institutions, from kindergarten to higher education. Emerging as a response to the global crisis, online learning has gained global attention and recognition and continues to unfold in the post-COVID era. This study examines and explores the experiences of student engagement in online learning at the graduate level and how they can be improved through a case study approach. This introductory chapter presents my research context and the development of online higher education in Canada. The chapter also includes my research questions, followed by definitions of key terms that I used in the study.

1.1 Research Context

Online learning has been dramatically growing since the global pandemic broke out in the spring of 2020. This worldwide, phenomenal change in the mode of learning has also been backed up by radical advancements in information technology, spurred by the increasing access to the internet, and demanded by the need for more accessible and flexible learning options. More specifically, the internet has become an integral part of people's lives, which enables more people to access online learning than ever before. As a result, online learning allows learners to access course materials and lectures anywhere in the world at any time.

The technology available for online learning has also grown exponentially in the past two decades. From streaming video lectures to interactive learning platforms, the range of options available to students has grown immensely. Nowadays, students can access high-quality online learning content and have a more engaging online learning experience with the material.

Higher education institutions (HEIs) have continued to expand their offerings of online courses and degree programs, thereby encouraging students to enroll in online courses and accelerating the speed of online learning development (Tabatabaei & Gardiner, 2012). In the USA, the first Web-based post-secondary education course appeared in 1995 (Bates, 2001). A report shows that in the USA, from 2002 to 2012, the number of students taking at least one online course increased from 1.6 million to 7.1 million, which represents a compound annual growth rate of 16.1% (Allen & Seaman, 2013). A more recent report shows that one in three students in the US higher education sector takes at least one online distance education course (Seaman et al., 2018). As a Chinese researcher, it is noteworthy that China, with the largest higher education system in the world, has gained huge development in online learning in the past decades, and in 2002 the Ministry of Education of China approved 68 Chinese universities to offer programs providing web-based education (Li, 2019). Online learning experiences have become the norm for today's students. With pressures to increase access to higher education, colleges and universities have focused on increasing the number of online courses and programs offered (Meyer, 2014).

During the global COVID-19 pandemic from 2020 to 2023, HEIs around the world were under radical transformations. Instead of going to campus for face-to-face

classes, students shifted to virtual classrooms via the internet. The COVID-19 crisis has created a worldwide disruption to higher education, and most HEIs moved to online learning admist the pandemic.

Student engagement is recognized as having an important influence on learning and achievement in higher education and is, as such, a critical area of much research and theory (Kahu, 2013). Previous research has demonstrated that student engagement is linked to various measures of academic achievement in online learning, including student retention, student satisfaction, and institutional success; therefore, it is important to consider actual student experiences to improve student engagement in online learning (Humber, 2021). With HEIs increasing their online presence and providing more opportunities for fully online studies, student engagement in the online environment requires further investigation and consideration (Redmond et al., 2018).

Since the 1990s, extensive research literature has investigated how students engage with their studies and what they, institutions, and educators can do to improve engagement (Zepke & Leach, 2010). However, studies on student engagement in the online learning environment are lacking. Furthermore, much of the previous literature on online student engagement is based on face-to-face learning, perhaps suggesting that the principles of engagement for online learning are not so different from the face-to-face classroom (Dyment et al., 2020; Meyer, 2014). It is also argued by some researchers that student engagement in online courses may be more important than it is in on-campus courses because online students have fewer ways to be engaged with the institution (Meyer, 2014).

A critical and more comprehensive understanding of student online learning experiences would help inform HEIs about ways to better engage with students who are autonomous and have multiple competing priorities in their lives such as jobs, family responsibilities, and financial problems (O'Shea et al., 2015). However, little research has been done about graduate education offered in an online format. Since online learning is a ubiquitous approach now, during and even after the COVID-19 pandemic, it is crucial to explore the problems in online student engagement and how we may be able to improve it. Studies on how educational technology affects student engagement within the broader sociocultural framework of engagement, and more qualitative research at the graduate level in this area are highly encouraged by previous researchers (Bond et al., 2020).

It is also noted that online student engagement is an under-researched area in Canada (Bond et al., 2020; Purarjomandlangrudi et al., 2016). The purpose of this study is to close the gap in the literature by problematizing student engagement in a fully online graduate program in a Canadian university from the perspectives of improvement science and the online student engagement framework.

1.2 Online Higher Education in Canada

Canada has a relatively long history of online and distance education (Bates, 2018b). Although different researchers have different interpretations of the origin of distance education, we cannot separate distance education from the social development of Canada. Many scholars agree that the earliest distance education can be traced back to the mid-1800s, which is commonly known as the first industrial era (Garrison, 2021). From then on, according to the development of technology, distance education experienced three generations: (1) correspondence study; (2) multimedia distance education; and (3)

computer-mediated distance education (Sumner, 2010). Online learning is the third generation of distance education and it has emerged since the second industrial revolution in the early 21st century.

Canada does not have any federal department or national system of education. Each province (and territory) is responsible for education at all levels, including HEIs. In the 1970s, with greater recognition of the possibilities of distance education, provincial governments moved to establish three institutions focused solely on distance education (Haughey, 2013). In 1970, Athabasca University was established in Alberta to offer distance education programs. It has now become an online university in Canada. In the same year, Télé-université was founded in Québec and it is the only French-language university in North America offering all its courses via online learning. British Columbia established the Open Learning Institute (OLI) in 1978 to provide college, adult basic and technical, career, vocational and university education to students throughout the province.

After around 50 years, online learning has greatly developed in Canada's post-secondary education. A recent national survey of online learning shows that over the period from 2011 to 2016, the number of institutions offering online courses has increased by 11%, and online courses can be found in every subject area (Bates, 2018b). Bates also finds that over two-thirds of the institutions in Canada report that online learning is very or extremely important for their future. Although there is no national recording system to track the total number of students studying fully online in Canada, Canadian Digital Learning Research Association (CDLRA) conducted a national survey in 2019 and reported that the vast majority (76%) of Canadian post-secondary institutions offer online courses for credit, with almost all universities and colleges across Canada

delivering courses online. The report also shows that in 2019, among all the 234 publicly funded institutions, all but one institution with more than 10,000 enrollments offered online courses for credit (N. Johnson et al., 2019). Online graduate programs in Canada commenced approximately four decades ago. In 1985, the Ontario Institute for Studies in Education (OISE) at the University of Toronto, began offering graduate-level courses online (Harasim, 2000).

With these developments, Canada is a leading country in the field of distance education. In 1987, the Commonwealth of Learning (COL) was created to promote the development and sharing of open learning and distance education knowledge, resources, and technologies. COL is an intergovernmental organization with headquarters in British Columbia, Canada. COL is the world's only intergovernmental organization solely concerned with the promotion and development of distance education and open learning (COL, 2024).

1.3 Research Questions

Based on the literature reviewed, this study was driven by the following four research questions:

1. What systemic problems may graduate students encounter when they engage in online learning?
2. What factors may contribute to graduate students engaged and not being engaged in the online programs?
3. How can student engagement be improved in online graduate programs?
4. What policy implications may be drawn from this study?

The first research question aims to investigate various systemic issues that graduate students may face in the context of a fully online learning program. Finding these problems serves as a crucial starting point for problem-solving initiatives, guiding subsequent efforts toward fostering improvement and enhancing the overall quality of the online learning experience. Based on the first research question, the second research question explores the factors influencing the engagement of graduate students in online learning. These contributing factors can provide insights into designing effective online programs that promote high levels of engagement among graduate students. Building on the insights gained from the previous two questions, the third research question focuses on proposing strategies to support the development of innovative solutions to improve student engagement in online graduate programs, according to the theoretical framework of the study. Lastly, the fourth research question looks at the broader implications of the research findings on a policy level. By analyzing problems students encountered and potential strategies, it aligns with existing policies or identifies the need for new policies to address issues in online graduate education. The purpose is to contribute to the development of policies that can positively impact the online learning experience for graduate students.

1.4 Definitions of Key Terms

Here I present the definitions of the key terminologies that I often use in this research.

Student engagement: Researchers found it is quite difficult to reach a consensus on the definition of student engagement. Fredricks et al. (2004) describe cognitive, emotional, and behavioral engagement and recommend studying engagement as a

multifaceted construct. From this perspective, cognitive engagement includes a willingness to tackle demanding tasks, maintaining a sense of purpose, utilizing strategies, and engaging in critical thinking. Emotional engagement involves a sense of belonging or valuing of the school. Behavioral engagement includes actions such as attendance and participation in school activities (Sinatra et al., 2015).

Online learning: Today, with the development of high-speed internet, online learning is used more often than distance education. According to Allen & Seaman (2011), online courses are those in which at least 80% of the course content is delivered online. Face-to-face instruction includes courses in which 0-29% of the content is delivered online; this category includes both traditional and web-facilitated courses. The remaining alternative, blended (sometimes called hybrid or mixed) instruction has between 30-80% of the course content delivered online.

Distance education: It is a type of teaching and planned learning in which the teaching normally occurs in a different place from learning, requiring communication through technologies, as well as special institutional organization (Moore & Kearsley, 2012, p. 2).

Online graduate program: An online graduate program refers to those master's or doctoral degree programs offered by higher education institutions, where at least 80% of courses are delivered online (Allen & Seaman, 2011).

Traditional student and non-traditional student: Many scholars classify higher education students into two primary categories: traditional and non-traditional students (Downing & Dyment, 2013; Mitchell et al., 2015; Wyatt, 2011). The terms "adult students" and "mature students" are also commonly used by some researchers to describe

non-traditional students (Chen, 2014; Lambert et al., 2014; Money & Dean, 2019). While there are different definitions of non-traditional students, mature students, and adult students in higher education, all three terms are commonly used interchangeably to refer to “non-traditionally aged” students who are participating in higher education primarily for career-related reasons while having other major responsibilities and roles (Panacci, 2015), such as career and family responsibilities. Considering that the legal age for adulthood is 18 years old in many countries, the interchangeability of the terms “adult students” and “non-traditional students” seems problematic, as traditional undergraduate students are typically above 18 years old.

There is no unanimous definition for non-traditional students. This study will adopt the common convention, referring to traditional students as those aged 18–24 and non-traditional students as those aged 25 and above in higher education (Wyatt, 2011). Non-traditional students are drawn to online learning due to its flexibility and convenience (Kahu et al., 2014; McPherson & Bacow, 2015). These students, often characterized by having spouses, children, full-time or part-time jobs, financial constraints, or other family and community commitments, find it challenging to be physically present on campus every day for face-to-face education (Kahu et al., 2014). Online learning offers more opportunities to these non-traditional students to pursue their studies in higher education. Researchers argue that as online learning has effectively become an integral part of higher education, the emphasis of higher education institutions should now shift from merely providing access to university education to enhancing its quality (Lee, 2017).

Synchronous interaction: Synchronous interaction involves scheduling a specific time for an online learning group to participate in real-time exchanges (Conrad & Openo, 2018). This allows students to communicate simultaneously, even if they are not physically in the same location. Communication can take place through online text chat, audioconferencing, or videoconferencing (Akarasriworn & Ku, 2013).

Asynchronous interaction: It is a type of interaction that does not require all students to be online at the same time, meaning that students individually determine when they interact with the online material (McPherson & Bacow, 2015).

Chapter 2 Literature Review

This chapter includes a literature review of this research. I discuss how previous literature addresses this area, including the current context of online higher education, the drivers behind its fast development, the rise in non-traditional students participating in higher education in the globe, learning theories within online learning context, definitions and measures of student engagement, and the factors influencing student engagement in online learning.

2.1 Online Learning

Online learning is one of the fastest growing areas of education worldwide because it provides access to educational opportunities in a flexible manner to students from diverse backgrounds and geographical regions, who often cannot access higher education by other means (Farrell & Brunton, 2020). In some respects, almost every course taught today is a hybrid and incorporates at least some online component (McPherson & Bacow, 2015). An essential term examined in this research is online learning, prompting an exploration into its definition and evolutionary trajectory.

2.1.1 Definition and Origin of Online Learning

Although online learning has become a buzzword for research in the past two decades, it is hard to find a consensus definition of online learning. The term online learning emerged in 1995 with the introduction of WebCT (Web Course Tools), an early web-based platform for courses, which eventually evolved into Blackboard, the first Learning Management System (LMS) online (Singh & Thurman, 2019). Online learning is often used interchangeably with online education, e-learning, web-based education/learning and more. Typically, this type of learning refers to the use of internet

for educational applications such as: course delivery and support of educational projects, research, access to resources and group collaboration (Harasim, 2017). A recent research by Singh and Thurman (2019) conducted a systematic literature review to gather definitions of online learning spanning the last 30 years, from 1988 to 2018. They identified 46 definitions of online learning, along with 18 synonymous terms, including e-learning, blended learning, online course, and computer-assisted instruction etc. According to this research, the central element in defining online learning is the utilization of technology. Furthermore, the evolution of the concept's definition was found to correlate with advancements in technology over the past three decades.

With many different definitions on online learning, many scholars agree that online learning is a format of distance education (Allen & Seaman, 2011; Bates, 2018b). Distance education refers to a format of education in which the teacher and students are physically separated. The origin of distance education can be traced back at least to the 1800s (Kentnor, 2015; Lee, 2017). For example, in 1858, the University of London started to provide correspondence study programs for students seeking an external degree, and back then the targeted students were women and racial minorities who were barred from higher education by political or personal circumstances (Lee, 2017). Over the past approximately 300 years, distance education has gone through different stages of development.

From the perspective of various media used in the process of education and the chronical development of technology, the history of distance education can mainly be divided to three generations (Anderson & Dron, 2012; Archer & Garrison, 2010; Nipper, 1989; Sumner, 2000). The first generation of distance education is called correspondence

education, which mainly uses postal parcel as correspondence in education. This was followed by a second generation defined by the use of mass media including television, radio and film as the main teaching and learning medium. Therefore, the second generation of distance education is also named multimedia distance education. Audio-conferencing and videoconferencing are the common methods used in this generation. The third generation of distance education is driven by the use the internet and the World Wide Web, mainly using computers and the internet as the delivery mechanism. Online learning was developed in the third generation of distance education. In 1991, the University of Phoenix was the first to offer online education programs through the internet. Universities and colleges commenced their exploration of online courses during the early to mid-1990s. However, significant expansion in online education within traditional non-profit institutions did not occur until 1998. It was in October of that year when New York University (NYU), renowned for operating one of the largest continuing education schools nationally, emerged as the inaugural large non-profit university to establish a for-profit online education entity, NYU Online (Kentnor, 2015).

2.1.2 Pedagogical Paradigm Shift of Online Learning

The history of the development of online learning also demonstrates a paradigm shift in pedagogy. A large part of our perceptions of online learning closely resemble earlier views on distance education, while at the same time, many current online higher education practices are heavily influenced by distance education practices of the past (Lee, 2017). In the first generation of distance education, communication between teacher and learner occurred via the postal system. The primary characteristic of this first generation is its limited two-way interaction between teacher and learner. Due to the slow

postal process, achieving two-way communication is challenging, resulting in a highly individualized mode of learning that tends to isolate students from group learning processes (Sumner, 2000). Therefore, learners in this generation primarily act as passive recipients, with teachers serving as the center for knowledge dissemination.

The second generation of distance education involves audio-conferencing and video-conferencing, enabling simultaneous participation of students and teachers from different locations. Despite its potential for communicative action due to two-way communication capabilities (e.g., teleconferencing), the second generation often underutilized this potential by prioritizing one-way communication, expert knowledge dissemination, mass marketing, and student independence (Sumner, 2000). Overall, similar to the first generation of distance education, the second generation remains teacher centered.

In the third generation of distance education, online learning can support electronic transmission which facilitates the sharing of contributions from both learners and instructors during a learning session. These contributions are sent to a central server, where they are stored and made accessible to other participants regardless of time or location. Unlike the second generation, online learning enables multiple participants to interact with the instructor, while also facilitating interaction among the participants themselves. Fully online graduate program in the study conforms to the definition of distance education: that is, in a fully online graduate program, teachers and learners interact at a distance and web technologies are used to bring them together (Lee, 2017). Online learning in the third generation puts more focus on interaction, including learner-to-learner, learner-to-instructor, and learner-to-content interactions (Moore, 1989).

It can be concluded that the evolution of distance education from traditional print-based methods to online learning signifies a paradigmatic shift in pedagogy. This transition moves from one-way education to two-way education, from individualized learning to a collaborative learning approach, from zero or limited interactivity to highly interactive learning, and from teacher centered to learner centered. This paradigm shift is also categorized as three generations: objectivist, subjectivist, and complexivist (Dron & Anderson, 2023). The objectivist paradigm involves pedagogies that assume there is an objective reality to learn about and that there are clearly defined objectives to be achieved. The objectivist paradigm focuses on teaching, aiming to identify and predict the most effective ways that teachers can facilitate the acquisition of desired skills or knowledge.

According to Dron and Anderson (2023), the subjectivist paradigm is learner centered, and it believes knowledge is constructed in the context of existing knowledge. In this model, knowledge is not only constructed by individuals in interaction with others, but it is also seen as a social and situated phenomenon. Subjectivism views the teacher as a “guide on the side” rather than a “sage on a stage”, and the teacher’s role remains that of a leader within a named group of students. During learning process, the teacher retains control, assesses student learning, and establishes and enforces group norms and rules. As shown in this research, teachers play an important role in initiating and supporting the students’ interaction and collaboration in the online learning. We cannot assume that simply because online learning platforms may increase interaction and collaboration capabilities while teachers and students are physically apart, students will automatically

engage more in interactive or collaborative learning. The “guide” role of the teacher remains significant in this model.

The complexivist paradigm goes further, and sees knowledge as intrinsically distributed, situated, complex, and emergent. knowledge and learning are viewed as dynamic and interconnected processes that extend beyond individual minds to encompass networks of people and their creations. Learning is not just about acquiring information but also about engaging with complex systems and contexts. For example, in a hospital setting, healthcare professionals from different disciplines (e.g., doctors, nurses, therapists) collaborate to provide holistic care to patients. Knowledge about patient diagnoses, treatment plans, and outcomes is distributed among the interdisciplinary team, and collaborative decision-making processes can help optimize patient care.

The pedagogical paradigm shift demonstrates the development of distance education in the past around 300 years since 1800s. In the current research context, the fully online learning program is offered in traditional higher institutions where students take courses designed and guided by the teachers. Students play an active role, participating in interactive and collaborative learning experiences. This instructional approach conforms to the subjectivist paradigm discussed, in which interactivity, collaborative learning, and student engagement are three key underlying forces driving improved student learning outcomes (Blasco-Arcas et al., 2013).

2.1.3 Reality and Possibilities

Online learning, rapidly expanding globally, provides flexible access to education for students from diverse backgrounds and regions, serving as a solution to challenges in higher education, including student recruitment, finance, and the challenges of the

COVID-19 pandemic (Farrell & Brunton, 2020; Kang & Pak, 2023; Redmond et al., 2022). Before COVID-19, online learning has seen rapid growth in the world, with more than six million students enrolled in online courses in the United States (Allen & Seaman, 2017). In Canada, online course enrolments constituted approximately 16% of all course enrolments in Canadian universities in 2015, and over the period 2011–2016, the number of institutions offering online courses has
increased by 11% (Bates, 2018b).

The unprecedented outbreak of COVID-19 pandemic resulted in a sudden and global change in many sectors including transportation, economic, and education. Due to regulations such as city lockdown and social distancing in order to decrease the spread of COVID-19, schools had to shut down as well and switch to online learning. The pandemic affected more than 1.5 billion students globally, and practices and the online teaching and learning context has undergone major changes (UNESCO, 2023). The online teaching and learning contexts are considered different from traditional in-person classrooms, which significantly change the way students communicate, engage and learn (Vezne et al., 2023). During the pandemic, online learning has swiftly become ubiquitous and virtually the sole learning approach adopted by nearly all schools worldwide. Many studies have been done to investigate the status of online learning during pandemic, including the implementation of online education by schools in this unique situation, the strengths, weaknesses, opportunities, and challenges associated with online learning, student engagement in online learning, as well as student perceptions regarding this fully online learning approach during the crisis (Bao, 2020; Dhawan, 2020; Morrison, 2021; Prodgers et al., 2023). These studies contribute to the body of literature on online

learning, enriching both theoretical understanding and practical applications through empirical data.

With current online learning no longer a trend, but mainstream, it has greatly impacted higher education as a whole across the globe (Kentnor, 2015). Blended online learning programs and fully online programs are very common in today's higher educational institutions. The sudden and swift transition to online learning brings opportunities, but it also presents challenges. The biggest problem might be that the advancement of online learning varies significantly worldwide. In developed countries, online learning is extensively established, whereas in developing nations, it is less advanced. In some cases, online learning is neither practiced nor officially recognized by educational institutions and policymakers in developing nations (Sofi-Karim et al., 2023). For example, in the United States, most four-year public institutions (93%), two-year institutions (91%), and four-year private institutions (87%) rapidly switched to online learning due to the pandemic in 2020 (N. Johnson et al., 2020). In Canada, the 2021 National Report shows that nearly all post-secondary institutions (93%) expected growth in the area of hybrid learning (courses offered in a partially online format) and over three-quarters of institutions (78%) anticipated growth in fully online learning (Johnson, 2021). On the other hand, in certain underdeveloped countries, several challenges continue to impede the progress of online learning. These obstacles include inadequate or poor-quality internet services, financial constraints preventing students from accessing reliable internet and necessary equipment like laptops, and a lack of experience among teachers in online instruction (Sofi-Karim et al., 2023).

Even within developed countries where the technology and internet infrastructure are better developed, equity, inclusion, and other social problems still exist. There is mounting evidence indicating that these problems may negatively impact, but are not restricted to: students from disadvantaged socio-economic backgrounds, students with specific needs (e.g., special education students) (Greenhow et al., 2022); students with disabilities, students who are caregivers, students belonging to racial and ethnic minority groups (Tate & Warschauer, 2022); or even students with immigration status concerns (Naffi et al., 2023). For example, in Canada, a temporary financial assistance program named Canada Emergency Student Benefit (CESB) was initiated to help Canadian and permanent resident post-secondary students during the pandemic from May 10 to August 29, 2020. However, international students in Canada were ineligible to receive this support.

Although these problems exist in the current context of online learning, the swift shift to online learning because of the COVID-19 pandemic aligns with broader global trends towards increased online learning, self-directed learning, and usage of social media, which are already underway before the pandemic, underscoring the need for further and deeper online learning research (Greenhow et al., 2022). In order to improve the current situation of online learning, more equitable access to physical, human, and social resources is needed for effective online learning are critical elements of a just society (Tate & Warschauer, 2022).

The post COVID-19 era is coming, bringing a series of new normals in societal behaviors, economic structures, and healthcare practices, and is also reshaping the way we approach teaching, learning, and accessing educational resources. Over the past

decade, research in online learning has consistently emphasized the importance of high-quality online education. Many of these research studies have focused on aspects of the online learning process, including examining student satisfaction (Alqurashi, 2019; Bovermann et al., 2018; Burbuagh et al., 2014), engagement (Dyment et al., 2020; Henrie et al., 2015; Kang & Pak, 2023; Redmond et al., 2022), as well as interactions between students and instructors (Abrami et al., 2011; Morrison, 2021; Purarjomandlangrudi et al., 2016).

The aim of UNESCO's sustainable development goal 4 (SDG4) is to ensure inclusive, equitable, and high-quality education, along with promoting lifelong learning opportunities for everyone, serving as a crucial driver for positive transformation by highlighting education's potential to foster a sustainable and equitable world (UNESCO, 2017). Under this initiative, higher educational institutions worldwide need to continuously improve the quality of online learning, whether through blended or fully online approaches, thereby facilitating broader access to education and empowering individuals to thrive in an increasingly interconnected and rapidly evolving global landscape.

2.2 Varied Perspectives on Drivers of Online Higher Education

The rapid development of online higher education can be attributed to a diverse array of factors, which has been demonstrated by studies from different perspectives, including the social, economic, political, and transformative dimensions of unprecedented changes. The convergence of these elements has created a dynamic landscape that promotes the widespread adoption and expansion of online higher education, making it an

important force in contemporary academic settings. The following section will provide an in-depth elaboration of these contributing factors.

From a social perspective, technology has brought about profound transformations in both our daily lives and higher education institutions. The advent of the internet and various mobile applications has significantly altered our modes of communication. Beginning from the initial phase of distance education relying on postal services for correspondence courses to the present era of online learning, technology has deeply influenced educational methodologies. Open universities and Massive Open Online Courses (MOOCs) are direct outcomes of the rapid technological advancements. Higher education has swiftly responded to this shift by offering a multitude of online courses. The prevalence of online participation in courses, educational programs, and various learning opportunities has surged, involving more than six million students across diverse educational institutions (Allen & Seaman, 2017). Technology has effectively bridged global distances, turning the world into a “global village” where communication happens at an unprecedented pace. Its influence spans all aspects of our lives, encompassing communication, trade, and education. Moreover, the phenomenon of globalization has further propelled the growth of online learning (Reyes & Segal, 2019).

From an economical perspective, online learning is often seen as an approach to reduce the rising cost of higher education and provide convenience to the students and teachers (McPherson & Bacow, 2015). Affected by globalization, education has become diversified. Similar to the outsourcing in industry, education also started outsourcing. Just like the dining department and bookstore of universities are now outsourcing, online learning is viewed as a form of outsourcing in education (Zhao & Lei, 2009).

Higher education has gradually formed two main requirements in globalization: lower cost and mass education. The rapid development of technology requires people to learn cutting-edge knowledge constantly. Universities aim to find approaches to provide education to more people via different formats including expanding campus, increasing enrollment, and providing more lifelong learning courses. Online learning, with its unique features of flexibility and mass coverage, is a right fit to solve the problem of mass education. Therefore, MOOCs platforms are widely used for students to take various courses online, from anywhere of the world for free. The term MOOCs was first used by Athabasca University in Canada when delivering a course in 2008. Later MOOCs have become pervasive in many disciplines.

From a political perspective, the integration of technology and education aligns with the policies and recommendations of international organizations, including the UNESCO (United Nations Educational, Scientific and Cultural Organization) and the OECD (Organization for Economic Co-operation and Development). For university administrators, technology holds symbolic significance in the realm of education. Much like wearing trendy clothing communicates a sense of style, having cutting-edge technology can act as an advertisement, elevating the profile of the institution (Zhao & Lei, 2009). Universities can leverage advanced technology to enhance their overall image. Additionally, online higher education has come to be perceived as crucial for producing a more educated and skilled workforce, fulfilling national or political objectives (Lee, 2017).

Moreover, unprecedented changes could also drive the development of online learning. A sudden change can also include unexpected crisis. After the World Health

Organization's declaration of COVID-19 as a pandemic on March 11, 2020, higher education institutions around the world shut down quickly. Instead of going to campus for face-to-face classes, students are shifting to virtual classrooms via the internet. According to UNESCO, these nationwide closures are impacting almost 70% of the world's student population (UNESCO, 2020). Therefore, higher education leaders, in order to be prepared for uncertain futures and financial challenges, must be equipped with options to meet strategic plan goals (Sutton, 2014).

2.3 Radical Growth of non-traditional Students Globally

non-traditional students are the fastest growing segment of higher education enrollments in America (Wyatt, 2011); therefore, higher education institutions need to examine the myriad factors and characteristics of this student population and to devise strategies to meet their distinctive needs. How to improve engagement of non-traditional students remains at the top of the list of priorities and concern for student affairs personnel and higher education leaders (Wyatt, 2011). These non-traditional students form a distinct population in higher education and they often bring rich personal and employment experiences to the classroom, but may struggle with their multiple roles and responsibilities (Lambert et al., 2014). Researchers have found that online learning can present both challenges and opportunities to promote student engagement and learning (Tomas et al., 2015). Online learning provides access to university learning for individuals who might otherwise face challenges or find it impossible to attend in-person. However, there are recognized issues associated with this mode of education. A central concern is how to effectively engage busy, time-constrained students in the online

environment, with the ultimate goal of maintaining their engagement throughout the duration of their study program (Dyment et al., 2020).

In the following sections, I outline the evolution of non-traditional student demographics in Canada, China, South Africa, and the US, offering a comprehensive overview of this student population on a global scale.

2.3.1 Canada

Based on the latest Education at a Glance report by the OECD (Organisation for Economic Co-operation and Development) in 2023 (OECD, 2023), Canada stands out among member countries with the highest proportion of adults aged 25-64 holding higher education credentials, at 60% compared to the OECD average of 40%. This significant percentage of adults with tertiary education credentials suggests a pivotal role played by Canadian higher education institutions in society. Colleges and Institutes Canada (CICAN) is Canada's largest provider of post-secondary education and adult education and training, representing 140 publicly supported higher educational institutions.

Research has shown a substantial and increasing number of postsecondary students in Canada are non-traditional students. For instance, in 2010, 60% of part-time and 13% of full-time undergraduate students fell into this category (Panacci, 2017). In a recent study conducted by Potter (2016), it is estimated that around 400,000 learners, the majority of whom are employed adults, are currently engaged in continuing education programs offered by Canadian universities.

Several distinct incentives for non-traditional students to pursue higher education have been identified by researchers. While different non-traditional students may have varying reasons, the primary motivations often include meeting job credential

requirements, acquiring career-related knowledge and skills to sustain, change, or advance in their careers, and increasing income (Panacci, 2017). Additionally, some seek personal development, fulfillment, and pursue personal interests, as well as forming new social connections, among other factors (Saddler & Sundin, 2020). Erb and Drysdale (2017) conducted research at a Canadian university and discovered that gender differences also exist in non-traditional students' motivations for pursuing higher education. Specifically, non-traditional female students are more likely to return for intrinsic reasons such as interest and professional growth, whereas non-traditional male students tend to return for more instrumental external gains, such as financial purposes.

Furthermore, Canada, being an immigration hub, sees numerous new adult immigrants seeking Canadian credentials to enhance their qualifications. Given that Canadian occupational regulatory systems are structured for domestically educated applicants, the consistent challenge for immigrants lies in obtaining recognition for their previous qualifications, acquired through both formal education and informal learning experiences (Shan, 2019). Another factor affecting the increase in non-traditional students is the economic condition. Alessandrini (2018) conducted a study utilizing data from the Survey of Labour and Income Dynamics (SLID), covering the years 1993–2011. This longitudinal survey, administered by Statistics Canada, encompassed all residents of Canada. The study discovered that in Canada, as the unemployment rate increases, more non-traditional students opt to go back to higher education institutions, showing a preference for universities over community colleges. With the global economy experiencing a downturn, particularly in the current situation following the COVID-19 pandemic, there is a noticeable rise in the unemployment rate worldwide. Consequently,

one can anticipate a surge in the number of non-traditional students enrolling in higher education institutions in Canada.

Despite the significant increase of non-traditional students, they are marginalized in the higher education literature, and the needs of non-traditional students in Canada are often overlooked as policies relating to higher education access continue to focus on traditional students (van Rhijn et al., 2016). non-traditional students face many challenges and barriers compared to traditional students while pursuing their studies. These challenges include a lack of financial support, limited involvement in on-campus interactions and activities, a lack of flexible study options due to busy work schedules or commutes, competing priorities such as family and career responsibilities, and feelings of marginalization on campus (Panacci, 2017; van Rhijn et al., 2016).

With the rising needs of online learning for non-traditional students, more online programs are required in Canadian higher education institutions, particularly fully online master's and doctoral level programs, to accommodate the personal demands of these students, including ongoing work and family commitments (Colley et al., 2019). However, scant research has examined the engagement of non-traditional students, particularly students enrolled in fully online graduate degree programs in higher education institutions (Kang & Pak, 2023). This gap in research becomes particularly noteworthy considering the substantial growth of online learning in professional education at the graduate level (McPherson & Bacow, 2015). Therefore, more research is needed, along with the development of strategies and initiatives, to improve the current situation faced by non-traditional students.

2.3.2 China

China opened up and reformed its economy in 1978. Since then, China has experienced an average annual GDP (gross domestic product) growth rate exceeding 9%, propelling it to become the world's second-largest economy, following the US (World Bank Group, 2024). This rapid growth in the economy has positively impacted the development of education in China.

According to the Ministry of Education of the People's Republic of China (MOE), higher education witnessed a rise in enrollment in 2023, with a gross enrollment rate of 60.2%. The number of higher education institutions across China reached a total of 3,074 (MOE, 2024). With rapid economic development in China, higher education has also progressed. However, there is limited literature focusing on non-traditional students in China. Most researchers still use terms like adult education, continuing education, or lifelong education to describe non-traditional students within the Chinese context.

In a national report jointly composed by the Chinese National Commission for UNESCO (CNC-UNESCO) and Chinese Adult Education Association (CAEA), it was highlighted that China has the largest, most-populated, and most diversified adult education system globally (CNC-UNESCO & CAEA, 2008). However, lacking a distinct definition of adult education, the national report points out that adult education in China is focused on the post training and continuing education for the employed. In China, adult education includes primary adult education, secondary adult education, and higher adult education, as a result of the unbalanced social, economic, cultural, and educational conditions throughout the vast territory of China. This study primarily concentrates on the higher education sector. According to this report, in 2007, altogether 1,764,400 students

graduated from institutions of higher adult education, representing 25% of the national total of higher education graduates, which indicates that higher adult education is still in great need in China.

China's adult education has undergone over four decades of development since the country's reform in 1978, marked by Deng Xiaoping's policy to open the nation to the global community. Actually, in 1986, for the first time, adult education was listed as an important component of China's national education system, along with basic, higher, vocational, and technical education (Wu, 2021). Since that time, adult education and the Open University of China (OUC), previously known as the Central Radio and Television University of China, have experienced a gradual increase in popularity.

As a result of the national strategic plan aimed at economic development, adult education redirected its emphasis towards offering training and skill-oriented education, transitioning from its previous focus on social and political goals to serving economic and social objectives. Nonetheless, China's economic reforms led to social challenges and economic inequalities among various regions and urban and rural areas (Sun & Chang, 2019). In response, the Chinese government implemented a series of policies to encourage adult education, ultimately shifting towards the broader concept of lifelong learning (Wu, 2021).

As a developing country with a population of more than 1.4 billion in 2023 (National Bureau of Statistics of China, 2023), the high-speed development of higher education in China is still quite imbalanced. Based on the latest report by the OECD (OECD, 2024), 19% of Chinese adults aged 25-64 held higher education credentials in 2020, which is quite low compared to the OECD average of 41%. This indicates that a

substantial portion of China's college-age population has been unable to access higher education opportunities, a situation compounded by the millions of adults who missed out on such opportunities due to the limited capacity of the higher education system in the past. Even today, China's higher education system has yet to adequately meet the demand for higher education among adults (Bie & Yi, 2014).

Another factor contributing to the rise in non-traditional students in China is the country's transition into an aging society. Since the introduction of the one-child family policy in 1979, China has experienced a decline in its population growth rate since the early 1980s. China's rapid fertility decline is echoed in its age distribution for 2023, wherein there are twice as many adults aged 25-64 years compared to children and youth below age 25 (Hertog et al., 2023). Consequently, there has been a simultaneous reduction in the working-age population and a gradual increase in the aging population in China. This demographic shift has led to new demands for higher education in the country. While efforts continue to expand college enrollment for traditional-aged students, greater attention must also be directed towards accommodating the significant number of non-traditional students (Bie & Yi, 2014). It is imperative to recognize the needs of this emerging demographic and address their diverse and unique educational requirements accordingly, which also aligns with the United Nations' goals and targets of the 2030 Agenda for Sustainable Development and for ensuring that no one is left behind (Hertog et al., 2023).

During the Seventh International Conference on Adult Education (CONFINTEA VII) in Marrakech, Kingdom of Morocco, held in June 2022, Mr. Yao Sun, Vice Minister of Education of the People's Republic of China, discussed China's implementation of

national policies aimed at enhancing infrastructure, introducing digital platforms, and leveraging its network of higher education institutions to engage with all adult populations, including seniors and residents of rural and remote areas. He emphasized the importance of governments guaranteeing access to appropriate digital tools and skills for adult learners, along with providing relevant support and training within local communities (UNESCO, 2023). Mr. Sun's words indicate the important policy direction to prioritize accessibility and inclusivity in adult education initiatives, ensuring that individuals from diverse backgrounds and regions have equitable opportunities for learning and skill development.

2.3.3 South Africa

South Africa is a developing country with a population of 60 million in 2024. The higher education sector of South Africa has undergone a transformation which resulted in three types of public higher education institutions: Technikons or Universities of Technology, comprehensive universities, and traditional universities. South Africa has 24 publicly funded higher education institutions: 11 universities, 6 universities of technology, and 6 comprehensive Universities. Higher education is also provided at many of the private institutions in South Africa, which are registered with the Department of Education to award specific degrees and diplomas. Higher education in South Africa has been and continues to be deeply affected by the impact of apartheid policies, which resulted in separate higher education institutions for blacks and whites (Leibowitz et al., 2015). Additionally, ongoing social, educational, and economic inequalities further exacerbate these challenges.

In South Africa, non-traditional students predominantly come from historically disadvantaged groups, including Black Africans, Indians, and mixed-race people (Reed et al., 2019). Researchers do not have an agreed-upon definition for non-traditional students, as their age cutoff varies, such as 23, 24, or 25 in South Africa. Generally, non-traditional students are referred to as working individuals who are also engaged in a program of study in a higher education institution (Gopalan et al., 2019). The expansion of access to higher education partly serves as a means to address past inequalities and injustices. According to the Council on Higher Education (CHE), the efforts to broaden access to a wider segment of South African society have led to a rise in overall admission rates. Approximately 70% of those gaining entry are Black students. Within this group, non-traditional students, defined as those aged 25 and older, make up 34% (CHE, 2013).

Over the past two decades, the landscape of higher education in South Africa has undergone substantial transformation. One major change is the combination of technology and education. Ng'ambi et al. (2016) conducted a comprehensive review of technology-enhanced learning over a 20-year period in South African higher education, identifying four distinct phases of development: (1) 1996-2000 efforts focused on integrating computer-assisted instruction and technology to enhance staff productivity and support professional development; (2) 2001-2005 initiatives aimed at democratizing knowledge and aligning strategies with governmental objectives for improved educational access, including the establishment of basic connectivity and wired schools, alongside educator development programs; (3) 2006-2010 the emphasis shifted towards scholarship and professional development, while discussions surrounding unequal technology access gained traction; and (4) 2011-2016 there was a pronounced focus on

promoting digital literacies, flexible learning modalities, social media integration, and ongoing professional development, with widespread adoption of LMS as a notable milestone.

Inequality is still a main topic when discussing non-traditional students in South Africa. Although South Africa is amongst the most developed African countries with an evolved digital infrastructure and has a clear e-education policy in place (Palvia et al., 2018), it is a country being part of the global 'South', and has far less resources than developed countries for example the UK or the US. In South Africa, only a relatively small proportion of the population can access good ICT (Information and Communication Technology) infrastructure such as internet access (22%) when compared to the UK (92%) and the US (89%) (Lembani et al., 2020). There are significant socio-economic disparities between its institutions and in the country (Leibowitz et al., 2015). The inequality is believed by many researchers to be largely inherited from the apartheid era (1913–1994). Furthermore, the commonly referred term of digital divide not only includes a lack of material resources but also includes cognitive resources (e.g., the ability to read, process and interpret information through ICT) and social resources (e.g., neighboring influence, home-owned ICT) (Lembani et al., 2020). Recent research has shown that in South Africa, only 5% of coloured and black students complete their studies in higher education and this requires a thorough, tactical, and advanced strategy in order to support these non-traditional and formerly underprivileged students (Zulu & Mutereko, 2020).

2.3.4 The United States

The increasing number of non-traditional students in the US indicates a quiet demographic revolution within higher education, and today's non-traditional student is becoming the "new traditional" student (Johnson, 2019). The latest data from the National Center for Education Statistics (NCES) show that around 70% of higher education students are non-traditional students over 25 years old (NCES, 2023).

However, US researchers also find it quite hard to define non-traditional students. Terms such as non-traditional, post-traditional, new traditional, adult, mature, older, reentry, nonresidential, evening or weekend, or distance (e-learning) students have been interchangeably used in the literature (Gulley, 2021; Kasworm, 2018; Richardson & King, 1998). These various terms indicate different understandings of non-traditional students in various contexts, highlighting the complexity of this group of people.

From a historical perspective, non-traditional students have been active participants in higher education in the US for an extended period. According to Kasworm (2018), during Colonial America, colleges granted access to all qualified individuals, including adult undergraduate students aged over the age of 21. Subsequently, two significant waves of adult student enrollment occurred in the US. The first wave occurred in the mid-1940s following the enactment of the federal Serviceman's Readjustment Act (the GI Bill), which greatly impacted American higher education by facilitating access and enrollment growth among returning World War II veterans as adult students. GI Bill benefits covered expenses for college, graduate school, and training programs for veterans and their family members beginning in 1944. For example, in the year of 1947, 51% of the World War II veterans used the educational benefits of the GI Bill,

comprising 49% of all college enrollments in that year (Remenick, 2019). The second wave of non-traditional student enrollment surged from the 1960s to the 1990s, during which non-traditional students were primarily defined as those over 25 years old. One major catalyst for this wave was the 1970s women's movement, which led to increased participation of non-traditional female students in higher education (Chen, 2015).

After the 1990s, the rapid development of internet technology in education has driven the increase of non-traditional students. As outlined by Palvia et al. (2018), the evolution of online education in the US can be broadly categorized into four phases: the 1990s (marked by the emergence of internet-propelled distance education), 2000-2007 (characterized by the increasing use of Learning Management Systems-LMS), 2008-2012 (witnessing the growth of Massive Open Online Courses-MOOCs), and beyond, where the growth of online higher education enrollments has surpassed that of traditional higher education enrollments.

Overall, scholars have identified various distinct incentives prompting non-traditional students to pursue higher education, which include seeking enhanced career prospects, acquiring knowledge, forming new social connections, and advancing social status (Saddler & Sundin, 2020). The continuous increase in the non-traditional student population has led to a backlog of unmet needs that have long been ignored by numerous universities. Services such as office hours for university resources, childcare facilities, faculty availability, and other conveniences usually accessible to traditional students pose challenges or are entirely impractical for non-traditional students to accommodate within their schedules (Johnson, 2019). non-traditional students account for the main student

body in current higher education institutions; however, they are often neglected (Chen, 2017) or marginalized (Markle, 2015).

The development of online education has provided flexibility and convenience for non-traditional students and allows them more options for study while fulfilling other responsibilities. However, researchers have found higher attrition rates among online learning students than among traditional students (Brown, 2017; Gaytan, 2015; Remenick, 2019). The reasons for higher attrition rates in online learning can be different, but mainly focus on limited institutional support, a lack of sense of community, and student engagement (Farrell & Brunton, 2020; Rovai & Jordan, 2004). In order to improve this situation, more in-depth research and strategies are required to better serve the diversified needs of non-traditional students.

Examining the situations of non-traditional students across Canada, China, South Africa, and the United States reveals diverse contexts shaping their educational experiences. Despite differences in socio-economic situations and policy frameworks, common challenges such as financial constraints and limited institutional support persist. Governments and educational institutions in these countries have responded with various initiatives aimed at expanding access to education and supporting non-traditional students. However, further research is needed to better understand the needs of non-traditional students and inform tailored strategies for their success. Overall, the experiences of non-traditional students underscore the global imperative of equitable access to education and the ongoing quest to address the unique challenges faced by marginalized non-traditional student populations worldwide.

2.4 Theories of Online Learning

Learning theory is important in examining the learning process, and it is critical to define what theory is first. Theory can be interpreted in many ways, but generally, it is a "coherent and systematic ordering of ideas, concepts, and models with the purpose of constructing meaning to explain, interpret, and shape practice" (Garrison, 2000, p. 3). A learning theory therefore helps understand and explain the learning process. Learning theories emerged in the 20th century, with three major theoretical frameworks shaping the study of learning: behaviorist learning theory, cognitivist learning theory, and constructivist learning theory (Harasim, 2017). These three learning theories reflect the development and advancement of human understanding of learning over the past 100 years. As elaborated by Mayer (2019), behaviorist learning theory views learning as strengthening responses through rewards and punishments, primarily based on studies of lab animals in simple settings. Subsequently, the rise of cognitivist learning theory interprets learning as acquiring information into memory, mainly through studies of humans memorizing arbitrary material. Lastly, the constructivist learning theory emerges, interpreting learning as the active construction of knowledge by the learner, who actively builds a mental representation in working memory.

Learning theory in online learning examines how people learn in an online context. A great number of scholars point out that the learning theory of online learning is built on constructivism, which emphasizes the active role of the learner in constructing their own understanding and knowledge of the world (Bates, 2015; Brierton et al., 2016; Bryant & Garrison et al., 2010; Gordon et al., 2018; Humber, 2021; Leslie, 2020; O'Shea et al., 2015; Vaughan, 2014).

2.4.1 Constructivism on Learning

Constructivism, a psychological theory, emerges from the realm of cognitive science, primarily influenced by the later studies of Jean Piaget, the sociohistorical research of Lev Vygotsky, and contributions from other scholars (Fosnot & Perry, 2005). Constructivism proposes that the learner is more engaged in a collaborative endeavor with both the teacher and peers in creating (constructing) knowledge, and it is important to keep in mind that the term constructivism refers both to a learning theory (how people learn) and to an epistemology of learning (what is the nature of knowledge) (Harasim, 2017). In this perspective, knowledge is not seen as an objective commodity that can be directly transferred to the learner by the teacher. Instead, the learner needs to personally construct knowledge. The process of knowledge construction requires active engagement from the learner rather than passive reception. Although constructivism itself contains several different conceptual and philosophical paradigms, there are two major types of constructivism in the classroom: (1) cognitive constructivism theory, and (2) social constructivism theory (Felix, 2005; Powell & Kalina, 2009). Both types are not entirely exclusive, as they share the fundamental belief that students learn by constructing their own knowledge. However, there are some differences between them.

It should be noted first that what is learned and how it is learned cannot be separated, and all learning involves cognitive construction of concepts, regardless of what is taught (Robinson et al., 2017). Cognitive constructivism comes directly from Piaget's work, which focuses more on how the individual constructs knowledge (Powell & Kalina, 2009). According to previous research, cognitive constructivism is "an umbrella term for a host of related epistemological and psychological theories about the nature of

knowledge and how it is formed through a knower's mental (hence cognitive) processes" (Hruby & Roegiers, 2012). Cognitive constructivism focuses on the individual in the group, believing that cognition occurs in the head of the individual and that learners make sense of the materials on their own (Felix, 2005). Cognitive constructivists advocate for anchored instruction, fostering learning environments that provoke thoughtful engagement and contribute to the development of effective thinking skills and attitudes for problem-solving and critical thinking (Keengwe et al., 2014).

From a cognitivist's perspective, how do we learn? According to Fosnot and Perry (2005), Piaget's theory proposes that when learners encounter new information or knowledge, they try to make sense of it by fitting it into their existing understanding of the world. This process is called assimilation. However, if the new information does not fit neatly into their existing understanding, they may need to adjust their existing mental structures to accommodate the new information. This process of adjustment is called accommodation. Assimilation and accommodation drive cognitive development by allowing individuals to adapt and refine their understanding of the world as they encounter new experiences.

The other approach of constructivism is the social constructivist model, which mainly draws from Dewey (1938) and Vygotsky (1978), and views knowledge construction as both an individual and collaborative process. In this model, knowledge is not only constructed by individuals in interaction with others, but it is also seen as a social and situated phenomenon. While Piaget puts more focus on individual development in learning, Vygotsky emphasizes the social context of human development and learning (Harasim, 2017). Vygotsky (1978) believed that humans gain knowledge

from contact and communication in a social environment. Knowledge is not reserved within humans but achieved through discussion and cooperation. In other words, knowledge is constructed through discussion and collaboration with peers. From the construction process, the group can achieve deeper understanding of knowledge than the individuals. Knowledge is not passed on passively from the teacher to the student. Students should be an active learner and participate in the construction of knowledge through group discussion. Students ask their questions and express their opinions on the platform of knowledge construction.

Based on Vygotsky's (1978) work, constructivism contains elements of Dewey's emphasis on the importance of learners' experience, and emphasizes the importance of creating meaning from personal experience and divergent thinking (Conrad & Openo, 2018). It is important to understand that learning is based on our previous experience and perception. Students' previous knowledge and experience are the premise of learning new knowledge. In constructivist epistemology, learners bring their unique experiences and beliefs into the learning process, and learners expand their understanding by building upon prior knowledge (Robinson et al., 2017). Ideally, in a constructivist class, the instructor establishes an environment in which active participation and conversation can occur, and the learner participates in learning by engaging in interaction with his or her instructor, peers, and content (Bryant & Bates, 2015; Shackelford & Maxwell, 2012).

Within some context and environment, learners can acquire new knowledge based on the collaboration and guidance from teachers or peers. Therefore, context, collaboration, communication, and construction are important in this procedure. Teachers should create a context and encourage students to collaborate with each other. Teachers

and students are all active participants in the learning process. They should communicate and discuss with each other and grow together. Teachers should facilitate and guide the learning of students because they have more experience and knowledge.

In cognitive constructivism, individuals construct ideas through personal processes, whereas in social constructivism, ideas are constructed through interaction with teachers and peers. Despite some differences, both social constructivism and cognitive constructivism contribute to the overall constructivism or constructed learning elements, facilitating students' comprehension (Powell & Kalina, 2009). In this study, the aim is not to segregate the two dimensions of constructivism; instead, it aims to integrate these aspects when examining online learning. Recently there has been a trend towards a synthesis of the two, with advocates believing that knowledge is constructed individually but mediated socially (Felix, 2005). As asserted by Keengwe et al. (2014), learners must construct their knowledge both individually and collectively.

2.4.2 Online Learning Theories from the Perspectives of Constructivism

As previously discussed, distance education has progressed through various technologies and at least three pedagogical generations. While it has transitioned from correspondence education to contemporary online learning, the key participants across all three generations—teacher, student, and content—have remained consistent (Anderson & Dron, 2012). Nonetheless, there has been a shift in the dynamics of their relationships, moving from a teacher-centered approach to one that is student-centered. Since the paradigm shift from teacher-centered to learner-centered education in online learning, what can contribute to a successful learner? People learn best in different ways, but

generally, researchers have found that successful online learners tend to be more independent, motivated, engaged, and self-directed (Rogers, 2000).

Constructivist-inspired online learning is a learner-centered approach, characterized by its learner-focused design, self-paced learning opportunities, and the flexibility for students to adjust their pace as needed (Keengwe et al., 2014). The online learning format offers students the flexibility to access and utilize learning resources available on the internet. In a technology-enhanced environment, a significant difference between social and cognitive constructivism lies in their respective emphases: social constructivism focuses on interaction with others and the collaborative construction of knowledge, while cognitive constructivism emphasizes interaction with content and the individual construction of knowledge (Felix, 2005).

In the context of online learning as a distinct format from traditional in-person learning, Piaget's theory of assimilation and accommodation takes on new significance. Particularly in fully online learning settings, students find themselves at home, facing computer screens, a departure from the conventional classroom setup where they engage with classmates and directly interact with teachers. This learning format requires students to adapt to the new technology to learn. In online learning, students will encounter information, concepts, and skills through digital platforms, which may differ from traditional classroom settings. Students need to assimilate the new information by relating it to their existing knowledge and experiences, but the digital format may require them to adjust their approach. For example, a student may assimilate new mathematical concepts learned through online videos by connecting them to their prior knowledge, but they may also need to adapt to the format of online lectures and discussions.

Online learning also presents students with unique challenges and opportunities that may require them to accommodate their existing mental structures. For instance, students may encounter new technologies, digital tools, or collaborative platforms that require them to adjust their understanding and skills. Additionally, the online format may require students to adjust their study habits, time management strategies, and communication skills, leading to accommodation of their learning approaches.

It's important to emphasize that a fundamental aspect of social constructivism involves recognizing the social dimensions of human development, which are inherently interconnected and cannot occur independently. At the core of human development lies the social utilization of tools. Furthermore, humans have acquired language as a means of communication with one another, a distinctive feature of human development that sets us apart from other animals that may also use tools (Harasim, 2017). In the online learning context, where students may feel isolated from peers and teachers due to physical distance, increased social interaction and collaboration online are required, aligning with Vygotsky's belief that effective internalization of learning relies on social interaction between teachers and learners, as well as among learners themselves (Harrison & Laco, 2022). In the past decades, many researchers have been deeply influenced by Vygotsky's social constructivism when studying online learning, and proved the pedagogical designs based on the theoretical approach of social constructivism have positively facilitated students' online learning process through online discussion (Brierton et al., 2016), online interaction mediated by social tools (e.g., podcasting and Google documents) (Bryant & Bates, 2015), and online collaboration (Swaggerty & Broemmel, 2017).

Social constructivism is dependent upon engagement, and perhaps all engagement research implies a belief in social constructivist learning theory (Meyer, 2014). In online learning, especially among non-traditional students, they can help each other by sharing their previous professional experience from different perspectives and fill in the gaps in each other's knowledge. Compared to in-person learning, online learning can make students feel disconnected and lack a sense of belonging; therefore, active learning and interaction are needed in online learning so that students can feel as if they are dealing with real people (Dixson, 2015). Hence, online learning programs that encourage student participation in thematic discussions, community building, and virtual interactions are recommended (Conrad & Openo, 2018).

Constructivist learning in online education has had its critics for lack of enough guided instruction, especially in relation to disciplines such as medicine or law which require a more didactic style of teaching led by "experts" (Harrison & Laco, 2022). I argue that constructivism, as a learning theory applied in online education, emphasizes that the learner is at the center and must be an engaged and active participant in the learning process. However, this does not diminish the importance of the teacher as a guide in the process. In the current context of online learning in higher education, teachers still play vital roles in leading courses, facilitating discussions, and assessing performance. With the development of technology, a wide range of interactive online learning approaches, such as simulations, case studies, and virtual laboratories, can provide hands-on experience and guided instruction in disciplines like medicine or law. Online courses may include expert-led discussions, live lectures, and mentorship opportunities to ensure that students receive adequate support and direction from

qualified professionals. Thus, the teacher's role becomes a "cyber guide on the side" rather than a "sage on a stage" in online learning. Online interactions may in fact offer advantages for some social constructivist activities; technology-based instruction can provide an all-important bridge between the content and the learner's own world of experiences (Landis, 2011). What is important is how to keep students engaged in interactive and collaborative learning in the online format.

2.4.3 Constructivist Collaborative Learning

Social constructivists expand upon the constructivist perspective, asserting that communication, collaboration, and interaction are pivotal in shaping thinking and learning processes, which lays a theoretical foundation for the importance of interactive and collaborative learning approaches in online learning (Robinson et al., 2017). Collaborative learning is a key concept in social constructivist learning theory. Online collaborative learning can be traced back to the early 1980s, when creative applications of computer conferencing in university courses were developed (Harasim, 2000). In collaborative learning, students work together in small groups towards a shared goal, sharing knowledge, experiences, and authority to foster positive interdependence, critical thinking, and active participation while engaging in activities such as creating meaning, exploring topics, or improving skills (Blasco-Arcas et al., 2013). Collaborative learning has been proven to be one of the key forces in improving learning performance in online learning, including higher level of active and equitably distributed learner participation, high completion rate, quality work, and stronger learner satisfaction (Blasco-Arcas et al., 2013; Harasim, 2000; Robinson et al., 2017).

It should be noted that collaborative learning and cooperative learning are terms often used interchangeably, but they do have some differences (Robinson et al., 2017). Cooperative learning employs a strategy where group members divide tasks and work on them individually. In collaborative learning, students work together to increase understanding and reach a common goal with support from the instructor. By exchanging diverse perspectives, group members cultivate individual awareness of their thought processes from collaborative learning. The key element in collaborative learning is to foster positive interdependence among students and promote individual accountability while facilitating interactions that encourage mutual support and understanding among peers (Abrami et al., 2011).

Some other researchers believe that different epistemological assumptions are based in cooperative learning and collaborative learning (Barkley et al., 2014). They further argue that cooperative learning is regarded as an alternative to the overemphasis on competition in traditional education, and requires students to work together on a common task and support one another. This learning approach assumes teachers' subject matter expertise and emphasizes their role in guiding students' learning journeys. Additionally, teachers oversee task management, resource allocation, and group dynamics to ensure effective learning. Therefore, cooperative learning is based on the epistemological positions that are derived from behavioral and cognitivist learning theory. Collaborative learning has its epistemological positions in social constructivism, which assumes that knowledge is socially constructed. According to social constructivists, reality is not solely external but is shaped through interactions between individuals, fostering shared meaning-making experiences. Constructionists believe that

knowledge and the learner are intertwined with historical, cultural, linguistic, and experiential contexts.

Recognizing the social constructivist aspects of collaborative learning emphasizes group work, it is important to foster a sense of community among learners in an online course, particularly due to the physical distance and potential isolation experienced by students in online learning. Assigning group projects or requiring classmate interaction via chats and discussion boards may be a useful approach to integrating collaborative learning activities into online courses (Dumford & Miller, 2018). For example, in many Canadian universities, the threaded discussion has become the staple means to facilitate interaction and collaborative learning in online courses (Anderson & Dron, 2012).

It has been proven by many researchers that effective collaborative learning can positively support increased student engagement, learning experience, performance, and outcome in online learning (Blayone et al., 2017; Bryant & Bates, 2015; Ewing et al., 2012). Furthermore, instructional interventions and strategies have been offered to establish an effective online collaborative learning environment. For example, Jeong and Hmelo-Silver (2016) proposed seven core principles to enhance online collaborative learning, including (1) engage in a joint task, (2) communicate, (3) share resources, (4) engage in productive collaborative learning processes, (5) engage in co-construction, (6) monitor and regulate collaborative learning, and (7) find and build groups and communities. These principles underpin the social interaction and co-construction aspects of collaborative learning, with online support from peers and instructors.

2.4.4 Community Building of Online Learning

The concept of community building is frequently explored in the literature on online learning. In this research, community does not mean a neighbourhood or a city, but it stands for a spirit or a feeling. McMillan and Chavis (1986) defined community as "a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to be together" (p. 9). Therefore, under this definition, community is more of a psychological concept. In a more recent review of the theory of sense of community, McMillan (1996) further elaborated community as:

> A spirit of belonging together, a feeling that there is an authority structure that can be trusted, an awareness that trade, and mutual benefit come from being together, and a spirit that comes from shared experiences that are preserved as art. (p. 315)

A community can also be a real organization of members. For example, a community can be a professional networking group, an academic program, or a university wherein members build a sense of belonging, trust in the leadership of the organization, obtain mutual support, and exchange experiences through interaction within the respective field. In online learning, those discussion board environments are also regarded as communities to promote social interaction (Gordon et al., 2018).

The theory of community building aligns with constructivist view in learning and interaction. As Dewey (1916) wrote in his book:

> There is more than a verbal tie between the words common, community, and communication. Men live in a community in virtue of the things which they have in common; and communication is the way in which they come to possess things in common. (p. 5)

Therefore, from a constructivist perspective, building a community requires shared goals, beliefs, aspirations, knowledge, and understanding. Unlike tangible objects, these elements cannot be physically transmitted. Communication or interaction is crucial in this procedure.

With the development of online education, more researchers have applied the theory of sense of community in online learning research (Berry, 2019; Garrison et al., 2010; Shackelford & Maxwell, 2012). Given the inherent nature of online learning, where face-to-face communication is limited, especially in fully online programs, students often face challenges in engaging interpersonal communication compared to traditional in-person learning. Many researchers agree that community building is essential to student engagement and satisfaction in online learning, because it is a way to overcome a perceived sense of distance among students resulting from not being able to see each other or interact in ways they had been accustomed to in face-to-face classes (Berry, 2019; Farrell & Brunton, 2020; Garrison et al., 2010; Meyer, 2014; Payne, 2021). Research conducted by Shackelford and Maxwell (2012) also proves that online community building plays an essential role in enhancing student satisfaction in online learning. Learner-instructor interaction emerges as a significant factor in improving the sense of community for online learners. Conversely, the sense of community, resulting from interaction, can profoundly impact the success of online students (Byrd, 2016). Feeling part of a community of learners has been shown to foster students' engagement and can lead to higher achievement of learning outcomes (Prodgers et al., 2023). Alternatively, a low sense of community is related to student burnout and feelings of isolation, and may result in student dropouts (Rovai & Jordan, 2004).

The concept of the online learning community is developed by many researchers as a viable approach to enhance online learning experiences (Blayone et al., 2017; Prodgers et al., 2023; Swaggerty & Broemmel, 2017). An online learning community is one in which the members work with one another via technology to construct knowledge and attain common goals (Yuan & Kim, 2014). A learning community is not a new concept in educational research. A course or an academic program can both be considered a learning community. Interaction is regarded as a basic characteristic of a learning community (Picciano, 2021).

Yuan and Kim (2014) emphasized that a learning community is a community of practice. Community of practice is a theory proposed by educational psychology researchers Lave and Wenger (1991) in their study of situated learning. Lave and Wenger (1991) argued that community is "participation in an activity system about which participants share understandings concerning what they are doing and what that means in their lives and for their communities" (p. 98). The theory of practice and social constructivism both emphasize the core concept of participation in a community of learning, with the former underlining that knowing is an act of participation in complex social learning systems, and in which we engage with each other and with the world (Wenger, 2000).

Drawing on the concept of community, Garrison, Anderson, and Archer (2000) proposed Community of Inquiry theory (CoI), which includes three main components: cognitive presence, social presence, and teaching presence, to analyze online learning. Cognitive presence refers to participants in a community of inquiry constructing meaning through ongoing communication, while social presence entails projecting personal

characteristics to present oneself as real within the community, supporting cognitive presence and fostering critical thinking. Teaching presence involves two main functions: designing the educational experience, which includes selecting and organizing course content and designing learning activities, typically done by the instructor, and facilitation, which may involve shared responsibility among the instructor and some or all participants. CoI has soon become one of the most referenced theories in online learning research (Putman et al., 2012).

Online learning communities differ from traditional learning communities primarily in two ways (Yuan & Kim, 2014). Firstly, communication within online learning communities is predominantly text-based, particularly in asynchronous formats, allowing learners more time to articulate their ideas compared to the typical oral interactions of traditional classrooms. Secondly, in face-to-face settings, learners often compete for speaking opportunities, potentially disadvantaging those who are slower to articulate their thoughts. In contrast, online learning provides equal opportunities for all learners to contribute, regardless of their speaking pace, thereby potentially encouraging more participation from typically reticent individuals. Additionally, learners who prefer expressing themselves through written language may find online learning environments more comfortable for their learning style.

It is important to point out that just because community is there, interactions among the members will automatically happen. A community must show leadership to push its development (Wenger, 2000). In the online learning environment, instructors are regarded as guides and facilitators who can push the interaction among the online learning community. Shackelford and Maxwell (2012) conducted a study and revealed

that learner-instructor interactions are crucial for building a sense of community, more than learner-learner interaction and learner-content interaction. They further emphasize that interactions that are most predictive of online sense of belonging include instructor modeling, support and encouragement, facilitating discussions, multiple communication modes, and required participation. In general, a sense of belonging can be developed in an online learning environment through promoting interactions. Other strategies in community building may include using cohorts and small peer groups (Price & Hayes, 2018), and to use social media such as Facebook, Messenger, Twitter or other platforms (Dyment et al., 2020) to create a sense of belonging.

2.5 Defining Student Engagement

Student engagement is a hot research topic in higher education which attracts wide attention from researchers, practitioners, and policy makers. It has also emerged as a central point of emphasis within higher education, with universities including it as a key priority in their strategic planning, underscoring the significance of enhancing student engagement (Pittaway, 2012). In past research, student engagement has been used to relate to many aspects in educational issues, including student performance, student dropout problems, student satisfaction, student motivation, student achievement (Carini et al., 2006; Martin & Bolliger, 2018; Reschly & Christenson, 2012), and the institutional performance (Baron & Corbin, 2012).

Many research studies have concluded that student engagement is positively connected to student success, which includes completion, progression, and work-related outcomes (Hampton & Pearce, 2016; Thomas, 2012). Students who actively engage both academically and socially in school tend to perform better and receive positive feedback

from teachers regarding their work and conduct. This encouragement helps them sustain high engagement levels over time, ultimately leading to successful completion of their schooling. Conversely, students who lack academic engagement or display negative social behaviors are at risk academically: they tend to have lower achievement and are more prone to experiencing frustration and receiving unfavorable responses from teachers (Finn & Zimmer, 2012).

As suggested by some researchers, students' engagement in learning is increasingly viewed as an indicator of successful classroom instruction and considered an outcome of school-improvement activities (Yang et al., 2018). Student engagement is a key element in keeping students connected with learning (Dixson, 2015). Zepke and Leach (2010) further argued that student engagement is, in fact, an indicator of student success. Active physical, mental, and emotional engagement is regarded as closely related to success in learning (Zepke, 2018). While we all agree that student engagement is important, there is debate over the exact nature of the concept (Kahu, 2013). Relating everything in education to student engagement might lead to attributing all problems to students, neglecting other factors such as institutional and policy aspects. To gain a deeper comprehension of student engagement, the starting point is to acquire a clear understanding of how to define the concept of student engagement.

Scholars find it quite difficult to give a distinct definition for student engagement. As Eccles and Wang (2012) pointed out, broadly defining student engagement would make it more applicable for policymakers and educated lay thinkers, broadening its utility beyond academic circles. However, this broader definition may reduce its clarity and distinctiveness within the realm of research and scholarly discourse. Conversely, defining

student engagement narrowly would sharpen its focus and enhance its clarity and distinctiveness within scholarly discussions. Yet, this narrower definition might limit its applicability and relevance to broader audiences outside academia.

Many historians of education acknowledge Alexander Astin's student involvement research in the 1980s as foundational to the development of modern engagement research (Axelson & Flick, 2010). Astin proposed that a student's level of involvement, defined as the quantity and quality of physical and psychological energy that students invest in the college experience, directly influences their learning outcomes. Other scholars may not agree that student engagement is simply involvement, but should be viewed from multiple and different perspectives such as psychological, social, and cultural dimensions, due to its multifaceted nature (Fredricks et al., 2004). Bomia et al. (1997) defined student engagement as "students' willingness, need, desire, and compulsion to participate in and be successful in the learning process" (p. 3). This definition generally describes engagement from the perspective of motivation. Kuh et al. (2008) argued that "student engagement represents both the time and energy students invest in educationally purposeful activities and the effort institutions devote to using effective educational practice" (p. 542). Their definition combines students' intrinsic motivation and exterior support from the institution and describes student engagement more from a behavioral perspective. Other researchers believe it is hard to explain student engagement in one or two sentences, and they try to divide student engagement into several categories. For example, Gallini and Moely (2003) considered that student engagement can include interpersonal engagement, community engagement, and academic engagement. They regard student engagement as a wider circle that not only includes learning as an

individual, but also includes community service and awareness, peer interaction and collaboration. Fredricks et al. (2004) described behavioral, emotional, and cognitive engagement and recommend studying engagement as a multifaceted construct. They further elaborate that an important aspect of behavioral engagement is involvement in academic and social activities or extracurricular activities, which has been shown to lead to positive academic outcomes and prevent students from dropping out. Students' emotional engagement is an indicator of their feelings about teachers, classmates, academics, and school, and is believed to influence their willingness to complete tasks and create ties to an institution. The concept of cognitive engagement is based on investment; it includes thoughtfulness and the willingness to put in the effort required to comprehend complex ideas and master difficult skills.

While there is some overlap, Kahu (2013) proposed four approaches to understand engagement: the behavioral perspective, which focuses on effective teaching practice; the psychological perspective, which views engagement as an internal individual process; the socio-cultural perspective, which considers the critical role of socio-cultural context; and finally a holistic perspective, which strives to draw the strands together. Kahu's perspectives underscore the multiple pathways available for improving student engagement, emphasizing that responsibility for this task extends to all stakeholders: students, educators, institutions, and the government.

Previous literature lacks a consensus on the definition of student engagement, given its complexity as a construct. Further research is needed to explore student engagement across various contexts, aiming for a comprehensive understanding of this phenomenon.

2.6 Measuring Student Engagement

The challenge of defining the term "student engagement" has led to multiple approaches in measuring student engagement. Researchers globally have been actively seeking to comprehend and enhance student engagement, recognizing its direct impact on academic performance and overall satisfaction among students.

The measurements of student engagement vary depending on both the definition of engagement and the methods employed for data collection. Various methods are available for collecting data on student engagement measurement, including but not limited to student self-report, experience sampling, teacher ratings of students, interviews, direct observation, checklists and rating scales, work sample analysis, and focused case studies (Mandernach, 2015). All these methods have their own strengths and challenges in application. For example, student self-report can achieve subjective perceptions of student engagement experience, which are not available through researcher observation; however, student self-report relies on the honesty of students and thus brings concerns with accuracy. Here I categorize the measurement methods into two major types: quantitative approach and qualitative approach.

2.6.1 Quantitative Measurement Approach

Quantitative measurement approaches of student engagement can include quantitative self-report and quantitative observational measures (Henrie et al., 2015). For example, quantitative self-report can include using quantitative surveys or scales to measure students. Quantitative observational measures examine the frequency of observed behaviors, such as the quantity of completed assignments and the time allocated to an assignment. Other methods include using academic performance, and bio-

physiological sensors (e.g., measuring student's blood pressure to determine engagement levels).

The most frequently used quantitative survey is the National Survey of Student Engagement (NSSE) developed by Indiana University (Kuh, 2001). NSSE offers annual surveys to assess the extent to which students engage in their learning on university campuses. NSSE collects information at four-year colleges and universities about first-year and senior students' participation in programs and activities that institutions provide for their learning and personal development. The results provide an estimate of how undergraduates spend their time and what they gain from attending college.

NSSE mainly includes five indicators/benchmarks to measure student engagement: (1) level of academic challenge; (2) active and collaborative learning; (3) student-faculty interaction; (4) enriching educational experience; (5) supportive campus environment (Kuh, 2009). The first benchmark emphasizes the importance of academic challenge in student learning. It highlights key factors such as class preparation, assigned readings, and diverse types of written work that contribute to this challenge. The emphasis is on analytical, synthetic, and evaluative aspects of coursework, as well as applying theories to practical problems. Active and collaborative learning emphasizes that students benefit more when actively engaged in learning and encouraged to apply knowledge in various contexts. Collaborative problem-solving and mastering challenging material can prepare students for real-world complexities. The indicators of active and collaborative learning include class participation, presentations, group projects, teamwork outside class, tutoring, community-based projects, and discussions with peers, family, coworkers, or others about class-related ideas. Student-faculty interaction is emphasized

as a third benchmark. This interaction allows students to understand how the faculty approach and solve practical problems, turning faculty members into role models and mentors for lifelong learning. The indicators of such interaction include discussing grades or assignments, talking about career plans, engaging in academic discussions outside of class, collaborating on non-coursework activities, receiving prompt feedback on academic performance, and working with faculty on research projects beyond the classroom. Enriching educational experiences include both in-class and extracurricular opportunities to enhance academic programs. This includes diverse experiences, such as technological collaboration, internships, community service, study abroad, meaningful conversations with peers of diverse backgrounds, and participation in formal programs like learning communities. A supportive campus environment is the fifth benchmark, and it involves a commitment to students' academic success. Key aspects include providing academic support, assisting with non-academic responsibilities, and creating a friendly environment for students to socialize.

NSSE is utilized by colleges and universities globally to measure students' engagement. According to its website, NSSE has been in operation since 2000 and has been used at nearly 1,700 colleges and universities in the US and Canada. For other countries such as Australia and New Zealand, the AUSSE (Australian Survey of Student Engagement) uses the Student Engagement Questionnaire (SEQ) as its primary instrument, and SEQ is based on NSSE (Baron & Corbin, 2012). In China, Tsinghua University, one of the top universities in China, developed the Chinese College Student Survey (CCSS) in 2011, as an adaptation and indigenization of the NSSE (Shi et al., 2014).

While NSSE is widely used globally as a tool to measure student engagement in higher education, concerns about its validity have sparked debates (Kahu, 2013). Several studies, including one across 14 four-year colleges and universities, found weak associations between academic success and NSSE benchmarks (Carini et al., 2006). Criticisms also focus on NSSE's emphasis on large-sized groups rather than subgroups or individuals, necessitating more in-depth qualitative research (Baron & Corbin, 2012). Generic instruments, according to Zepke (2018), may not capture the complexities of learning and teaching.

Moreover, NSSE's conceptualization of engagement implies that engagement primarily involves observable behaviors by students, overlooking the significance of less visible forms of engagement related to cognitive and emotional aspects (Axelson & Flick, 2010). For example, some students might outwardly appear engaged but are actually emotionally detached, while others may possess genuine interest or psychological investment in their coursework without exhibiting typical engagement behaviors for various reasons.

Notably, NSSE primarily targets undergraduate students, omitting measurement of graduate students' engagement. Additionally, with the rise of online learning, NSSE lacks specific measurements for online students. Despite some inclusive adaptations in 2013, such as changing "in the classroom" to "in your courses", the survey remains geared toward on-campus student engagement experiences (Dumford & Miller, 2018). Furthermore, NSSE doesn't offer suggestions for enhancing student engagement based on survey results.

In an effort to address the limitations of group size, Gunuc and Kuzu (2015) attempted to develop a student engagement scale for higher education through quantitative research, focusing on two main components of campus engagement and class engagement. They identified six factors—valuing, sense of belonging, cognitive engagement, peer relationships (emotional engagement-I), relationships with faculty members (emotional engagement-II), and behavioral engagement—comprising 41 items within the context of campus and class engagement. A higher score on the student engagement scale indicates heightened engagement with the university, campus, and class, while a lower score suggests weaker engagement or the potential for disengagement. However, this approach, focusing on smaller-sized student groups, lacks qualitative research on individual students' perceptions and experiences.

2.6.2 Qualitative Measurement Approach

Aside from the large-scale quantitative approaches, there are very few studies providing in-depth perspectives on the engagement experiences of online students in higher education (Farrell & Brunton, 2020). Qualitative measures are often conducted through interviews, open-ended survey questions, or discourse analysis. In-depth qualitative and program-specific research on student engagement are suggested by many researchers, given engagement is fundamentally situational—it arises from the interplay of context and individual (Kahu, 2013; O'Shea et al., 2015).

Technology is a word that is often related to innovation and advancement. However, it is not merely a case of technology plus students equals engagement (Bond et al., 2020). There are very few studies providing in-depth perspectives on the engagement experiences of online students (Farrell & Brunton, 2020), and there is a need to examine

the experiences of students pursuing fully online graduate-degree programs in one field of study in an academic unit or institution (Kang & Pak, 2023).

In order to examine the complex nexus of technology and student engagement in higher education, Bond et al. (2020) systematically reviewed research from 243 studies published between 2007 and 2016. They found that most of the research has been conducted in the USA, followed by the UK, Taiwan, Australia and China. Quantitative methods were predominantly employed in the studies, followed by mixed methods, while qualitative research methods were infrequently utilized. A limited number of studies offered definitions of student engagement, and less than half were guided by a theoretical framework. The courses under investigation frequently employed blended learning and text-based tools (e.g., discussion forums), with undergraduate students being the primary focus. Behavioral engagement emerged as the most frequently identified dimension, followed by affective and cognitive engagement, all stemming from the integration of educational technology.

This comprehensive review proves the necessity for this study which focuses on how to improve student engagement in a fully online graduate degree program in a Canadian university, via qualitative research methods. Measuring student engagement can be difficult because engagement is mainly an internal, subjective experience (Mebert et al., 2020). Quantitative methods often fall short in capturing the qualitative aspects of student engagement, such as the cognitive and emotional dimensions of learning. A qualitative approach, on the other hand, can involve asking students to provide detailed self-reports of their experiences during online learning, allowing for a richer understanding of their engagement levels. As highlighted by McPherson and Bacow

(2015), we currently face a deficiency in rich descriptive data regarding the widespread adoption of various forms of online instruction across diverse subject areas and segments within the higher education system, particularly considering the diverse characteristics of non-traditional students involved. In addressing this deficiency, more qualitative research is recommended for a more in-depth examination.

2.7 Student Engagement in Online Learning

The aforementioned definitions and categories of student engagement try to interpret the nature of student engagement from multiple different perspectives. These previous studies laid a solid foundation for the research of student engagement. However, these previous definitions and categories of student engagement are primarily based on the face-to-face learning context. Can these definitions be directly applied in the online learning settings?

While student engagement is a commonly discussed topic, the literature on online student engagement is still developing (Vezne et al., 2023). Further review of previous studies revealed that a growing body of research has employed constructivism, theories rooted in constructivism, or interaction theory as frameworks to examine online student engagement. The subsequent section provides a comprehensive elaboration on these findings.

Based on the commonly accepted constructivist learning theory for online learning, scholars have tried to view student engagement in online learning through constructivist lenses. For example, the theory of community of inquiry refers to the possibility of using constructivist theory in online learning, and the theory posits three intersecting elements in online teaching and learning: social presence, teaching presence,

and cognitive presence (Archer & Garrison, 2010). Researchers have employed this framework in studying online learning and student engagement, as evident in the works of Garrison et al. (2010) and Payne (2021). Importantly, this framework aligns with John Dewey's work on community and inquiry (Garrison et al., 2010). Dewey believed that inquiry is a social activity and goes to the essence of an educational experience; therefore, the connection of the community of inquiry framework to Dewey is especially important in the development of the concept of cognitive presence in a community of inquiry (Garrison et al., 2010).

From the social constructivist perspective, some other scholars believe interaction and engagement are closely related and even used interchangeably (Martin & Bolliger, 2018). Consequently, the promotion of interaction holds significance in the context of online learning. Martin and Bolliger (2018) conducted quantitative research to examine student perceptions of various engagement strategies employed in online courses. Their investigation was based on Moore's (1989) interaction framework, encompassing learner-to-learner, learner-to-instructor, and learner-to-content engagement in the online learning environment. They reviewed the relationship between interaction and engagement, finding that "engagement is developed through interaction" (p. 206). Building on this framework, Alqurashi (2019) also utilized Moore's interaction theory to explore student satisfaction and engagement in online learning environments, and found that learner-to-content interaction was the strongest and most significant predictor of student satisfaction.

The community of inquiry theory and the three types of interaction theory are both applicable to examining student engagement in online learning, yet they exhibit

certain limitations. The community of inquiry theory primarily emphasizes the social, teaching, and cognitive dimensions of online learning, but it falls short in addressing the collaborative element inherent in constructivism, which emphasizes collaborative efforts in constructing knowledge. Similarly, Moore's three types of interaction theory place a greater emphasis on interaction, overlooking the community building inherent in constructivism.

Among the few studies on student engagement in online learning, Redmond et al. (2018) provided a more nuanced approach to explore engagement within the online environment in higher education, including five key elements of engagement: cognitive engagement, emotional engagement, behavioral engagement, collaborative engagement, and social engagement. These five elements are considered crucial for effective student engagement within the online learning environment in higher education.

Compared to the previous categorization of cognitive, emotional, and behavioral engagement by Fredricks et al. (2004), Redmond et al. (2018) added two more elements into the framework of online student engagement, which are: collaborative engagement and social engagement. The definition of collaborative engagement refers to the development of diverse relationships and networks such as collaboration with peer students, teachers, industry, and the educational institution that can support learning. Group study, group discussion, connecting to faculty members, and developing professional communities can all be regarded as indicators of collaborative engagement (Redmond et al., 2018). Social engagement includes participation in academic and non-academic activities such as recreational or social functions. It is a way of creating purposeful relationships with others. In an online environment, social engagement often

takes the form of students trying to establish the relationship by talking about themselves or communicating via social media. Indicators of social engagement can include building community, creating a sense of belonging, developing relationships, and establishing trust.

The two added elements of collaborative engagement and social engagement more emphasize the importance of collaboration and peer interaction in an online learning environment. This five-element framework helps describe the nature of online learning where students have fewer ways to be engaged with the class and institution (Meyer, 2014), and therefore collaboration and community building are more emphasized in online student engagement. Redmond et al. (2018) grounded their framework on social constructivism, which endorses that knowledge is an outcome of social interchange. Social constructivism, situated learning and andragogy, due to an emphasis on interaction and collaboration in group activities, are endorsed by many scholars who study online learning (Garrison et al., 2010; Humber, 2021; Leslie, 2020; O'Shea et al., 2015; Vaughan, 2014). Therefore, the comprehensive five-dimensional framework introduced by Redmond et al. (2018) is well-suited for measuring student engagement in online learning in this study in a holistic manner. This framework will be further explored in Chapter 3.

2.8 Factors of Engagement and Disengagement in Online Learning

The growth of online education as a substitute for traditional on-campus teaching can be credited to its flexibility, providing non-traditional students with the opportunity to advance their personal and professional development while juggling work and various responsibilities (Kang & Pak, 2023). Researchers in the past have identified multiple

factors associated with student engagement in online learning. In the following sections, I will examine these factors primarily grouped into two categories: factors contributing to student engagement and factors contributing to student disengagement.

2.8.1 Student Engagement Factors

When examining what factors are associated with student engagement in online learning, some researchers have adopted the framework based on the categorization of cognitive, emotional, and behavioral engagement by Fredricks et al. (2004). Previous researchers have found that for cognitive engagement, indicators can include reflection, interpretation, synthesis, or elaboration (Henrie et al., 2015), learning from peers, deep learning, critical thinking, self-regulation, and a positive attitude about online learning (Bond et al., 2020; Finn & Zimmer, 2012). For emotional engagement, relationships with peers and teachers (Gunuc & Kuzu, 2015), students' feelings toward learning, such as involvement in or a sense of belonging to the community (Lee et al., 2019) are often discussed. As for more observable behavioral engagement, participation and involvement in class discussion (Pilotti et al., 2017), more specifically, assignments completion, frequency of logins to website, number and frequency of postings, responses, and views, time spent creating a post, etc. (Henrie et al., 2015), is discussed. These factors are all identified as being positively related to enhanced student engagement in online learning.

It is worth noting that the line between these three categories of cognitive, emotional, and behavioral engagement is quite debatable. For instance, Bond et al. (2020) classified learning from peers as a form of cognitive engagement, whereas other researchers argue that it constitutes a mode of collaborative learning and should be considered a distinct factor due to its crucial role in online learning (Lee et al., 2019).

Another significant factor is interaction. While researchers (Henrie et al., 2015) categorized it more under emotional engagement, Bond et al. (2020) placed it primarily under behavioral engagement. Martin and Borup (2022) further argued that any analysis focusing solely on an individual's mental energy, emotion, or behavior is limited because these dimensions can manifest differently based on the affordances and constraints of the online learning environment. They propose five thematic factors of engagement: communication, interaction, presence, collaboration, and community building. This argument underscores the significance of interaction, collaboration, and community building within the context of online learning.

Realizing that student engagement in online learning is multidimensional and that factors contributing to it are hard to categorize, some other researchers attempted to avoid categorizing these factors into these three categories in the online learning context. These factors are thus emphasized separately in the literature. For example, a motivational factor is discussed as the reason students select online learning (Artino & Stephens, 2009). According to Artino and Stephens, motivational engagement includes students' intentions to enroll in online courses and procrastination issues. Because procrastination is referred to as a disengagement factor, it is discussed in section 2.8.2. The most mentioned reason for selecting an online program is its flexibility and convenience, especially for those non-traditional students who work full-time or have other obligations that prevent them from participating in face-to-face classes (Aghaee et al., 2015; Koole & Stack, 2016; Kumar, 2014; Kung, 2017; Lumbreras & Rupley, 2017). Online learning offers the advantage of striking a balance between family/work commitments and academic studies, while also reducing the need for extensive travel to attend classes. For

non-traditional students who have jobs, they can take an online program to obtain a graduate degree for job promotion opportunities or to support the goal of entering the professoriate (Brown, 2017; Koole & Stack, 2016; Kung, 2017; Lumbreras & Rupley, 2017). Moreover, these students can earn money while studying, so that they may have less financial pressure while pursuing an online graduate degree (Brown, 2017; Kurucz et al., 2015). A previous study investigating student satisfaction in a fully online graduate program proved that the completely online nature provides working professionals with the flexibility needed to earn a master's degree with a career-relevant area of specialization, and the convenience of online teaching allowed for the successful balance of work and family obligations for these students (Burbuagh et al., 2014). Another reason that students select an online learning program is that online learning offers the potential to broaden access to a diverse range of faculty members, including those within a student's home institution and even on an international scale (Kurucz et al., 2015).

Based on Moore's (1989) interaction framework, previous studies have identified three types of interaction that have been shown to support learning in online courses: (1) interaction with content, including the ability of learners to access, manipulate, synthesize, and communicate content information; (2) interaction with instructors, or the ability of learners to communicate with and receive feedback from their instructors; and (3) interaction with classmates, such as the ability of learners to communicate with each other about content to create an active learning community. A number of scholars have emphasized the importance of interaction in online student engagement and found that increased interaction can help to improve student engagement in online learning (Bryan et al., 2018; Morrison, 2021; Purarjomandlangrudi et al., 2016).

Academic self-regulation is also important in online learning and regarded as one form of motivation in learning (Abrami et al., 2011; Zimmerman, 2008). Academic self-regulation refers to the monitoring, regulation, and control of one's cognition, motivation, and behavior in order to achieve a goal in learning (Dunn, 2014). Those students who can prove good self-regulation are regarded as more engaged and away from all kinds of distractions in online learning. Since distance online learning is characterized by autonomy, students' ability to self-regulate their learning becomes a critical factor for deep and meaningful learning, and thus improved planning, controlling, and evaluation skills are essential for online learning (Barak et al., 2016).

2.8.2 Student Disengagement Factors

Online learning, a type of distance education, addresses the critical challenge of reducing the perceived distance for disconnected students, who often come from diverse locations across the country or even globally. In this context, lack of physical presence and interaction is a drawback of online learning (Purarjomandlangrudi et al., 2016), and thus lack of interaction has been identified as one of the most important factors resulting in student disengagement in online learning (Burbuagh et al., 2014; Purarjomandlangrudi et al., 2016). Especially lack of learner-learner and learner-instructor interaction can further result in a sense of isolation for students (Yuan & Kim, 2014), and less collaborative learning (Putman et al., 2012). The absence of physical interaction and face-to-face engagement exacerbates students' feelings of detachment from the academic community.

Another notable factor associated with student disengagement is the difficulty of maintaining a balance between the demands of active participation in online learning

such as online discussions and academic essay writing, while simultaneously managing the competing responsibilities faced by non-traditional students, such as job or family commitments (Brown, 2017; Deshpande, 2016; Ewing et al., 2012; Price & Hayes, 2018). This time and energy dilemma, intertwined with professional commitments, poses a formidable stressor that warrants attention.

Procrastination, as one of the motivational factors, previously discussed in 2.8.1, is also related to student disengagement in online learning (Deshpande, 2016; Ewing et al., 2012). Although procrastination can occur in both online and face-to-face learning environments, it might be more critical in online courses. This is because in online learning, the majority of the responsibility lies with the student, and without regular classroom attendance, the chances of self-regulation failure or procrastination increase (Rakes et al., 2013). Conversely, when students actively engage in self-regulation, indicating their commitment to academic tasks, it can decrease procrastination tendencies (Dunn & Hayakawa, 2021).

Moreover, technological challenges and glitches, a recurring theme in the literature, are discussed as an additional factor of student disengagement in online learning (Deshpande, 2016; Kurucz et al., 2015; Price & Hayes, 2018). These technical hiccups, ranging from connectivity issues to platform inefficiencies, heighten the difficulty of the online learning experience.

Furthermore, insufficient institutional support is another significant factor contributing to student disengagement. Receiving institutional support is highly valued by online students (Stone et al., 2016). Examples of limited institutional support include inflexible policies and inadequate resources for online learners, particularly those non-

traditional students. While adopting a one-size-fits-all approach to student services may be cost-effective, it may not adequately address the diverse needs of online students (Remenick, 2019). Limited financial support for online learners is also discussed by researchers (Ewing et al., 2012; Kurucz et al., 2015). Therefore, higher education institutions play a central role in improving the quality of online learning by providing support for learners (Kebritchi et al., 2017).

2.8.3 Implications and Recommendations

Literature reviewed on this subject indicates that overlap exists in the engagement factors and disengagement factors in online learning. For example, increased interaction is a factor of engagement but decreased interaction can be a factor of disengagement. These factors are not isolated but intertwined and can serve as key indicators of engagement in online learning. The web of issues, such as the support from instructors and institutions, interactive experiences with instructors and peers, motivational factors, and a sense of belonging, collectively underscores the factors associated with student engagement in online learning. Recognizing these integral factors of a larger framework emphasizes the need for a holistic approach to address the multifaceted aspects of online learning in different contexts. Given the influence of contextual factors on student engagement, there is a need to examine the experiences of students pursuing fully online graduate degree programs in one field of study in an academic unit or institution (Kang & Pak, 2023).

Prior research has suggested various strategies to improve students' engagement in online learning, such as advising online instructors to implement practices such as creating icebreaker sessions, fostering small group collaboration, using more course-

specific nudge interventions, using course materials that applicable to real-life situations and building positive communities (e.g. early & frequent course contact with students and course orientation), and establishing a course Facebook group to enhance student interaction and participation (Banna et al., 2015; Brown et al., 2022; Hampton & Pearce, 2016), or recommendation of policy-making strategies for online education administrative leaders (Burnette, 2015). Berry (2019) argues that, from a teaching perspective, strategies should consider a wide range of students' social and emotional needs and underscores the significance of establishing professional development communities. However, these approaches tend to address the improvement of students' engagement in a fragmented manner, perceiving it as disconnected and neglecting the interconnectedness among different stakeholders.

Chapter 3 Theoretical Framework

The theoretical framework of this study is adapted from improvement science and the online student engagement framework. Improvement science, rooted in the studies of industry and healthcare, is increasingly applied in education. Improvement science views treat education as a complex system, advocating for problem-specific, user-centered approaches. Key principles of improvement science include understanding systemic origins, testing changes, and fostering networked communities. The online student engagement framework is based on Redmond et al.'s (2018) interdisciplinary conceptual framework, designed specifically for examining online student engagement in higher education. This framework comprises five key elements of engagement for learning in an online environment: cognitive engagement, emotional engagement, behavioral engagement, collaborative engagement, and social engagement. Below, I elaborate on these two theories individually and explain why I incorporate them into my study.

3.1 Improvement Science

Before introducing improvement science, it is important to discuss quality assurance in higher education. Quality is a word that we use quite often in daily life, but what does it mean in educational settings? This will help us understand how higher educational institutions ensure and improve the quality of their programs and services, thereby providing context for the application of improvement science methodologies.

3.1.1 Quality Assurance in Higher Education

In recent decades, the global higher education has experienced rapid changes, including technology integration, increased student enrollment, internationalization, diversity and inclusion initiatives, reduced government funding, quality assurance issues,

and the impact of the COVID-19 pandemic etc. These changes have led to extensive reforms for higher education institutions to meet the new societal challenges that these institutions are facing today in their main activities (Jorge & Peña, 2017). Educational reform, revolution, or transformation are often discussed by the researchers, higher education institutions, or policy makers, trying to respond to the societal changes, either from a curriculum perspective or from a policy perspective (Colet, 2017; Oliver & Hyun, 2011). New quality assurance approaches are at the forefront of these discussions including different types of stakeholders: governments, higher education institutions, quality assurance agencies, recognition bodies, students, employees, industry, as well as the whole society itself (Bernhard, 2012).

Before proceeding further, it is important to clarify the term “quality assurance” in the context of higher education, distinguishing it from the quality assurance commonly discussed in business sectors. Higher education institutions, like business in some sense, are also a complex organization. To define an organization here, organizations are conceptualized as collectives formed by individuals with the purpose of achieving one or more specific goals, featuring an internal division of labor and a hierarchical structure designed to fulfill their designated purpose(s) (Lueg & Graf, 2022). As an organization, higher education institution can include elements as students, faculty, administrators, and supporting staff. A university is different from a business organization, as the latter is profit oriented and primarily concerned with earning a financial return on the investments, activities, or operations. A university contributes to society through teaching, research, and service, but these processes are not its purpose, actually the particular purpose of the university is a leader in society, servant to society, and visionary

for society; therefore, a university is an organization of society rather than in the market economy (Houston, 2008). Houston (2008) further emphasized that teaching, research, and service in a university are means to promote learning rather than ends in themselves. From this perspective, teaching fosters individual learning, research contributes to knowledge for humanity, and service supports learning, and thus student learning is regarded as "the heart of quality", and authentic quality improvement in higher education should focus on improving processes of research and service towards learning rather than assessing perceived quality of outputs. Hence, the contemporary approach to educational innovations advocates placing the learner at the center, as suggested by Colet (2017).

According to Houston (2008), the elements of the organization, interrelationships and balance of outcomes are predetermined. An "excellent" organization is one that complies most closely with the predetermined model. To answer how education can fulfill its predetermined mission, three common epistemological pathways have been explored and tried out: (1) Assuming the current educational system is adequate, focusing on maintaining or making minor adjustments as needed; (2) Expressing dissatisfaction with the current education system, advocating for complete destruction and rebuilding to achieve progress; (3) Believing in gradual improvement of education, based on existing social conditions and institutions (Li, 2023). From this perspective, we can conclude from previous research that, although online learning is widely used in higher education nowadays, challenges still exist, indicating a need for further development (Akojie et al., 2019; Burbuagh et al., 2014; Erichsen et al., 2014; O'Shea et al., 2015). Therefore, the third pathway, which involves improvement as a means to incremental advancement, is necessary for online learning in higher education. In the context of online learning, what

strategy can be used for improvement is something we need to consider. As discussed above, learners should be put at the center of educational quality assurance measurement, student engagement becomes the core of this study. Improvement science is thus being applied in this study to find how we can engage students in purposefully structured learning so as to generate strategies to improve the whole organization when problem is detected (LeMahieu et al., 2017).

3.1.2 What Is Improvement Science?

Educators and researchers have been working hard to reform education in a variety of ways including educational reforms, but the piecemeal efforts have not yielded systemic and widespread results (Hinnant-Crawford, 2020). Researchers point out many educational reforms often end in failure (Landis, 2011), or an endless cycle of "reform without improvement" in education (Li, 2023, p. 11). Therefore, more and more researchers argue that a continuous improvement approach or improvement science is necessary in education (Cohen-Vogel et al., 2015). This approach involves examining the systems where problems manifest and making changes to those systems that result in improvement. Instead of hastily adopting new programs or interventions, it emphasizes making decisions based on a deeper understanding of the problem, its underlying causes, and a clear vision of what improvement entails (Cunningham & Osworth, 2023; Hinnant-Crawford, 2020).

Improvement science emerged in the early twentieth century and has been widely applied in industry and healthcare. Improvement science refers to an approach for improving quality and productivity in diverse settings (Cohen-Vogel et al., 2015). W. Edwards Deming was key in the development of improvement science. In his book, *The*

New Economics for Industry, Government, Education (Deming, 2018), Deming introduced "the System of Profound Knowledge" and argued to view a large complex organization from a systemic perspective to operate a set of discrete and independent departments. Deming, an American statistics professor and physicist, is often considered the father of quality improvement. He successfully utilized improvement science to help Japanese manufacturing industry achieve quality improvement in the 1950s. His theories of management and improvement for a system were soon widely accepted by the American industries.

Improvement science has been proven to be a success in industries and healthcare (Lewis, 2015), then how can it be utilized in educational settings? Similar to the industries and healthcare, education is also a quite large and complex system. Higher education is more complex compared to business sectors and it is suitable to use improvement science to analyze higher education based on the emphasis on interactions and interdependence over formal hierarchies of systems thinking of improvement science (Chan Hilton & Cruz, 2019). System knowledge also builds upon the assumption that all system parts are interrelated with all other system parts and cannot be understood in isolation, which also means that there is no simple linear cause and effect determination (Kjellström & Andersson, 2017). Because the theory or philosophy that systems display characteristics that are more than the sum of their parts, emphasizing that understanding a system cannot be achieved by analyzing its components in isolation (Monat & Gannon, 2015).

Improvement science can be captured as the studies on how to improve an individual, an institution, or a system. Previous researchers view improvement science

from different perspectives. Hinnant-Crawford (2020) synthesized the definition of improvement science as:

> Improvement science is a methodological framework that is undergirded by foundational principles that guide scholar-practitioners to define problems, understand how the system produces the problems, identify changes to rectify the problems, test the efficacy of those changes, and spread the changes (if the change is indeed an improvement). (p. 29)

Therefore, improvement science helps answer the research questions of this study by finding out what the problems are within students' engagement in the online graduate program, and then trying to understand how the system produces these problems, and to offer strategies to rectify these problems for future improvement. The theoretical framework of improvement science closely aligns with the trajectory aimed at addressing the four research questions posed in this study.

As explored within the literature review, defining and subsequently measuring student engagement proves to be a challenging task. Researchers often draw from students' experiences as a foundation for assessing their level of engagement. Given the dynamic and complex nature of this analytical process, employing a fitting methodology becomes imperative, and in this regard, improvement science emerges as a well-suited approach for conducting such a process analysis.

Based on evidence-based practice, improvement science has formed its own theoretical model over the years. The Model for Improvement includes three fundamental questions: 1. What are we trying to accomplish? 2. How will we know that a change is an improvement? 3. What changes can we make that will result in improvement (Langley et

al., 2009, p. 24). Langley et al. (2009) further argued that “change” is the focus here in improvement science and the theory of improving is concerned with developing, testing, implementing, and spreading changes. However, not all changes will make improvements happen. We will need a deeper understanding of improvement before we know what change is required for improvement. Scholars therefore list some key principles of improvement, including: (1) Knowing why you need to improve; (2) Having a feedback mechanism to know if improvement is happening; (3) Developing a change that you think will result in improvement; (4) Testing a change before any attempts to implement; (5) Implementing a change (Langley et al., 2009). These five principles demonstrate a whole process of realizing an improvement that is initiated from a change.

The Carnegie Foundation for the Advancement of Teaching offered a different approach to understand improvement science in an educational system and they believe there are six principles of improvement: (1) Make the work problem-specific and user-centered; (2) Variation in performance is the core problem to address; (3) See the system that produces the current outcomes; (4) We cannot improve at scale what we cannot measure; (5) Anchor practice improvement in disciplined inquiry; (6) Accelerate improvements through networked communities. The concept of networked improvement communities (NICs) was then developed by the Carnegie Foundation for the Advancement of Teaching, and the approach is aimed at continuously improving the quality of practices, processes and outcomes in targeted problem areas in education systems (Bryk et al., 2015; LeMahieu et al., 2017).

When comparing these principles, commonalities are focused on understanding the purpose of improvement and knowing how to measure a change. The Carnegie

principles here provide a more specific approach and argue that improvement is closely connected to a system which includes variations, and the idea of networked communities is brought up. The core part of the two sets of principles is to answer the question: What is the problem here? Or what is needed to improve? Once we have the answer to the question, we will have an idea where to start for an improvement. The Carnegie principles also covered the core elements in my research: this research is problem-specific and user-centered; variations are expected to be determined for improvement and how to use communities to spread the strategies for improvements. Therefore, the first and most important step is obvious: to identify the specific target/problem. Advocated by the Carnegie Foundation for the Advancement of Teaching, improvement science was rapidly developed within education at the dawn of the twenty-first century. Therefore, educational improvement science is an interdisciplinary science of improvement science and educational science.

3.2 A Problem-Oriented Approach

One purpose of this study is to determine how to improve student engagement in online graduate programs by understanding the problems or challenges of graduate student engagement in online learning. To achieve this goal, the initial step involves identifying what these problems are and where they exist within the current learning contexts of students. Problem-solving is a subject frequently discussed in our daily lives, such as a mathematical problem, a communication problem, or an educational problem, but what exactly is a problem, and how should we define a problem?

A problem can be a broad term. Researchers have tried to define problems or problem solving from different perspectives, such as from cognitive perspective (Getzels,

1979; Kitchener, 1983; Reiter-Palmon & Robinson, 2009; Schraw et al., 1995) or from social, political, and economic perspectives (Agre, 1983). According to Getzels (1982), a problem can be defined in two categories: (a) a problem occurring when a desired action to a given situation is blocked, and (b) a problem as a question raised for inquiry (p. 40). Or, some other researchers refer them as well-defined problems and ill-defined problems (Abdulla & Cramond, 2018; Kitchener, 1983; Pretz et al., 2003; Schraw et al., 1995). Kitchener (1983) argued that well-defined problems are those that have correct and knowable solutions, while ill-defined problems can have conflicting assumptions, evidence, and opinion that may lead to different solutions. Pretz et al., (2003) further elaborated that well-defined problems are those problems whose goals, path to solution, and obstacles to solution are clear based on the information given, while ill-defined problems are characterized by their lack of a clear path to solution or a clear problem statement as well, making the task of problem definition and problem representation quite challenging. For example, a mathematical problem such as "what is the result of 4 multiplied by 5?" is a well-defined problem, because this problem has one and only solution. In contrast, a problem such as "How can we effectively mitigate and adapt to the impacts of climate change to create a more sustainable and resilient future for the planet?" is an ill-defined problem, because it can have different solutions to this problem.

Once we establish a conceptual understanding of what constitutes a problem, the subsequent step involves how to identify these problems. Past studies have used different terms to refer to the process of finding a problem, including problem identification, problem discovery, problem formulation, problem construction, and problem posing (Abdulla & Cramond, 2018). Previous studies have shown that problem identification is a

necessary prerequisite for problem solving (Smith, 1996), and problem identification is based on past experience (Reiter-Palmon & Robinson, 2009). To identify the problems in student engagement within online graduate programs, it becomes imperative to explore students' experiences in their online learning journeys.

It is also important to note that problems cannot always be "solved" or "corrected", or "rectified", and therefore it is more appropriate to state a problem can be "improved" or "ameliorated" (Agre, 1983), given the fact that a problem is any situation that bears improvement (Smith, 1996), especially those ill-defined problems. In this particular study, the focus is on identifying ill-defined problems, which may not necessarily be immediately solvable but can be subject to improvement. Consequently, the foundational and initial step in improving student engagement revolves around the identification of these problems within the student engagement process.

As discussed above, when trying to identify ill-defined problems, we may employ alternative or multiple perspectives because ill-defined problems might not have straightforward solutions. It is crucial to recognize that there are different levels of ill-defined problems, which call for different levels of problem identification (Abdulla & Cramond, 2018). There might be different factors impacting the process of finding the true problems. For example, organizational factors play a significant role in problem identification, and therefore true causes or root problem analysis should be applied during systemic problem identification (Edquist, 2011; Rubenstein et al., 2020; Smith, 1996), not the superficial problems. Here, systemic problems can be defined as factors that negatively influence the direction and speed of innovation processes and hinder the development and functioning of systems (Wieczorek & Hekkert, 2012). This is why

many researchers argue problem finding or problem identification is even more crucial then problem improvement (Abdulla & Cramond, 2018; Agre, 1983). It is necessary to identify problems before designing any policy, and the mode of identifying systemic problems and their root causes can be called “diagnostic analyses” that are strategic in all policy design (Edquist, 2011).

From the literature, it is evident that researchers frequently utilize the term “challenge” to describe a difficult situation. The terms “problems” and “challenges” are commonly used interchangeably in research. Nevertheless, there exists a nuanced distinction between the two. According to Oxford English Dictionary, a challenge means a difficult or demanding task, especially one seen as a test of one’s abilities or character (Oxford English Dictionary, n.d.). Challenge can be external, for example a business facing increased competition from other companies in the industry, compelling it to innovate and differentiate to maintain or gain market share. Alternatively, challenge can be internal, for example a student setting a personal goal to achieve straight A’s throughout the academic year, challenging himself to excel in his studies. Problems, as discussed above, is relatively a broader term. In the realm of educational improvement science, the choice between “challenge” and “problem” might depend on whether it is emphasizing personal growth, opportunities for development (challenges), or specific issues that need resolution (problems), especially within a system. Usually when describing the result of facing a challenge, the answer is either success or failure. While problem-solving is often associated with challenging situations, problems are not merely “solved” or “unsolved”, they can be “improved”.

3.3 Building Professional Improvement Communities (PICs)

According to the previous researches, suggestions given to improve student engagement include creating more social opportunities for online students (Banna et al., 2015), and community building is one approach. However, socializing may be only one method of creating a community; community needs an educational goal as well for online learners (Meyer, 2014). Several decades ago, Professional Learning Communities (PLCs) were introduced with the aim of improving the educational system (Vescio et al., 2008), to connect students to the profession and support sustained relevance to industry in order to improve collaborative engagement (Leslie, 2020; Pittaway, 2012; Redmond et al., 2022; Tomas et al., 2015).

Originating from insights in the private sector regarding the influence of workplace environments on employees, PLCs encourage collaborative participation among workers (Burns et al., 2018). Nowadays, PLCs are employed in areas such as learning technology, adult education, and workplace learning (Servage, 2009). Stoll and Louis (2007) defined PLCs as “a group of teachers sharing and critically interrogating their practice in an ongoing, reflective, collaborative, inclusive, learning-oriented, growth- promoting way” (p. 2). This definition emphasizes a collaborative learning community composed by specialized professionals. However, the concept of the PLCs faces a critical problem in the pursuit of organizational improvement as PLCs prioritize learning as a key developmental goal for the organization, which can shift focus away from the initial missions of organizational improvement (Li, 2023).

In more recent years, scholars (Li, 2023) suggest use Professional Improvement Communities (PICs) to underline a programmatic, professional, and sustainable approach

in educational improvement science. Li (2023) further pointed out three essential elements of PICs: (1) Consensus mission and goal; (2) Reciprocal learning and commitment; (3) Regular and effective communication. PICs can vary significantly in size, encompassing both small cohorts and extensive programs. In the context of this study, PICs may range in size from a focused cohort to the entire program. Additionally, these communities may extend to include professionals from different universities who offer similar online graduate programs. Within PICs, each student is regarded as an individual improver contributing to improvement. PICs can empower improvers' capabilities systemically, such as improvement in decision-making, leadership, implementation, and evaluation, as well as the capabilities to learn from and collaborate with one another (Li, 2023).

In this study, a fully online graduate program has been developed to meet the needs of professionals seeking academic or career advancement. Both the cohort and the entire online program can be considered as Professional Improvement Communities (PICs). Participants have the opportunity to learn independently within the program, and through behavioral, collaborative, and social engagements, the collective capabilities of the community can be improved as individuals share their professional knowledge and experiences. Additionally, these PICs have the potential to extend across different universities, enabling systemic improvement on a larger scale.

In the field of education, improvement science can be integrated with educational theories, thus constructing educational improvement science (EIS). EIS can be defined as below:

EIS is an emerging, problem-oriented, transdisciplinary field studying the process of and/or approach to advancement in education at individual, institutional, systemic, national, and/or global levels. It involves the promotion of authentic improvement in education by building on evidence-based research and professional improvement communities (PICs) (Li, 2023, p. 12).

By employing EIS, the aim of this study is to examine authentic problems related to students' engagement in online learning and to investigate sustainable strategies for improvement within higher education systems. By building PICs, we will be able to cultivate the capabilities of individuals, teams, and the whole organization or system (Li, 2023).

3.4 Online Student Engagement Framework

In this research, the problem lies in the process of online graduate student engagement experience. Drawing from constructivist principles, which highlight the significance of deriving meaning from personal experiences and promoting divergent thinking (Conrad & Openo, 2018), the first step of this study involves identifying the problems students face in their individual and collaborative engagement experience within online graduate programs.

In order to have a deeper understanding of student engagement in online learning, previous researchers have been trying to develop an appropriate framework to analyze this topic. However, with substantive and multiple definitions and indicators of student engagement, it is quite hard to reach consensus of a framework to view student engagement in online learning given this concept is so broad and multidimensional, ss discussed in Chapter 2. It is more commonly in the literature that researchers build

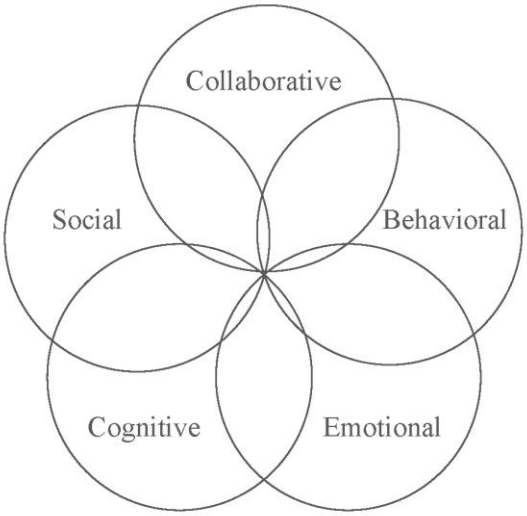
framework of student engagement in online learning by drawing upon the three main types of engagement (behavioral, emotional, and cognitive) typically identified in traditional in-person learning environments (Fredricks et al., 2004; Schindler et al., 2017).

Redmond et al. (2018) proposed an interdisciplinary conceptual framework designed specifically for reflecting on online student engagement in higher education, using categories drawn from the themes within the previous literature. This is a quite nuanced and evaluative framework to explore online students' engagement. This framework will be used in this study to view student engagement in a fully online graduate program in Canada.

The framework includes five key elements of engagement for learning within online environment: cognitive engagement, emotional engagement, behavioral engagement, collaborative engagement, and social engagement. Each of the five elements is interrelated and somewhat overlapped. Figure 3.1 can demonstrate the online learning framework with these five key elements. A detailed explanation of each element will be elaborated in the following section.

Figure 3. 1 Five-key-element Online Student Engagement Framework

Five-key-element Online Student Engagement Framework



Note. This diagram was created by the author to illustrate cognitive, emotional, behavioral, collaborative, and social engagement in online student engagement, as proposed by Redmond et al. (2018).

Cognitive engagement leads to deep learning of concepts and skills (Zepke, 2018). Academic level is regarded as the main predictor of cognitive engagement (Park & Yun, 2018). The level of cognitive engagement can range from simple memorization to cultivating deep understanding and expertise through self-regulated learning strategies (Fredricks et al., 2004). Some scholars argue that cognitive engagement is more than simple memorization. Cognitive engagement refers to how strategically the student attempts to learn in terms of employing sophisticated learning strategies and carrying out mental simulations to diagnose and solve problems (Reeve, 2013). From a social constructivist perspective, cognitive engagement refers to the student's ability to construct meaning and integrate and reflect on understanding while learning. Indicators of cognitive engagement can include critical thinking integrating ideas, justifying

decisions, and developing deep disciplinary understandings (Redmond et al., 2018). For example, recent research has found that the depth of the discussion is positively related to students' cognitive engagement in the asynchronous online instruction (Pilotti et al., 2017), indicating that students may respond well to high pedagogical expectations. This argument is also supported by the research conducted by Shukor et al. (2014), which indicates that sharing information and posting high-level messages in online discussions are the two significant indicators of students' cognitive engagement. My study mainly focuses on a fully online graduate-level program that involves higher learning demands, critical thinking skills, academic-level reading materials, and the capacity to connect theoretical knowledge with professional career experiences. This emphasis arises from the fact that a majority of these students are employed while pursuing the fully online program. Therefore, in this study, cognitive engagement encompasses the examination of whether students can cultivate critical thinking skills throughout the learning process. Additionally, it explores whether students can connect the theoretical knowledge acquired in the course with their day-to-day professional work or effectively apply their knowledge to solve work-related problems. As suggested by Putman et al. (2012), when learning objectives are linked to real-life experiences within moderately complex tasks, and participants share information regarding their beliefs and experiences, there is a higher probability that students will actively engage cognitively. Cognitive engagement is difficult to measure because it is not observable. Most of the previous researches on cognitive engagement rely on students' self-report due to its invisibility. Especially in fully online program where asynchronous communication is mainly used, students' cognitive engagement is more difficult to measure. Self-report is thus a reasonable

measure scale for cognitive engagement. Therefore, qualitative interviews are used in this study to measure students' cognitive engagement, as proposed by Greene (2015).

Emotional engagement mainly concerns students' feelings or attitudes toward learning, for example, managing expectations, articulating assumptions, recognizing motivations, and committing to learning (Redmond et al., 2018). Emotional engagement, comprising various affective responses such as interest, liking/disliking, boredom, happiness, sadness, values, and anxiety during learning, involves both positive and negative reactions to teachers, classmates, academics, and the school (Fredricks et al., 2004; Zepke, 2014). This engagement is assumed to establish connections with the educational institution and has the potential to influence one's willingness to actively participate in academic tasks. Researchers have found that both negative and positive emotions can facilitate activation of attention and engagement; however, positive emotions are considered more advantageous in promoting engagement (Sinatra et al., 2015). Therefore, it is suggested to enhance students' enjoyment and curiosity and minimize their anxiety and frustration in online learning (Reeve, 2013). In online learning community, emotional engagement also highly relates to the degree to which students experience a sense of connection and support from institution, faculty, and fellow students (Fredricks et al., 2004; Kang & Pak, 2023). It is also suggested that if students can apply the course content to their lives or professional work experience, students feel more desire to learn the course and thus emotional engagement is improved (Hampton & Pearce, 2016). This aspect holds significant relevance for the study, given that the majority of students in this study are currently employed. Consequently, understanding

how to motivate these students to establish connections between the course material and their professional lives becomes crucial.

Behavioral engagement involves participation or involvement in learning and academic tasks and includes behaviors such as effort, persistence, concentration, attention, asking questions, and class discussion (Fredricks et al., 2004). Behavioral engagement often includes such motivational constructs as persistence and effort. Self-directed academic behaviors are clearly related to self-regulatory behaviors and strategies such as intentional and purposeful information seeking, effort, and class attendance (Sinatra et al., 2015). For example, "environmental control" strategy was found to be a significant predictor of behavioral engagement while students use the strategy to intentionally eliminate potential distractions to their learning (Park & Yun, 2018). Indicators of behavioral engagement can include upholding online learning norms, supporting and encouraging peers (Redmond et al., 2018). Indicators of behavioral engagement reflect observable student actions and most closely align with conceptualizations of student engagement as quantity and quality of effort towards learning (Schindler et al., 2017). It is important to point out here that quantity of participation does not always lead to high quality of engagement, as some scholars argue that performance or superficial engagement should be avoided (Park & Yun, 2018), because these actions of online students appear to be busy but do not contribute to deep learning and is a waste of time (Dyment et al., 2020). Greene (2015) also contended with this argument, emphasizing the need to distinguish between deep engagement and shallow/surface engagement. She further elaborates that covert activities, such as digesting new knowledge in one's own words, often indicate deep-level processing,

whereas overt actions, such as copying examples from readings, are usually associated with shallow or surface engagement. This perspective reinforces the idea that cognitive engagement and behavioral engagement are closely related, but not all forms of behavioral engagement can lead to cognitive engagement. Therefore, quantifiable measures are needed to be used cautiously to measure students' engagement as these metrics may exclusively capture surface engagement rather than cognitive engagement. In this study, qualitative measures are used to explore deep-level learning that is connected to authentic engagement.

Collaborative engagement is related to collaboration with peers, for academically worthwhile purposes such as discussion, tutoring, study groups, and group tasks or assessment. Engagement with faculty and the institution is also regarded as a part of collaborative engagement, and can include indicators such as developing professional communities (Redmond et al., 2018). Learning situations are increasingly social and interactive in nature (Järvelä et al., 2016), especially online learning environment which requires student to have more interaction and collaboration due to its lack of face-to-face communication. There is broad consensus in the previous literature on the value of creating a community that positions students as knowledge creators rather than knowledge consumers through collaborative learning (Tomas et al., 2015). When focusing on the learning procedure, O'Shea et al. (2015) highlighted three principles in collaborative engagement: Relate-Create-Donate. "Relate" underscores the significance of relationships, interactions, and negotiations essential for building rapport. "Create" pertains to the learner's control over the selection and development of tasks. On the other hand, "Donate" emphasizes the value of contributing to the broader community in tasks

that may not be academically centered but contribute authenticity to the activity. In today's online programs, there are elements specifically crafted to encourage collaborative engagement, such as web-conferencing and group discussion boards. Students are often required to engage in these collaborative learning activities, sometimes mandated by the course instructor as part of the course criteria. In these collaborative activities, students usually have the opportunity to contribute their knowledge or experiences to the entire group through online interactions, aiming to accomplish a shared task and adhering to the relate-create-donate process. Within this collaboration, the students develop interaction as they participate in meaningful discourse with others focused on the common objective or purpose, and collaboration is noted as having an important impact on the discussion and ensuing conversations regarding course content. (Putman et al., 2012). Therefore, experiences of group work, community building, and support from peers, instructor and institution are explored in this study, regarding the experience of collaborative engagement.

Social engagement is a way of establishing purposeful relationships with others. Social engagement mainly includes developing relationships through social interactions individually or within communities. Through social engagement, students can establish trust and create a sense of belonging. Social engagement is vital for success in university and is equally important as intellectual pursuits (Krause, 2005). In an online environment, social interactions are often in the form of students talking about themselves and their contexts, which may result in ongoing interactions through social media (Redmond et al., 2018). Social engagement in this study can be illustrated through actions that build community such as using an online learning platform or social media to interact with

each other, communicating through synchronous meeting via self-introduction or group discussion. Topics of interaction can be related to academic programs or their daily lives. These social interaction opportunities are quite important especially for fully online learners due to the lack of face-to-face interaction. Through social interactions, online learners will be able to establish trusted relationship and feel a sense of belonging to this community of online learning program. Online discussion boards are commonly used in fully online programs as a primary way of asynchronous communication. Online discussion boards create opportunity for students to interact, but at the same time, online discussion boards can also bring issues if not well-managed. Researchers have found that students are often discouraged by significant numbers of posts or quite lengthy posts, due to the time commitment required to read, resulting students may have felt that discussions moved too quickly and may have subsequently begun to feel more disconnected from other students (Aljeraisy et al., 2015). Therefore, smaller group size is suggested by previous studies. Group size is an important factor within the interaction of participants as smaller groups resulted in greater social interaction and collaboration (Ewing et al., 2012). These smaller groups may facilitate creation of a sense of community as they can offer more opportunities for students to interact. This argument is supported by Pilotti et al. (2017)'s research, indicating that smaller group size is positively related to student engagement. In a fully online program where asynchronous communication is the primary method, students' interaction may be hindered by text-based information, which serves as the primary mode of interaction, and finally leading to limited student participation or disengagement (Putman et al., 2012). In order to examine students' social engagement, this study explored experiences of students' sense of belonging, their

relationship establishment (academic and non-academic, e.g., friendship), frequency of communication with peers, and group size preference, etc.

This five-key-element framework for online engagement in higher education provides a nuanced and practical tool to describe the dynamic nature of students' engagement in online learning. There is overlap between the five different elements, for example, motivation to learn can be found in cognitive engagement and also emotional engagement; however, these five interrelated elements propose a nuanced theoretical framework for understanding students' engagement in online learning. This study analyzed online graduate students' engagement from these five threads. Educational improvement science is also utilized to knit the five threads together which means viewing online graduate students' engagement in a systemic approach.

3.5 An Online Student Engagement Improvement Framework

The theoretical foundations of educational improvement science and the engagement framework developed by Redmond et al. (2018) serve as the theoretical framework of this research. Why do we need to improve? The answer might seem obvious, as we might all agree that in the biological world, there are three common fundamental attributes: growability, developability, and improvability (Li, 2023). The goal of educational research is to improve education. Educators and educational researchers have never stopped searching for a better way to educate. As improvement science employs a problem-oriented approach to examine the process of improvement, this approach aligns with my research questions, which aim to identify existing problems within the student online learning process.

According to the understanding of system performance, when a problem occurs (e.g., poor student engagement in online learning), the leadership has the role and responsibility to investigate system-based causes. This involves trying to pinpoint the interactions among structures, work processes and norms that are producing the current outcomes (LeMahieu et al., 2017). When we integrate online technology to education, the system becomes even more complex. Low student engagement in online learning can usually lead to low student satisfaction and higher student attrition rate, and thus many universities which offer online learning programs have increasingly begun to develop strategies to increase online student engagement (Dyment et al., 2020; Farrell & Brunton, 2020; Hampton & Pearce, 2016).

Many previous studies have acknowledged the importance of improving online students' engagement; however, online learning is not often viewed in a systemic way. Usually, their approach can lead to deficit thinking that blames students and/or requires them to change in order to benefit from higher education, and continues to disadvantage the non-traditional students who select online graduate programs (Thomas, 2012). Deficit ideology is a dangerous obstacle for improvement if we locate the problem in the users, which will neglect the failure of the entire system (Hinnant-Crawford, 2020). The strategies based on deficit ideology are discrete and fragmented, and might be one-sided, just like the blind men describing an elephant (Baron & Corbin, 2012). Furthermore, the experienced/knowledgeable teachers, motivated students, plus modern technology combination does not assure a quality outcome. Just like the example of car parts: adding the very best car parts from various car makers does not assure a quality car, rather, it is about designing better processes and making the whole system work better. Student

engagement cannot be successfully pursued at the level of the individual student, school, or faculty but must be pursued holistically in a systemic approach and with a common understanding of what it is the institution seeks to achieve (Baron & Corbin, 2012).

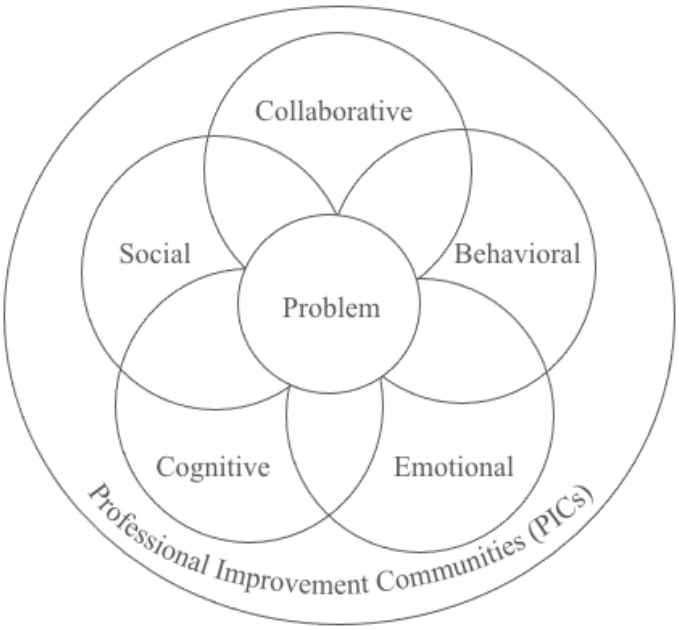
Improvement science underscores the significance of two types of basic knowledge: subject matter knowledge and profound knowledge (Li, 2023). According to Li, subject matter knowledge is the foundation for professional activities of improvement, while profound knowledge comprises four areas: appreciation for a system, knowledge about variation, theory of knowledge, and psychology (Deming, 2018, pp. 63–78). In this research, a university leader's subject matter knowledge can include how to lead the entire university and manage different departments effectively, and understanding of organizational and educational theories. Meanwhile, a university leader's profound knowledge comes from stepping outside of the system to study it and can include viewing the university as a whole system, recognizing the interconnections among various stakeholders (such as students, faculty, and staff), gaining insight into the psychology behind people's performance (e.g., students' engagement in online learning), and subsequently applying theories to improve the whole system. By integrating the two theories of improvement science and engagement framework developed by Redmond et al. (2018), I am able to establish a basic knowledge from the online graduate program, and a system of knowledge including student engagement in online learning.

The purpose of this study is to improve students' engagement in online learning from a problem-oriented approach, based on the integration of improvement science and a five-key-element student engagement framework in online learning. Here I propose an

online student engagement improvement framework, which is based on improvement science and the online student engagement work, as shown in Figure 3.2.

Figure 3. 2 An Online Student Engagement Improvement Framework

An Online Student Engagement Improvement Framework



Note. This diagram was created by the author to illustrate a problem-oriented approach to analyzing online student engagement from cognitive, emotional, behavioral, collaborative, and social engagement, as proposed by Redmond et al. (2018). Additionally, the diagram demonstrates the use of PICs to expand and empower improvers' capabilities and ensure the success of improving organizations (Li, 2023).

In this new online student engagement improvement framework, problems encountered in the online learning process are placed at the center, highlighting a problem-oriented approach, surrounded by five aspects to analyze online students' engagement, which are cognitive, emotional, behavioral, collaborative, and social engagement. Guided by three fundamental questions of improvement science: (1) What

are we trying to accomplish? (2) How will we know that a change is an improvement? (3) What changes can we make that will result in improvement (Langley et al., 2009), we follow the Plan-Do-Study-Act (PDSA) cycle to determine if a change is actually an improvement for students' engagement online (Hannan et al., 2015; Hinnant-Crawford, 2020; Lewis, 2015). Here, the PDSA cycle includes four phases: first, we identify authentic problems within student engagement in online learning, generated by the system. Based on these findings, we develop plans outlining what we aim to achieve, and develop strategies tailored to different contexts. Second, we test these strategies in practice in a small scale (e.g., one online course or online program) before trying it on a larger scale. Third, we will study what happened after implementing these strategies and then reflect and act upon what we learn. Fourth, we may choose to adopt, adapt, expand, abandon, or test again under other conditions based on if a change leads to an improvement. Eventually, we need to use PICs to expand and empower improvers' capabilities and ensure the success of the improving organizations (Li, 2023).

Previous studies have shown that engagement is malleable (Fredricks et al., 2004), and therefore we can utilize proper pedagogical or other interventions to improve students' engagement experience and thus enhance their learning outcomes. Improvement science offers a different perspective, which is from a systemic viewpoint to explore students' engagement and recognizes the dynamic, complex, and intertwined relationship among different stakeholders in the higher education system. By adopting this online student engagement improvement framework, we can follow a practical path for studying how to improve students' engagement in online learning in this study.

Chapter 4 Methodology

This chapter introduces the research methodology employed by explaining why a qualitative case study research design is used in the study, followed by a depiction of this case and participants. Comprehensive descriptions are given of the data collection techniques and data analysis and interpretation procedures. Lastly, the chapter wraps up with ethical considerations, research trustworthiness, and limitations of this study.

4.1 Qualitative Research Method

Many existing studies on student engagement have used quantitative methods. NSSE, for example, is a large-scale, national survey which has been tried out by many universities around the world. However, NSSE is not program specific and is less capable of focusing on the complexities of learning and teaching (Zepke, 2018). These quantitative measures are sometimes inadequate to identify insights as to how and why a specific learning activity affected student engagement (Henrie et al., 2015). Subjective opinions, attitudes, beliefs, or experiences of things in the outer world cannot be easily measured in the statistical sense, and require qualitative methods (Percy et al., 2015). The qualitative approach to study students' engagement is thus suggested by many researchers (Bond et al., 2020; Fredricks et al., 2004; Kahu, 2013; O'Shea et al., 2015).

From an interpretive or qualitative perspective, I am more interested in understanding the experience and perceptions of the students' engagement in their online graduate program, and to find out what factors affect students' engagement. I will also be able to explain why students are not engaged and how to improve student engagement in online graduate learning. Because, as a researcher, I believe the reality is constructed by individual students interacting with their social environments. This is the fundamental

philosophical underpinning of my qualitative research (Merriam, 1998). According to Merriam (1998), qualitative research is commonly used in educational research. The basic qualitative study in education typically draws from concepts, models, and theories in educational psychology, developmental psychology, cognitive psychology, and sociology, and the data collection is through interviews, observations, or document analysis. The reason why I selected the case study approach is explained in the section below.

4.2 Case Study

4.2.1 A Case Study Approach

While case studies can be very quantitative and can test theory, in education they are often qualitative. A case study design is employed in this study to gain an in-depth understanding of the situation and meaning for students' engagement in online learning. The interest of the study is in the process rather than outcomes, in the context rather than a specific variable, in the explorative rather than confirmatory. Insights obtained from this case study can influence policy, practice, and future research in this topic.

Because of these characteristics, a qualitative case study design is used to conduct a thorough and comprehensive examination of the learning process of fully online graduate students. The research goal is to find systemic problems that students encountered in engagement in this procedure and determine how to improve students' engagement. The case study approach provided me with the opportunity to closely study the program and allowed me to explore the fully online delivery methods and investigate how students learn and interact within a fully online learning format. This case study design has facilitated an in-depth investigation of students' engagement experiences

within an online program, enabling me to explore the factors influencing students' engagement, both positively and negatively, in the online graduate program. This analysis is conducted from a systemic perspective, aligning with the theoretical framework of this study. The following sections provide a detailed explanation of the introduction to the case study research design and the rationale behind its use.

4.2.2 Defining Case Study

Although case studies, especially qualitative case studies, are widely used in the field of education (Merriam, 1998), it is rather difficult to define case study in consensus from literature, as described by Stake (2005) to be somewhat problematic. Researchers have been trying to define case studies from different approaches. From research purpose and procedure angle, Yin (2018) argued that "a case study investigates a contemporary phenomenon (the "case") in its real-world context, especially when the boundaries between phenomenon and context may not be clearly evident." (p. 46). Yin (2018) further explained that "contemporary" means a fluid rendition of the recent past and the present, not just the present, and case studies are more suitable to answer a "how" or "why" research question while a contemporary set of events over which a researcher has little or no control.

Merriam (1998) tried to define a qualitative case study as an "intensive, holistic description and analysis of a single instance, phenomenon, or social unit" (p. 27), which is more from end-product or result oriented perspective, but also underscores the in-depth and systemic feature of a qualitative case study. Hancock and Algozzine (2006) also supported that the in-depth analysis is what a case study focuses on, and they further identify three characteristics in a case study (either quantitative or qualitative): First, case

study research more often addresses a phenomenon (e.g., a particular event, situation, program, or activity). Second, the phenomenon is studied in its natural context, bounded by space and time. Third, case study research is known for its rich descriptions, drawing from a wide array of information sources.

The features of a case study can be used to provide a more specific definition of this research method. For example, Merriam (1998) further argued that qualitative case studies can be characterized as being particularistic, descriptive, and heuristic. "Particularistic" in case studies signifies their concentration on a specific situation, event, program, or phenomenon, with the individual case serving as a valuable source of insights about the phenomenon and its potential broader implications. "Descriptive" denotes that case studies result in a comprehensive and detailed depiction of the studied phenomenon, typically encompassing numerous variables and illustrating their interactions over time. "Heuristic" characterizes case studies as a tool for enhancing the reader's comprehension of the subject under examination. They can lead to the discovery of new insights, broaden the reader's knowledge, or confirm what is known.

4.2.3 Rationale for Adopting a Case Study Approach for This Study

Educational phenomena are never simple and linear, as concluded by Cohen et al. (2018) as below:

> The social and educational world is a messy place, full of contradictions, richness, complexity, connectedness, conjunctions and disjunctions. It is multilayered and not easily susceptible to the atomization or aggregation processes inherent in much numerical research. (p. 288)

A case study design can thus help me delve deep into the online learning procedure and gain comprehension of how this unique context influences the engagement experiences of graduate students. The engagement experiences of fully online graduate students are investigated from cognitive, emotional, behavioral, collaborative, and social perspectives, based on the student engagement framework. A case study design facilitates the exploration of this complexity by considering various indicators, including the motivation of learning, the habit of learning online, interaction in the learning process, the structure of lessons, and support from instructors and the institution, among others. All these factors are examined within the broader context of the entire program or university.

A case study design emphasizes the importance of understanding the context in which a phenomenon occurs. The contemporary phenomenon in this case study is the issue of student engagement in online graduate programs. This is a relevant and current concern, as discussed in Chapter 1, online learning has become increasingly prevalent and is continuously evolving. The focus on student engagement is essential because it is directly related to the quality of education and learning outcomes in these programs. By addressing this issue, the case study explores a matter of significant relevance and interest in online learning.

This case study is situated in a real-world context, which is an actual environment in which the online graduate program operates. This includes the university that provides this program, the online learning platform, the faculty, the curriculum, the instructional methods, and the students. This case study involves examining the practical aspects of online learning, which is the context where the problems of student engagement arise. By

conducting the study in this real-world context, I can gain insights into how various factors impact student engagement and how improvements can be made in an authentic educational setting.

Student engagement is a complex and multifaceted concept that can vary significantly across different educational settings (Schindler et al., 2017). By conducting a case study, I can thoroughly explore the phenomenon within the context of the specific program. I can examine what factors influence student engagement, and how student engagement can be improved in a way that is highly relevant to that particular educational context. Furthermore, in this study, the boundaries between the phenomenon (student engagement) and the context (the online learning environment) are not always clear evident. It can be challenging to isolate the phenomenon of student engagement from the context since it is influenced by multiple variables. Through case study design, I will be able to answer my research questions in a way that is particularistic, descriptive, and heuristic (Merriam, 1998).

According to Yin (2014), case studies are often used to answer how or why questions, and this approach reflects an endeavor to engage in causal reasoning. Therefore, the design of a case study is well-suited for exploring the learning process of graduate students in an online setting, including individual engagement and collaborative engagement. A case study provides a unique example of real students in real learning situations, enable readers to understand ideas more clearly than simply by presenting them with abstract theories or principles (Cohen et al., 2018). This case study can be part of a growing pool of data and can help me or other researchers to understand other

similar cases, which can generate logical rather than statistical connection between the case and the wider theory.

The focus of the research has been on exploring students' experiences and perceptions regarding their learning engagement in a fully online delivery program, and then based on the findings to analyze the authentic problems that affect students' engagement in the learning process. By employing this approach, I aim to prioritize the students' input and gain insights into their learning experiences and to identify the challenges and problems associated with their online learning procedure. To gain insights into complex online learning processes, a valuable approach is to seek input from the students themselves. Ultimately, I try to identify strategies to improve students' engagement in fully online graduate learning. The research findings can inform the development of effective strategies that can improve the learning experience of graduate students in online settings. Therefore, a case study is a suitable approach to investigate these interdependencies and understand the intricate relationship between student engagement and the broader online graduate program context.

4.2.3 Embedded Single-case Design

Yin (2018) identifies four main case study designs: (1) The single-case design; (2) The embedded single-case design; (3) The multiple-case design; and (4) The embedded multiple-case design. He suggested that the choice of case design depends on whether the case study is a single case or a multi-case study. Furthermore, he pointed out that within these two categories, there can be a single unit of analysis or multiple units of analysis. I chose the embedded (multiple units of analysis per case) single-case design in this research. Here, a case refers to a thing, a single entity, a unit around which there are

boundaries and I can "fence in" what I am going to study (Merriam, 1998). For this study, I selected a fully online master's program (FOMP) offered by a mid-sized comprehensive university named Riverside University (RU) (a pseudonym) in Ontario, Canada. Individual students in this program are embedded units of analysis within the program. There are multiple reasons for me to select this particular case:

First, a qualitative case study is defined as an intensive, holistic description and analysis of a bounded phenomenon, such as a program, institution, or system (Hancock & Algozzine, 2006; Merriam, 1998; Yin, 2018). This program I selected is bounded as a fully online master's program in a university of Ontario, Canada. According to Yin (2018), single case can represent a significant contribution to knowledge and theory building by confirming, challenging, or extending the theory. This case is critical for the researcher to analyze the experiences of engagement from different students' perspectives using a problem-oriented approach of improvement science, and the theory of online student engagement framework. Even though a case study might be about a single organization, the analysis might include systematic data from some element within the organization (Yin, 2018). In this study, current students of this program are the subunits that are embedded in this program, as that the embedded subunits need to be within (or part of) the original single-case (Yin, 2018).

Secondly, the case study design is particularly suitable for researchers interested in process-oriented investigations (Merriam, 1998). Merriam further explained that process focus involves monitoring and describing the context, population, and program, as well as identifying or confirming causal explanations for specific effects within the program. This study employs a problem-oriented approach to investigate why students

may not be engaged in the fully online learning program and to analyze how to improve student engagement. This dual focus on both “why” and “how” questions aligns with a comprehensive process analysis of the program, aiming to provide a causal explanation for student engagement in the online learning procedure.

Thirdly, the FOMP at RU has been offered for around ten years, attracting a diverse student cohort with varying backgrounds, experiences, and motivations. This diversity enriches the research by providing comprehensive and multiple angles of student perspectives in the case study. Despite the widespread shift to online learning formats in universities during the COVID-19 outbreak, students enrolled in the FOMP have chosen this format willingly. Therefore, their motivations for learning are multiple and extend beyond the circumstances imposed by the COVID-19 lockdown.

Fourthly, familiarity and personal interest in the program serve as additional reasons for choosing this case. My role as a teaching assistant for a full term in this program has provided a deeper understanding of its teaching and learning processes, curriculum designs, and dynamics of student interactions. Being a researcher from China, I have observed that there is currently a dearth of fully online master’s and doctoral programs available in Chinese universities. This scarcity of online learning opportunities severely constrains the choices for individuals who are unable to enroll in traditional, in-person graduate degree programs. The investigation of this case aims to unveil its complexities and contribute to the improvement of online learning opportunities.

Lastly, a convenience sampling approach is advantageous due to its accessibility within the specific program context. Stake (1995) suggested that time and access to fieldwork are limited, necessitating the selection of cases that are easy to access and

relevant to research inquiries. This approach enhances the feasibility of data collection within a familiar and cooperative environment.

4.3 Case Description

The case identified for this research is FOMP, a bounded fully online master's program offered by a mid-sized public university in Canada with a pseudo-name Riverside University (RU). In response to the growing prominence of online learning, RU has expanded its offerings to include online learning options that are accessible to students beyond the campus. The aim of expanding online learning is to bring in innovation, making the university more lively, energetic, and sustainable over time according to the report of this program at RU.

These online learning options at RU encompass both blended online programs and fully online programs. As described by the university, blended online programs are designed to provide students with a flexible learning environment. This flexibility is especially beneficial for those who may face limitations in terms of resources or a preference for non-traditional educational pathways. These programs are thoughtfully structured to incorporate face-to-face components, where necessary, to effectively meet the program's learning objectives.

In contrast, fully online programs at RU are characterized by the delivery of all educational content through online means. Students enrolled in these programs are not required to physically attend a classroom, placement, practicum, or any similar in-person activities. The entirety of their educational experience takes place in the online environment.

According to a recent university report in 2020, FOMP is one of the several fully online degree programs offered by this university at graduate level, and notably, FOMP boasts the highest enrollment figures among these online graduate programs. Over the past decade, there has been a consistent increase in the number of students enrolling for fully online graduate programs at this university. This trend is reflective of the broader landscape of online education development in both Canada and globally. While there is no national statistical record in Canada specifically tracking nuanced data on online graduate programs, findings from the 2021 Canadian National Online and Digital Learning Survey (CNODLS) indicate that 78% of institutions anticipated growth in fully online learning (Johnson, 2021). The subsequent 2022 CNODLS revealed that the greatest demand for fully online courses comes from professional graduate students, accounting for 44% of the respondents (Irhouma & Johnson, 2022). Developing online graduate programs to meet the requirements of professional students has become an important issue in Canadian universities (Hurst et al., 2013), and globally (Jacobsen et al., 2018). With a growing trend of students opting for fully online formats for their graduate studies, it is quite meaningful to explore experiences of student engagement and identify effective strategies to improve engagement in online learning environments.

The origins of FOMP date back to 2013 when RU conceptualized and developed this fully online master's degree program. This program was specifically crafted to attract and involve qualified professionals aspiring to prepare for roles in specialty teaching, administration, and leadership within K-12 schools, higher education, and community settings. Tailored for individuals wishing to pursue a master's degree while maintaining

full-time employment, the fully online program allows students to pursue their studies without disrupting their current professional commitments.

FOMP employs a cohort-based approach, placing a strong emphasis on field-based, practitioner-led learning experiences. Students can utilize their professional practice and integrate it into the program. Currently consisting of ten cohorts in total, most FOMP cohorts can be successfully completed within a two-year timeframe, spanning six terms. Notably, one of the cohorts allows students to finish the program in just one year, covering three terms. Seven of the cohorts are entirely conducted online, with no onsite components, providing flexibility and accessibility to students pursuing their academic goals. This cohort structure can provide ongoing support within the course work, enabling students to develop a professional community of practice. To ensure the integrity of the cohort model, continuous enrollment is required, and will necessitate that students complete all the required courses within the timeframe stipulated. After nearly a decade of development, enrollment in FOMP has expanded significantly, now standing at approximately four times the size of its initial enrollment. With a current student body exceeding 400, FOMP emphasizes the importance of sustaining a modest class size for every cohort. Typically, each cohort is structured to include 20 to 25 students.

The curriculum of FOMP is grounded in the theoretical principles of experiential learning, and adult learning models. Supported by these theoretical precepts, students are challenged to develop a professional knowledge base that integrates both practical and research knowledge and links theory with systemic and systematic inquiry, thereby emphasizing the generation, transformation, and application of professional knowledge and practice. Students take one course per term and there are eight courses in total for

students during the two years program. Usually, students take four courses per year, for example, one course in the fall term (September-December), one course in the winter term (January- April), one course in the intersession (May-June), and one course in the summer term (July-August).

As a fully online graduate degree program, the course instructor of FOMP usually sends the course introduction and course syllabus to the students a few days before the course starts. Because in a fully online graduate program, students are usually self-directed and rely on the course syllabus to conduct learning, a well-planned course syllabus in online learning program is rather important. A course syllabus mainly includes course name, name and contact information of the course instructor, course description and expectation, learning objectives, list of course readings, course delivery mode, methods of evaluation, assignments and rubrics, assignments deadlines, course requirements, and other relevant regulations and policies such as attendance, code of conduct, and academic integrity. Course syllabus in the online learning program is a format of communicative documents that will ensure students understand how to engage in self-directed learning. Students are required to log on to the course delivery platform and use their student accounts to log into the platform to see their course structure. Most of the interaction among students and instructors are completed via this platform. Students are also encouraged to contact the instructors or supportive staff members at the faculty via emails.

Students in the FOMP Program can expect to spend seven to ten hours per week on each course. Weekly readings and discussion via blogging usually begin on the Monday of the week and due on Sunday night. Students can expect weekly feedback

from their instructors. Readings are expected to be completed prior to students' engagement with the responses online. To develop a collegial and productive online dialogue, students are encouraged when and where possible to post initially earlier in the week to allow for others to comment. The course readings are listed in the course syllabus and are available online for download via the course platform or from the link to the university library. Supplementary materials such as YouTube videos, other readings, or other resources are also listed for students' reference.

The course interactions include synchronous and asynchronous methods. For synchronous interactions, students are required to participate in the Zoom meeting online to meet with each other and the instructors, and as for asynchronous interactions, students are requested to post their contributions online. Most interactions in this program are asynchronous and usually mandatory for evaluation.

Grading for each course is usually based on the students' online engagement and assignments. Usually, the students will be evaluated on their online discussions, research paper, and oral or paper presentations. According to the graduate student policy of the university, graduate students must maintain at least a 70% average in their program. Students who do not maintain a minimum average of 70% each term or receive a final course grade lower than 60% may be removed from the program.

This case study has an embedded single case design, and therefore has subunits of analysis. According to Yin (2018), embedded subunits need to be within (or part of) the original single case. The case study is to explore the students' engagement experience within this FOMP, which is a single, large, and complex entity. The program in this study is regarded as a whole (the "case"), and the embedded units are the individual students

based on the research questions. Therefore, the embedded single case design is also suitable for maintaining a case study's focus (Yin, 2018).

Data collection from the embedded units encompasses an online survey and subsequent interviews, while the data collection strategy for the entire case involves document analysis and the examination of archival records such as the program's social media and webinar videos. As Yin (2018) emphasized, no single data source has a complete advantage over all the others. In fact, these diverse sources complement each other significantly, making it imperative for a robust case study to draw upon as many of these sources as possible.

In compliance with the temporal constraints inherent to this case study, an online survey and subsequent follow-up interviews were administered during the winter term (January- April) of 2023. The study's participants encompassed both first year and second year FOMP students. Consequently, the first-year FOMP students had completed an entire term of study, affording them valuable experience with a fully online learning format. The students are eligible to participate in the study if they: (a) are currently enrolled at the fully online FOMP program; and (b) have completed at least one online course at the program.

4.4 Data Collection

A strength of case study is its ability to deal with multiple types of evidence (e.g., interviews, documents, and surveys) to investigate the unit of analysis (Yin, 2018). This study entails multiple data collection approaches, such as qualitative online survey, semi-structured interviews, and document analysis.

4.4.1Online Survey

According to Yin (2018), a survey could be designed as part of an embedded case study to produce evidence for the study. Online surveys offer a significant benefit in their openness and flexibility to address various research questions relevant to social research (Braun et al., 2021). This method enables access to data spanning from individuals' perspectives, experiences, practical behaviors, and their interpretative or sense-making processes. Thus, an online survey is developed in this case study as one of the multiple data sources to increase internal validity (McClintock et al., 1979; Yin, 2018). An online survey can help facilitate affordable, fast, and easy access to a large, geographically dispersed group of participants in this case (Braun et al., 2021), and then finally reach the potential interviewees. The purpose of this online survey was twofold: firstly, to gather information regarding the participants' demographic characteristics and their diversified engagement experiences with the fully online program under investigation; and secondly, to streamline the data collection process, ensuring a swift and convenient means of access for the students. Given the inherently remote nature of this program, students tend to experience a greater degree of disconnection from both their peers and the university, particularly when compared to on-campus students. Furthermore, a significant proportion of these students are either employed or juggle family responsibilities, which translates into demanding schedules. These circumstances present hurdles to their willingness to participate in the research, as is evident from feedback obtained during follow-up interviews, where they candidly expressed their time constraints.

To address this challenge, I employed a recruitment strategy that entailed sending invitation emails to encourage student participation in the interviews. The recruitment

emails provided an overview of the research and embedded a web link to the online survey. The email informed them of the research purpose, eligibility criteria for participants, and contact information for the researcher or research team. The emails also emphasized the voluntary nature of participation and provided assurances of confidentiality and anonymity. After gaining permission from the program coordinator, the invitation emails are sent to all the 357 participants of FOMP through the program coordinator. If the respondents agreed to participate in the study, they were directed to answer all questions detailed in Qualtrics (www.qualtrics.com). Participants who agreed to participate were directed to complete the survey in Qualtrics after giving their consent. At the end of the survey, participants were asked to provide their email addresses if they were willing to participate in a follow-up interview. Two rounds of email invitations were sent to potential participants, with a second reminder sent two weeks after the first.

The online survey was developed based on issues raised in the research literature and the research questions. The survey has 32 questions in total. Question1-8 are demographic questions (e.g., age, gender, cohort, educational background, etc.). Question 9 asks the reason for choosing the fully online course and is an open-ended question. Question 10-14 explores the frequencies (e.g., time of online study, communication with peers per week, online participation, etc.). Question 15 asks their challenges during this online learning procedure and Question 16 asks their suggestion for improvement, and these two questions are open-ended as well. Question 17-31 are questions using five-point Likert scale to explore students' perceptions (e.g., experience, attitude, opinions, etc.) to the online learning procedure, and the scale includes strongly agree, somewhat agree, neither agree nor disagree, somewhat disagree, and strongly disagree. The main

themes in the survey that are reported in this study related to students' engagement experience and their perceptions of the learning process in this fully online graduate program. The last question, Question 32 asks if student wishes to participate in a follow-up interview. This dual approach allowed for a comprehensive exploration of the diverse array of student engagement experiences within the program.

A total of 46 participants consented to completing the online survey, resulting in a response rate of 13%. The demographics of the students who completed the online survey are shown in Table 4.1.

Table 4. 1

Demographics of Online Survey Participants

Characteristics	n=46	%
Gender		
Woman	36	78%
Man	8	17%
Non-binary	2	4%
Age		
18 - 24	2	4%
25 - 34	30	65%
35 - 44	12	26%
45 - 54	2	4%
Previous online course taken		
1 course	4	9%
2-3 courses	25	54%

4 or more courses	17	37%

4.4.2 Semi-structured Interviews

Interviewing is a common means of data collection in qualitative studies (Merriam, 1998) . Interviews may be structured, semi-structured, or unstructured, and semi-structured interviews are particularly well-suited for case study research (Hancock & Algozzine, 2006). By using semi-structured interviews in this research, I can present questions that are pre-established but formulated in a flexible manner. For example, in the process of interviews, I can adjust my follow-up questions based on their personal answers and backgrounds. The responses to these questions offer initial insights into my inquiries. Beyond these predetermined queries, semi-structured interviews involve follow-up questions strategically crafted to delve deeper into topics of particular interest to the interviewees. Through this approach, semi-structured interviews encourage participants to openly and freely share their thoughts and viewpoints, not solely from the perspective of the researcher (Hancock & Algozzine, 2006). For example, Question 4 in Appendix E asks about the benefits and challenges experienced by students in this online program. After students shared some benefits and challenges, I followed up by asking more questions about why these experiences occurred, considering their individual and unique circumstances.

In this study, the semi-structured interview is based on some open-ended questions about students' personal experience in learning a fully online program. Each interview lasted about 40 to 50 minutes. The interviews were all completed via Zoom. At the end of the online survey, ten participants provided their email addresses and

expressed willingness to participate in follow-up interviews, which is a reasonable sample size for this case. According to the rule of thumb sample size guide for qualitative research (Mertens, 2020), sample sizes are often smaller for qualitative research, because the focus in a qualitative study is on depth of understanding rather than statistical significance. I reached out to each of the ten participants and scheduled a meeting time. Eight participants responded and participated in the interview via Zoom meetings. Prior to the interviews, respondents received a copy of the consent letter and were reassured that their information would remain confidential. All participants provided verbal consent to participate and agreed to be video recorded in the interview. The interviews were video recorded, transcribed, and analyzed to provide a deeper understanding of students' experiences and perceptions of this online program. Although the sample size is relatively small, their responses may indicate typical responses, especially if all eight interviewees mentioned particular issues.

4.4.3 Document Analysis

According to Yin (2018), documentary information (whether paper or electronic) is likely to be relevant to every case study topic. Merriam (1998) acknowledged that documents is the umbrella term to refer to a wide range of written, visual, and physical material relevant to the study at hand, and this term includes materials in the broad sense of any communication. In this study, documents such as university webpage introduction about this program, program brochure, program recruitment seminar videos, course descriptions, course syllabus from instructors, and relevant policy documents regarding online learning were analyzed as well.

As a researcher, I acknowledge that no single source of evidence has a complete advantage over all others. In fact, the various sources are highly complementary, and a good case study will therefore want to rely on as many sources as possible (Yin, 2018). The survey helped me to receive overall understanding of the program and interviews helped me go deeper in this research. Documents analysis provides a historical review of the program. All the above approaches can form data triangulation and then avoid solutionitis which means jump quickly on the solution based on past experiences, professional knowledge, and beliefs about what seems appropriate (Bryk et al., 2015). Therefore, in my study, the survey data, the interviews, and document analysis have constantly been alternative rather than competing sources of evidence and ideas (Gable, 1994), and thus form triangulation of the evidence. I discuss how I conduct qualitative survey analysis, semi-structured interview data analysis, and document analysis in the following section.

4.5 Data Management and Analysis

According to Yin (2018), a major strength of case study data collection is the opportunity to use many different sources of evidence. My data is mainly collected from multiple sources: online survey, interviews, documents which include program website, program introduction brochure, course description, course syllabus from the instructors, program recruitment seminars, and policy documents. The collected information is organized and securely stored in separate folders on a computer that requires a password for access. Raw data is stored in spreadsheets, PDFs, and Word documents. The data analysis procedure entails the examination of all the collected evidence.

In this study, the purpose of data analysis is to make sense of the data I collected, which involves consolidating, reducing, and interpreting what my participants have said and what I have seen and read (Merriam, 1998). Qualitative data analysis is an ongoing process, in which the findings gradually "emerge" from the data (Mertens, 2020). I adopted a combination of deductive or top-down thematic analysis and inductive or bottom-up coding approaches (Braun & Clarke, 2006) in this procedure. When conducting case studies, it is possible to obtain confirmatory (deductive) as well as explanatory (inductive) findings, as outlined by Yin (2018). This research applied a deductive approach by thinking with five-key-element student engagement framework, to find out the problems students encountered in online learning, combining improvement science as well as the literature to view problems systemically and to explore factors contributing to the students engagement with inductive approach. Due to the complexity of the data analysis process, involving frequent back-and-forth examination of data, it is essential to employ both deductive and inductive approaches in this process (Merriam, 1998).

Deductive coding approach was utilized to construct or provide support for general principles or concepts according to my literature review and theoretical framework, because "that researchers cannot free themselves of their theoretical and epistemological commitments, and data are not coded in an epistemological vacuum" (Braun & Clarke, 2006, p. 84). This approach ensured my study has a structured analysis based on existing literature. The findings through deductive coding helped to confirm the five-key-element students' engagement framework and validate the factors previous researches have found to affect students' engagement experience in online learning. As

Table 4.2 shows, Braun and Clarke (2006) outlined that thematic analysis usually includes 6 phases: (1) Familiarizing yourself with your data; (2) Generating initial codes; (3) Searching for theme; (4) Reviewing themes; (5) Defining and naming themes; (6) Producing the report. It is important to note here that many researchers believe that qualitative data analysis is not a linear process rather a recursive (Braun & Clarke, 2006), iterative, or spiral process (Creswell, 2013). Close-ended questions in the survey and questionnaire were analyzed deductively, confirming the theoretical framework of this study. Creswell (2013) argued that qualitative data analysis can include five spiral steps: (1) Managing and organizing the data; (2) Reading and memoing emergent ideas; (3) Describing and classifying codes into themes; (4) Developing and assessing interpretations; and (5) Representing and visualizing the data. Hence, it can be concluded that the general process of data analysis entails an initial comprehensive examination of the data, followed by the generation of codes, development of themes, interpretation of the data, and ultimately, the reporting and representation of the findings.

Table 4. 2

Phases of Thematic Analysis

Phase	Description of the process
1. Familiarizing yourself with your data:	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.
2. Generating initial codes:	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3. Searching for themes:	Collating codes into potential themes, gathering all data relevant to each potential theme.
4. Reviewing themes:	Checking if the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic 'map' of the analysis.
5. Defining and naming themes:	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme.
6. Producing the report:	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

Note. Adapted from "Using thematic analysis in psychology," by Braun, V., & Clarke, V. (2006). *Qualitative Research in Psychology*, *3*(2), p. 87. (https://doi.org/10.1191/1478088706qp063oa). Copyright 2006 by Edward Arnold (Publishers) Ltd.

This study employed an inductive approach as well, utilizing improvement science principles, in conjunction with a focus on student engagement in online learning, research questions, and existing literature. Furthermore, an inductive approach was incorporated during the data analysis process to facilitate the emergence of novel codes and themes that were not explicitly covered or may not have been anticipated in the existing literature review. Inductive coding enabled the discovery of new insights or factors that might have been overlooked with a purely deductive approach. Open-ended questions in the survey and interviews were analyzed inductively for new findings emerging from the data itself. As explained by Braun and Clarke (2006): "Inductive analysis is therefore a process of coding the data without trying to fit it into a preexisting coding frame, or the researcher's analytic preconceptions" (p. 83). For instance, I asked each interviewee to define student engagement based on their own experiences (see Appendix E). The responses varied, including terms such as involvement, participation, and contribution, among others. This question was posed because previous literature lacks a consensus on the definition of student engagement. It's essential for students to comprehend what student engagement is before delving deeper into the topic. Consequently, their definitions were derived through an inductive coding process.

To examine qualitative data, I adopted an iterative approach of analytical circles rather than using a fixed linear approach. The combination of deductive and inductive

coding enhanced the rigor and robustness of my research. Deductive coding provided a solid foundation based on existing framework and literature, while inductive coding ensured that my analysis remains open to new perspectives and unanticipated factors.

4.5.1 Online Survey Analysis

In this study, an online survey was strategically employed as a means to engage with participants. As a qualitative researcher in the study, the aim in hearing from multiple participants is typically about gaining rich(er) insights into the topic of interest, not generating a sample that achieves statistical representativeness, and allows simple claims of generalizability (Braun & Clarke, 2006). The online survey data was collected using Qualtrics, a web-based survey tool, extracted into a Microsoft Excel file, cleaned, coded, and analyzed. The survey was sent to 357 participants who met the participation criteria in the study and received 46 valid responses.

The closed-ended questions and answers (e.g., Yes/No) and demographic data (e.g., gender, age) from the survey were counted and treated like quantitative data. Open-ended questions and answers were analyzed for key words, categories, themes, and subthemes in qualitative research software NVivo 12, as quantitative description limits what can be learned about the meanings participants give to events (Sandelowski, 2000). The questions in the survey related to students' online learning experiences are designed according to the literature review and theoretical framework. Therefore, the structured questions data analysis adopted a deductive approach, and the open-ended questions' data analysis followed an inductive approach allowing room for generating new insights.

In the online survey, the participant students' perceptions and experiences within the fully online program were assessed, and the findings were reported using percentages

generated by Qualtrics. The agreement percentages were calculated by dividing the number of responses indicating strong agreement and agreement by the total number of responses. This calculation provides readers with a sense of scale and proportion, enabling them to gauge the magnitude of agreement among participants.

4.5.2 Semi-structured Interview Data Analysis

At the end of the online survey, participants were asked to provide their contact information, if they were willing to be contacted for a follow-up interview. Following that, each of the ten participants who were willing to participate in the interview were contacted by email to arrange the follow-up interviews in accordance with their availability and preferences. Eventually, eight participants were interviewed through the use of Zoom. In the report of the findings, pseudonyms are used to identify the participants, for the purpose of confidentiality. Interview participants' information is shown in Table 4.3.

Table 4. 3

The Interview Participants Information

Pseudonym	**Gender**	**Age range**	**Employment status (Full-time/Part-time)**	**Year in current program**
Ben	Man	35-44	Full-time	2
Charlotte	Woman	25-34	Part-time	1
Emily	Woman	18-24	Full-time	2
James	Non-binary	25-34	Full-time	1
Mia	Woman	35-44	Full-time	2

Olivia	Woman	35-44	Full-time	1
Sophia	Woman	35-44	Full-time	2
Tina	Woman	35-44	Full-time	2

Each of the interviews lasted approximately 40-50 minutes and was later transcribed using a third-party transcription software tool named Otter Ai. I verified the transcription for precision by cross-checking it against the videos. Then I read the transcriptions sentence by sentence thoroughly and made notes about specific phrases, ideas, and concepts, along with the notes made while interviewing (Creswell, 2013). Interview transcripts constitute the primary and voluminous qualitative data in my analysis process. Prior to commencing coding, I carefully read through the transcripts multiple times, aiming to grasp the overall content of the data without becoming overly engrossed in coding details (Creswell, 2013). Creswell further explains that these memos can encompass concise phrases, ideas, or significant concepts that come to mind, extending beyond mere data summarization and instead striving to synthesize the data into a higher level of analytical thinking. I applied this approach while reading the transcripts and other related documents, enabling me to develop a valuable understanding of the entire database before proceeding with coding.

Throughout the interviews, participants were queried about their experiences, learning processes, and attitudes towards the fully online program. While they were not directly questioned about what they had learned, certain pieces of knowledge they had gained were revealed during the interviews.

Creswell (2013) reminded us that forming codes or categories represents the heart of qualitative data analysis, which requires the researcher to build detailed descriptions, apply codes, develop themes or dimensions, and provide interpretation in light of their own views or views of perspectives in the literature, which plays central role in case studies. Therefore, in this process of data analysis, coding is the essential step. As Saldaña describes, a code is "a word or short phrase that symbolically assigns summative, salient, essence capturing, and/or evocative attribute for a portion of language-based or visual data" (Saldaña, 2021, p, 5). To facilitate further parsing of the transcripts and more efficient coding using technological algorithms (Saldaña, 2021), I employed NVivo 12 as an aid in my coding process.

While coding the interview data, I used deductive coding to look for evidence of online student engagement framework, which includes five categories such as cognitive engagement, emotional engagement, behavioral engagement, collaborative engagement, and social engagement. I also applied inductive coding to find data that were not covered by the current literature, ensuring the rigor of data analysis.

After the initial coding process, the next step is to identify themes, which involves discerning patterns in the data, following the guidelines provided by Braun and Clarke (2013). The goal is to uncover similarities and overlaps among the codes, with the themes tailored to address the research questions in this study. As an illustration, the theme "Sense of belonging" encompasses codes such as "Enhanced learning with familiarity" and "Lacking a strong sense of belonging."

4.5.3 Document Analysis

In this study, relevant documents and reports were collected for data triangulation (e.g., university webpage introductions about this program, program brochure, program recruitment seminar videos, course descriptions, course syllabus from instructors, and relevant government policy documents regarding online learning), and the documents and reports were evaluated in relation to the research questions regarding policy making.

I followed the same coding process within the document analysis, using deductive coding to identify examples of tasks that fit into the framework and inductive coding to describe these tasks and identify examples that did not fit into the framework. More nuanced data analysis is covered in Chapter 6.

4.6 Researcher's Positionality

The concept of a researcher's positionality is a widely discussed theme in qualitative studies. Scholars often employ the terms "insider" and "outsider" to delineate different positionalities of researchers, and this topic has been the subject of ongoing debate (Chavez, 2008). It's crucial to note that insider and outsider positions should not be viewed as a rigid dichotomy, as highlighted by Holmes (2020). Instead, these positions can be fluid and dynamic, and they may coexist within a study. For example, within a single research project, there might be elements of insider perspective on certain dimensions while simultaneously featuring elements of outsider perspective on other dimensions (Hellawell, 2006). Positionality is informed by reflexivity; therefore, the researcher should adopt a reflexive approach to identify, construct, evaluate and express their own position with their work, with the aim of comprehending their role in shaping it or affecting its outcomes (Holmes, 2020).

It is important to recognize that researchers can never provide an entirely objective description of something as it truly is (Holmes, 2020). We as researchers should note that "All researchers begin data collection with certain assumptions about the phenomenon being investigated, situations to be observed, and people to be interviewed" (Merriam et al., 2001, p. 406). Therefore, researchers are encouraged to continually be aware that their positionality is never fixed and is always situation and context-dependent (Holmes, 2020), and the key point is to stay conscious of who we are in relation to the research process (Hellawell, 2006).

Taking on a reflexive stance, I will provide a brief overview of my personal background to offer insight into my identity and the motivations behind this study. I was born and raised in China and initially pursued a bachelor's degree in Educational Technology at a Chinese university. I began my career as a university staff member in China and subsequently, approximately two decades ago, I made my first journey to Canada to pursue a master's degree in education. Following two years of dedicated study, I completed my master's degree and returned to China.

Fast forward to the present, I relocated to Canada about five years ago to start a full-time PhD program. Before commencing my PhD studies, I devoted approximately 15 years to a full-time career. Contrasting the younger, single version of myself who pursued a master's degree 15 years ago, I now see a different version of myself. I have become a mature woman with a wealth of life and professional experiences, as well as the responsibilities of a family and a child.

As proponent for lifelong learning, my deep passion for higher education led me back to campus. When I commenced my PhD studies, I had the first close contact with

the fully online FOMP program, a field that has always captivated me. This fascination with online learning can trace back to my undergraduate major in educational technology in 1996. My interest lies in exploring the integration of technology in education, a passion that fueled my master's thesis on computer-mediated education. At that time, online learning was not as widespread globally. During my doctoral program, I had the opportunity to connect with some peers studying FOMP, allowing me to gain deeper insights into the program. This ongoing journey of discovery and my genuine enthusiasm for educational technology have continually motivated me in my academic pursuits.

I see myself as both an insider and outsider of this study. My insider position is multifaceted, incorporating various dimensions that enhance my connection with the participants in the study. Firstly, as a non-traditional student, I share common characteristics with many of the participants such as older age, having family responsibilities, and rich work experience, enabling me to better understand and relate to their unique perspectives and challenges. This allows me to empathize with those participants who are navigating the graduate studies of balancing family responsibilities with academic pursuits.

Furthermore, my current status as a student as the participants fosters a sense of shared experience and mutual understanding. This proximity ensures that I am immersed in the same academic environment, making me attuned to the specific nuances and dynamics prevalent within our academic community. Moreover, having prior experience with online learning in Canada, I bring insights into the challenges and advantages associated with this mode of education, contributing a valuable perspective to the study.

Lastly, my role as a teaching assistant with FOMP provides me with insider knowledge regarding the teaching and learning dynamics within the program under investigation. This direct involvement in the educational process allows me to offer unique insights into the participant experience, adding depth and authenticity to my understanding of the context. Together, these multifaceted aspects of my insider position enrich my ability to comprehend and analyze the participants' experiences.

On the other hand, I acknowledge my outsider status, which is evident in several aspects. Firstly, as a full-time PhD student, my academic situation differs from that of the fully online master's student participants, the majority of whom are actively engaged in full-time employment while I am not currently employed. This distinction in academic context underscores my position as an outsider, as our educational experiences and daily commitments can be quite different.

Moreover, during the data collection phase for my survey and interviews, I deliberately assumed a role without any instructional or assistant responsibilities within the program. This deliberate choice was made to position myself as an outsider, ensuring an unbiased and impartial exploration of the participants' perspectives. By maintaining a neutral role, I sought to minimize any influence that my insider position might have had on the participants' responses.

Additionally, the course I assisted with was specifically designed for newly admitted first-term students, creating a distinction from the research participants who are pursuing master's degrees online. This contextual difference places me as an outsider in the specific academic context under investigation, emphasizing the boundaries between my role as a teaching assistant and the experiences of the participants in the FOMP.

Both insider and outsider stances in a study have the potential to offer advantages and introduce biases (Holmes, 2020). As an insider, I had direct experience and knowledge of the FOMP program, its structure, and and its learning format. I had easier access to the program and thus gain insights and experiences that an outsider cannot have. In another view, an insider positionality might bring bias such as preconception about this learning format or prior experience or relation with this program, and thus might influence the way I interpret my data.

Conversely, an outsider perspective allows for a more neutral view of the program and maintains a certain distance from the participants. However, it may also present challenges in fully understanding the participants' experiences. By adopting a reflexive approach in this study, I recognize my positionality and aim to leverage both insider and outsider perspectives to my advantage. This approach, in turn, strengthens the trustworthiness of the study.

4.7 Ethical Considerations

This research project was undertaken with the approval of the Non-Medical Research Ethics Board (NMREB) at Western University. The researcher submitted documentation to Western University's Non-Medical Research Ethics Board (NMREB) to obtain approval on October 25, 2022. The approval process required a thorough explanation of what a participant would experience in the study, and how the researcher will carry out their work involving human participants and their data. All the supporting documents such as online survey, interview questions, letter of information and consent (LOI/C) were submitted (see Appendix C). In the LOI/C, the researcher outlined the potential benefits and any potential risks associated with the study. The LOI/C also

explained details about the study's objectives, confidentiality measures, procedures for participants who wished to withdraw voluntarily, and the contact information of the investigator for any queries the participants may have had.

After the NMREB approved the research ethics application on November 30, 2022, the researcher forwarded a recruitment email to the program coordinator of the master's program involved in the study. The researcher sought assistance from the program coordinator to facilitate the distribution of the recruitment email to eligible potential participants. Participants were provided with a LOI/C to help them understand the research purpose and procedure. A weblink to the online survey was also included in the recruitment email. Online survey responses were collected through Qualtrics. Qualtrics uses encryption technology and restricted access authorizations to protect all data collected. Interviews were recorded with participants' consent, and they were assured they had the right to not answer individual questions or to withdraw from the study at any time, with no effect on their academic standing.

The data collected in the online survey and interviews were exported and saved on an encrypted and password-protected laptop computer. Participants' personal details were removed from the resulting data and replaced with a code to ensure privacy. To safeguard confidentiality, participants were explicitly informed that only the researcher would have access to the recordings and raw data. During analysis and any future dissemination of study results, participant names were replaced with pseudonyms. However, participants were made aware that the use of pseudonyms might not guarantee complete confidentiality, and they were given the autonomy to decide whether to participate in the study based on this information. According to the guidelines of Western's NMREB, data

collected from this study will be preserved for seven years. Following Western University's recommended practices for destroying data and/or data devices, all information will be securely disposed of after that time period.

4.8 Establishing Trustworthiness

In order to establish the trustworthiness of this study, I employed the framework of Guba and Lincoln (1989) which includes four criteria: credibility, transferability, dependability, and confirmability. Lincoln and Guba (2007) proposed techniques to enhance or test these criteria. For credibility, techniques include prolonged engagement, triangulation, peer debriefing, and member checks. For transferability, thick descriptive data is crucial. For dependability and confirmability, an external audit involving an audit trail and an external auditor is recommended. In my study, I adopted these techniques for enhance the trustworthiness of this qualitative research.

Credibility asks how congruent are the findings with reality (Stahl & King, 2020), which means how to ensure the findings are accurate. In my study, I used different sources for data collection including survey, interviews, and documents, to investigate students' engagement experiences, which enabled me to view this phenomenon from different perspectives. During interviews, I ensure the accuracy of participants' responses by seeking clarification when necessary. Being a teaching assistant also allowed me a prolonged engagement which means lengthy and intensive contact with the FOMP to gain in-depth knowledge about the program. I also employed member checks.

Transferability enables readers of the research to make judgments based on similarities and differences when comparing the research contexts to their own, as qualitative inquiry seeks to expand their understanding by transferring findings from one

context to another (Mertens, 2020; Stahl & King, 2020). I provided sufficient detail in the case description, and nuanced explanation is also provided on how I collect data and my data interpretation process. This can help the readers have a better understanding of this research context.

Dependability means that the research findings must be consistent and can be repeated. Dependability can ensure that the process of research is logical, traceable, and clearly documented (Tobin & Begley, 2004). Confirmability is to get as close to objective reality as qualitative research can get (Stahl & King, 2020). Confirmability is established when credibility, transferability, and dependability are all achieved in the research (Guba & Lincoln, 1989). Dependability and confirmability are established through debriefing with my supervisor for ensuring an external audit, as well as the reasons I have elaborated for theoretical, methodological, and analytical choices throughout the entire study.

4.9 Limitations

Despite its valuable contributions, this research has several limitations. The first limitation is the study's single case design. "How can you generalize from a single-case study?" is a question I was frequently asked. The answer is not straightforward. Case studies, like experiments, are generalizable to theoretical propositions and not to populations or universes (Yin, 2018). In this sense, neither the "case" nor the case study, represent "samples". Rather, in doing case study research, my goal is to expand and generalize theories (analytic generalizations) and not to extrapolate probabilities (statistical generalizations) (Yin, 2018, p. 58). As such, the findings might not be directly applicable to online programs provided by other departments, institutions, or educational settings in other countries. As Patton (1990) argued, qualitative research should "provide

perspective rather than truth, empirical assessment of local decision makers' theories of action rather than generation and verification of universal theories, and context-bound extrapolations rather than generalizations" (p. 491). For future research, it is recommended to explore multiple-case designs and conduct cross-discipline case analysis when comparing students' engagement in diverse educational settings.

Secondly, the voluntary nature of participant involvement could lead to potential self-selection bias, as those who volunteered might have been more engaged or motivated than their peers. Moreover, the use of self-reporting in both the online survey and interviews could introduce response bias, where participants might not always provide completely candid or accurate responses. The reliance on retrospective data from participants' accounts might also be subject to memory inaccuracies. Alternative instruments for measuring student engagement, such as class observation, longitudinal studies, or mixed-methods studies involving larger participant samples, are recommended to enhance the generalizability.

Finally, it is important to note that the policy recommendations from this research are grounded in the specific context of RU in Ontario Canada. These recommendations might not be directly applicable to other regions of Canada nor other contexts, given the absence of a centralized educational system in Canada and the likelihood of varying policies across provinces. Furthermore, as an immigration country, Canada can have a group of more diversified non-traditional students. The current online student engagement framework including cognitive, emotional, behavioral, collaborative, and social engagement provides a valuable guide to study student engagement; however, it may still simplify the complexities and nuances of the online learning environment. There

could be additional factors associated with student engagement such as gender, cultural backgrounds, socioeconomic status, prior work experience, goal of online learning, and instructional design. These factors may not be fully accounted for in the analysis, limiting the depth of understanding of online student engagement. It is recommended for future research to be conducted in different provinces across Canada, with a refinement of a more inclusive framework. This approach will contribute to a more comprehensive understanding of the online learning landscape across Canada.

Chapter 5 Findings

This chapter presents the empirical findings obtained from the online survey and follow-up interviews, which offer an in-depth understanding of participants' learning perceptions and experiences in the fully online program. Findings from related policy document analysis are also presented in the chapter. Based on the codes and themes developed from my data analysis, I group themes into larger units of abstraction, enabling a comprehensive understanding of the data (Creswell, 2013) and exploring the deeper connections and implications of the data. I engage in a thoughtful and reflective examination of the data, based on my theoretical frameworks, aiming to uncover the underlying meanings embedded in the data, and to generate insights and explanations.

5.1 Engagement Defined by Participants in their Online Program

The purpose of this study is to investigate students' engagement experience in online learning. Therefore, the initial step is to examine how the participants comprehend the concept of engagement in their online learning. Although this is not explicitly outlined in my research questions, it is crucial to explore students' interpretations of engagement before proceeding with further discussions. Since there is no consensus on the definition of engagement, I allowed students to provide their own understanding rather than imposing a predefined definition. In the interview, when asked to define student engagement in an online program, these students gave a detailed description from multiple perspectives rather than giving precise terms. Most of them believe engagement for them is more like participating in the program, either verbally or text based. James said:

> That would be really nice that type of participation in like group-based discussions would be really nice. ... And I think it's more robust of a discussion if we're actually verbally saying it, rather than typing. So, I think that participation is my version of engagement in the course.

Sophia also agrees that engagement is participation, but she prefers defining engagement as asking questions, although she is not quite sure. She commented: "Participating verbally within the classes, asking questions?" I asked further if she could give an example, she said:

> Specifically, in the lectures, I tried to have all the readings done before class. It wasn't always possible. But when I could I tried to do that, so that I had questions readily to ask. I tried to review the course materials ahead of time also, so that I was able to ask any questions. ... I like also engaged within classes or outside of classes, I should say, via email a lot with the professors to ask follow-up questions.

Charlotte agreed that engagement for her is participation and contribution, and she emphasized the contribution should be "valuable". She further explained:

> That involves more engagement for me or creates more engagement for me when I feel like I have something worthwhile to contribute to that conversation. When I feel like I don't have anything worthwhile, I feel like what I have contributed is low quality in comparison to what I could potentially do.

Interaction is another term that students used to define online engagement. Emily described how she feels while engaging in online learning: "I feel like maybe like interacting with other students and the teachers through like discussion boards or on

Zoom classes." Olivia also believes engagement is a type of interaction. These students engage in both verbal interaction and text-based interaction within the online learning environment. For others, interaction might be mostly text-based online. For instance, Emily predominantly participates in text-based interaction, expressing her perspective by stating,

> I feel like the engagement that we're mostly in is very text-based. ... It's a lot of text back and forth. It's not a lot of conversations in person. So, I feel like that's kind of where it ends a lot of the time.

Emily's experience highlights the prevalence of text-based communication in the online program, resembling online social media platforms, within their online workspace.

5.2 Non-traditional Students Who Have Competing Priorities

FOMP was designed mainly for non-traditional students who were usually aged 25 and above in higher education. The study found these students usually have competing priorities such as full-time or part-time employment, family responsibilities, childcare requirement, and academic commitments. How to balance these priorities in life is important to these students, resulting in their demanding schedules. This was evident during the interview appointment scheduling process, as some interviewees were only available in the evenings or on weekends. Additionally, due to their busy schedules and unforeseen work/family obligations, some interviewees had to reschedule their interviews multiple times.

Flexibility is one of the most beneficial factors for these non-traditional students to select fully online learning format. In the online survey, students were asked why they

choose to learn the graduate program fully online. Students were asked to select as many as appropriate for them, and their answers are listed in Table 5.1.

Table 5. 1

Reasons for Enrolling in the Fully Online Program (n=46)

Reasons for enrolling in the fully online program	%	Responses
Transportation (e.g., do not have to commute)	19%	20
I can take care of family needs/members at home while completing the course	17%	18
I can do the course from any location	23%	25
I can study for the course according to my own schedule	12%	13
Since I do not like speaking in class, I get to speak online	0%	0
I can still work while taking online program	20%	21
I wish to be familiar with online education approach which I might use to teach in the future	2%	2
Because of COVID-19 pandemic	7%	7
Other: please specify:	1%	1

It is observed that the majority of participants opted for the fully online program due to the advantages it offers in terms of flexibility regarding time, location, transportation, and accommodating job and family responsibilities. One student who chose “other” as the reason for selection explained, “I chose the program, not the mode of delivery”, to point out that the program per se can be one of the motivations for enrollment.

FOMP recognizes the unique characteristics of non-traditional students who have busy schedules, and thus the majority of FOMP courses employed asynchronous

communication method, through posting on the course forums. Students allocate their spare time, such as evenings or weekends, for their coursework. Synchronous meetings scheduled by the instructors through Zoom are typically optional to accommodate students' diverse and busy schedules, but recordings are available for later review. Online engagement in discussions, assignments, and the final project all contribute to the students' overall grades.

Students' detailed description on how they juggle different life priorities is shown in the follow-up interviews. Finding a balance between demanding work commitments and pursuing an online master's degree has emerged as a significant challenge, as revealed through interviews with these students. All eight interviewees in this study are employed while concurrently pursuing their fully online master's degree program. For interviewees who have family or childcare responsibilities, the task of finding a suitable time to participate and share their learning experiences posed an even greater challenge. From the interviews, the typical days of students engaged in online learning are different yet have common attributes. For these eight interviewees, each individual was asked to describe their experience of engagement in online learning. Each individual's experience is a unique narrative.

Ben, in the midst of his demanding work schedule, primarily engages in online learning on weekends, and manages his readings in small increments throughout the day. To cope with the significant screen time, which he was not entirely accustomed to, Ben explores various tools to facilitate his reading process. One strategy he employs is utilizing text-to-voice tools, similar to audio books, enabling him to listen to the readings and effectively integrate them into his learning routine.

Charlotte, on the other hand, maintains limited interaction with her peers, typically occurring once or twice a week, often revolving around their weekly assignments. The mode of communication primarily involves text interactions. This entails engaging with her peers' work, identifying relevant connections between their work and her own. During these interactions, she may offer suggestions or pose questions as part of the collaborative process. Such text interactions serve as the primary means through which she establishes connections with her peers.

Within Emily's program, collaborative group projects play a significant role. Typically, she engages in discussions with fellow students through WhatsApp, focusing on project-related matters such as task allocation and coordination. Alternatively, they collaborate using shared Google documents to collectively complete assignments. However, these interactions do not occur on a daily basis but intensify as deadlines approach, with a greater emphasis on project-specific discussions during those periods.

Due to the demanding nature of his current full-time job, James often struggles to find sufficient time during the week. As a result, he tends to allocate a single day to complete all of his coursework. Typically, this entails going through the required readings and reviewing lecture materials. Additionally, he actively participates in the discussion board by commenting on a few selected posts. This pattern generally represents a typical week for him. Furthermore, if there are any assignments to be completed, he ensures that they are prioritized and completed accordingly.

Mia's experience is characterized by enthusiastic participation during synchronous meetings. During these sessions, Mia demonstrates engagement by sharing her ideas as requested by the professor. To ensure her continued involvement, she

consistently keeps her camera turned on, allowing others to observe her expressions and constant presence. Furthermore, she participates energetically in small group activities facilitated by the professor, typically consisting of two or three members. Within these groups, she contributes actively, engaging in discussions, sharing her thoughts orally, and occasionally supplementing the conversation by sending messages in the chat.

A typical form of engagement or online interaction for Olivia occurs through email communication with the professors. Weekly assignments are also a motivation for students to interact. Olivia mentioned that as part of the weekly assignments, students were instructed to submit a minimum of three questions on the online platform. However, these questions often go unnoticed or unanswered during the subsequent synchronous meetings. Due to the infrequency of online meetings, taking place every two weeks, it becomes challenging to maintain a consistent momentum in discussions, resulting in a loss of continuity. Olivia encountered this challenge in her online engagement.

Sophia's preferred method of engagement is through asking questions. In preparation for the lectures, she endeavours to complete all the assigned readings beforehand, although it may not always be feasible. By doing so, she ensures that she has relevant questions ready to ask during the session. Additionally, she proactively reviews the course materials in advance, allowing her to seek clarification or ask questions as needed. Whenever the professors initiate group discussions or pose questions related to the course content, she actively participates to the fullest extent possible. Furthermore, she values engaging with the professors both during and outside of classes, often utilizing email communication to seek clarification on assignments or ask follow-up questions.

Finally, Tina's online learning experience revolves around active participation in discussion forums and collaboration with peers. Her reflective approach involves considering practical applications of learned content, whether engaging synchronously or asynchronously. Tina leverages online interactions to enhance her understanding and contribute to the collective learning experience.

These diverse narratives of eight interviewees collectively paint a vivid picture of the multifaceted nature of online learning experiences. Through these nuanced descriptions of their learning engagement experiences, students reflected their understanding of engagement in the fully online program, from multiple perspectives including behavioral, collaborative, and social perspectives. The lived experiences of these interviewees illustrate how their competing life priorities, such as job or family responsibilities, can impact their online engagement in both positive and negative ways. For instance, similar career backgrounds can facilitate social interactions and foster a sense of belonging. However, on the other hand, employment commitments can also result in a busy schedule, limiting the time available for active participation in online discussions.

5.3 Factors Influencing Online Learning Engagement

Both my online survey and semi-structured interviews confirmed that there were challenges when students engaged in their online program. As previously discussed in Chapter 4, when conducting case studies, it is possible to obtain confirmatory (deductive) as well as explanatory (inductive) findings (Yin, 2018). Here, I employed both deductive and inductive reasoning to answer my first two research questions. Deductive reasoning helped the confirmation of existing problems faced by students in their online learning

process, along with identifying factors influencing graduate students' engagement as supported by existing literature. Deductive findings are drawn from the five-key-element online engagement framework: cognitive engagement, emotional engagement, behavioral engagement, and collaborative engagement (Redmond et al., 2018). On the other hand, inductive reasoning enabled me to investigate novel problems and factors that had not been addressed in prior literature. Additional details regarding these factors are elaborated in the subsequent sections.

5.3.1 Cognitive Engagement

In this study, cognitive engagement encompasses the examination of whether students can cultivate critical thinking skills throughout the learning process. Interviewees mostly shared their cognitive engagement experience in positive ways. A few interviewees believed that they gained critical thinking abilities through the learning process. Ben commented his experience and said,

> It's definitely helped me. Helped me with my writing, in terms of government writing, and academic writing, and how to cite things a lot better. So, it's been beneficial that way.

Ben believed that the online learning experience had significantly contributed to his effectiveness in his current career, particularly in enhancing writing skills for government and academic purposes and improving citation practices, which required a high level of critical thinking skills. Charlotte also felt her critical thinking ability was enhanced after the learning procedure. She shared her experience as,

> I feel like that's been able to, like, bring a lot more critical thinking on my behalf. Because I'm able to see things from more perspectives than just my own. I've

> seen similar situations from the perspective of a teacher or a resource support person, or even a tutor. ...I feel like there's definitely benefit there.

Charlotte's experience of engaging with diverse perspectives had improved her critical thinking, offering valuable insights and a broader foundation for her work. Olivia used to think online program would be easy for her. However, she changed her mind after enrolling in the online program. She found online learning is thoughtfully designed and encouraged her to develop her critical thinking, mainly from the many questions given by the professors or learning syllabus.

Overall, the online learning experience of Olivia had surpassed her initial expectations, and she held a positive attitude towards her cognitive engagement in this online program. Tina, similar to Olivia, also felt her critical thinking ability was raised in the online learning procedure by sharing her experience as,

> I do feel my critical thinking skills are improved, because you know, during the learning we were required to read many research articles, and then share our comments or feedbacks with the class. I learned to view the question or issue from multiple perspectives because of the different answers from my classmates. I really learned a lot from the research articles.

Apart from those interviewees who explicitly expressed positive attitudes towards their critical thinking skills in the online program, a few were unsure about the answer. For example, James said,

> I don't know that my critical thinking has developed farther than it already is where it needs to be. But analytical skills maybe I think it has developed a little bit more just because I am actually engaged in this topic. And so, it's I feel like

> I'm analyzing the information a little bit more thoroughly because I feel more engaged in the actual content.

James was uncertain about a notable improvement in his critical thinking but believed his analytical skills had advanced due to active engagement in the program's content. Therefore, increased interest can lead to a more engaged cognitive experience for him. Similar uncertainty happened to Sophia, as she said,

> The critical thinking, ... I don't know if it's because I have several years of experience in the field that I didn't notice my growth in that area. But it was sometimes, or maybe it just took a long time before I got to think critically about the stuff that I learned. So, I read the articles, did the online quiz, did the assignments, and then it might not have been until a couple of months later at work where I was like, Oh, yes, I learned this at school, I can use this, and this will help me solve this real-life problem. So maybe it just took a little bit of time to translate from the classroom to everyday work.

Due to her extensive work experience, Sophia could not determine if this online learning experience had contributed to her critical thinking ability. However, her words suggested that the integration of critical thinking from the classroom to professional application can occur, but it may take time. Olivia felt her analytical skills were improved after the online program as she was required to do much data analysis within her field of study and she believed learning happened during this process.

Another indicator of cognitive engagement is to explore whether students can connect the theoretical knowledge acquired in the course with their day-to-day professional work or effectively apply their knowledge to solve work-related problems.

Most interviewees had positive feelings about this aspect. When asked the extent to which this online learning experience has helped him to solve complex real-world problems, Ben said,

> Lots actually, the ability to find reputable sources, I think, has helped me quite a bit with that, because anything online, you know, can be written by anyone else, but actually finding those reputable sources and doing that further research in finding cited sources and finding reputable sources has helped me quite a bit from all the research of all the readings.

Due to the analytical writing demands of Ben's current job, the skills he acquired from this online program have proven valuable, particularly in citing credible sources. Mia agreed that the knowledge she had learned from the online program was helpful to her job because she thought it was "a professional education program, and it's directly applicable to your job". As one of the purposes of the program is to provide online learning opportunities to those non-traditional students with jobs, students who have work experience are encouraged by the instructors to share their work-related experiences with the whole class.

Another interviewee, Mia, is a mother. She believed that online learning could make her feel "fresh", implying that learning through technology helped her stay updated with the latest advancements in education, so when her son shared what he had learned in his computer, Mia felt confident and happy to discuss with her son. Mia had a strong desire for acquiring knowledge, and she saw online learning programs as a great opportunity to satisfy this craving and stay up to date. With the knowledge she learned from the online program, Mia now felt quite confident sharing her thoughts with her

colleagues in her daily work. She also received great feedback from her partners and from the schools she worked for.

For Sophia, she also agreed that the online learning program had helped her a lot in her career. Sophia worked in the field of ABA (applied behavior analysis), and this online program provides an ABA cohort, which is quite specific and targeted to students within this area. Therefore, Sophia felt the program was quite helpful on many occasions within her work. Tina had a similar experience; she expressed her positive experience of applying the theoretical knowledge to her daily job. Olivia strongly felt that the course was highly related to her career and said,

> Ah, a lot, I would say, from one to five, has helped probably five, maximum, although I'm not at the level where I can say I am very qualified in this yet. But it has helped a lot also, because like I said, the work that I'm doing right now is actually the kind of work that's required by the board. So, everything is super related, my work is related to my school, my school is related to my work. I wouldn't understand anything that they talked about in the lecture if I didn't work, because we get everyday examples from these situations at work. And the other way around be able to like, solve situation and problems at work if I didn't go to school, because we use many theory at work.

Charlotte had a different answer to this question. When asked the same question about the extent to which the online learning experience had assisted her in solving complex real-world problems, she expressed the view that she had not had ample opportunities to apply what she has learned in the program. This was due to the necessity of reducing her work hours to allocate more time to her studies at FOMP. For a busy working non-

traditional student like Charlotte, while online programs offer the advantage of pursuing higher education without leaving employment, it can prove demanding for professionals in similar situations to effectively manage graduate programs that entail substantial commitments of time for reading, writing, and engaging in online communication with peers.

In summary, the diverse experiences and perceptions from the interviewees indicate a generally positive impact of the online learning program on their cognitive engagement, fostering critical thinking skills, analytical skills, and practical application. The findings highlight the importance of tailored online programs for non-traditional students seeking to balance work commitments with higher education.

When triangulating the findings with the online survey, similar results were observed among survey participants. When asked if the online learning experience helped them think critically, 32 out of 46 students (70%) strongly agreed or agreed. Regarding analytical skills, 37 out of 46 students (80%) strongly agreed or agreed that they gained analytical skills during the online learning program. These findings support previous research indicating that graduate students learning online reported high levels of critical thinking (Artino & Stephens, 2009).

5.3.2 Emotional Engagement

Emotional engagement mainly concerns students' positive or negative feelings or attitudes toward their learning experience, the educational institution, their instructors, discipline, subject matter, required tasks, or fellow students (Redmond et al., 2022). Regarding the general learning experience, 41 out of 46 (89%) online survey participants expressed a desire to recommend this program to others. Further interviews revealed

more nuanced information about this topic, which can be summarized into three main aspects: a) generally good support from the institution and instructors; b) a positive but not very close relationship with peers; and c) an overall positive attitude toward this online program.

All the interviewees agreed that they received good support from the institution and instructors. As Charlotte mentioned, “I know that there are people out there if I need them.” Emily also acknowledged the institution’s support in her learning, such as providing online resources for tuition payment and a well-functioning online learning platform. However, she felt the institution could better support her if she was treated separately from on-site students, as she received many email notifications for on-site activities that she could not attend. As she described below,

> I feel like when you’re an in-person student, you kind of get more from the institution, because all the services would kind of be in person. ... I often get emails about stuff that would be in-person or like, that would be cool to go to, but then I can’t because it’s like a 1,000 of kilometers away. So, I don’t feel like I really get like that much from the institution.

All the interviewees agreed that this online learning experience had met their expectations. Olivia even mentioned “It’s a little bit beyond my expectation, actually. So that’s pretty good.” They all expressed a desire to recommend this online program to others.

Relationship with peers was good according to the interviewees, but the relationship were not that close as in in-person learning. As Charlotte shared with me,

> I definitely have a lot of respect for my peers. Through the work that we've shared with each other, I can tell that they are like, they are all very passionate and very caring individuals. But, but not so much friendship. No.

Interviews demonstrate that establishing a positive and connected relationship with peers is not easy in online learning due to the disconnected learning format and limited face-to-face interaction. Ben felt like he was wasting his time in these discussion boards, because he only saw pages and pages of words without dynamic body language and real-time communication. Olivia also commented that she did not feelwell supported by her peers by stating,

> There's a couple of assignments where you're allowed to do it in groups, but and then even though we have like a WhatsApp group chat, no one is reaching out to each other if they want to work in group.

As previously discussed, there are overlaps across the five dimensions of social, cognitive, behavioral, collaborative, and emotional engagement. In cases where an indicator could be associated with more than one type of engagement, my choice was to align the indicator with the type of engagement that demonstrated the closest correspondence to the framework.

5.3.3 Behavioral Engagement

Indicators of behavioral engagement reflect observable student actions and most closely align with conceptualizations of student engagement as quantity and quality of effort toward learning (Schindler et al., 2017). From the quantity perspective, the time spent on online learning is a direct indicator for measuring behavioral engagement. From the survey report, among 46 survey participants, 29 students (63%) spent around one

hour to two hours per day on online learning, 2% spent less than one hour per day, and 22% spent two hours to three hours per day on online learning. As suggested by the course syllabus, students in the FOMP Program can expect to spend seven to ten hours per week on each course. Therefore, students are expected to spend around 1.4 hours to 2 hours per weekday in their online learning process. The online survey showed that more than half of the participants could meet the course requirements. The follow-up interviews explored more on how students felt about the time commitment in online learning.

In the case of FOMP, the majority of students opted for the fully online program due to its compatibility with their demanding work schedules, allowing them to continue their full-time employment while pursuing a master's degree. One of the main challenges they faced was the lack of time for studying. Charlotte expressed this sentiment, stating, "I feel like we're all very busy. Lots of us have families and other responsibilities and jobs." For many students, the only available time for studying was after completing a full day of work, leaving them with little time for rest.

Moreover, as a graduate-level program, there was a substantial amount of required reading and research articles, adding to the students' stress. Ben shared his experience, saying,

> The biggest barrier was the amount of reading that occurred on a weekly basis. The program was designed for practicing teachers, but it's nearly impossible for a practicing teacher to fulfil all their duties, including grading, while keeping up with the required readings.

When students chose this learning method, they understood that they had to dedicate their limited free time to the demands of the graduate program. They were aware that they needed to sacrifice some of their leisure time for studying. However, they still felt the pressure because of this. Some students mentioned that occasionally the course information was released very close to the course start date, leaving them with a tight study schedule and causing additional stress. Sophia highlighted this issue, saying,

> Some of the classes released all the information Monday morning, and then we had a lecture on Wednesday. It was too close together to have enough time to review all the readings and articles. ... Sometimes, if work got busy or other things were happening in life, the readings got done after the lecture.

Based on the course syllabus provided by some instructors, the required readings were listed and distributed to the students at the beginning of the program. However, students expressed a desire to receive any supplementary materials or information as early as possible before the course lectures, allowing them sufficient time for preparation.

Reading often consumes a significant amount of students' time for graduate studies, making it challenging for them to multitask effectively while engaged in reading activities. However, with the help of digital tools that can convert text to voice, students can engage in multitasking activities. For instance, they can listen to articles while driving, working, doing laundry, or other tasks. As Ben explained, "For me, I had to find many different tools to help me with the reading. Because it was so much screen time that I wasn't quite used to yet. So, I found different text-to-voice tools." He also mentioned that these tools only work for PDF files, which posed challenges for articles that were scanned and not compatible with the tools.

Furthermore, some students experienced excessive screen time when reading posts and engaging in discussions on the course platforms. In asynchronous interactions, most of the discussions took place through online postings, which also contributed to the students' final grades, as stated in the course syllabus. Therefore, students were required to actively participate in online discussions and share their thoughts. However, students may experience heightened stress due to the substantial amount of online reading required in addition to their article readings. As James described his experience, saying,

> With regard to that the discussion that happens with that online, tends to be just like an endless reading, and the reading. ... I need to read with the audio playing at the same time so that I can like, move faster through it, I find that I can't keep up with the discussions.

It is worth noting that quantity of participation does not lead to high quality of engagement, as some scholars argue that performance or superficial engagement should be avoided (Park & Yun, 2018), because these actions of online students appear to be busy but do not contribute to deep learning and are a waste of time (Dyment et al., 2020). Interviewees expressed their perceptions of lacking authenticity in performative engagement.

Most FOMP courses require students to fulfill certain participation requirements such as a certain amount of posts or engaging in online discussions. These requests are stipulated in the course syllabus and contribute to the students' final grades. Course instructors employ various methods to keep students busy online. When asked about their views on these mandated posts and activities, students provided different responses. Three students (Mia, Olivia, and Sophia) believed that these requirements could indeed

foster engagement for them. However, four students (Ben, Emily, James, and Tina) felt that these requests could not promote genuine engagement and were merely performative in nature. One student (Charlotte) expressed that her level of engagement depended on whether she had valuable contributions to make or had a strong connection with the topic. Otherwise, she found that being compelled to contribute online could not generate a truly engaging experience for her.

Procrastination reflects students' levels of academic disengagement or a tendency to delay starting the work required for their online course, indicating lower behavioral engagement (Artino & Stephens, 2009). Procrastination is a particularly pervasive problem for online students, especially for those graduate students who have jobs and families (Dunn & Hayakawa, 2021). As demonstrated in the online survey report, 39 out of 46 (85%) participants agreed that they encountered more procrastination issues in online learning. The following interviews provided further insights into students' experiences. James shared his personal experience, noting, "I know that I have to do this, but I can keep pushing it. When it's all asynchronous. It tends to just get pushed and pushed and pushed." With the flexibility of learning location and time in online settings, students are more prone to procrastination, especially when they lack high engagement in their studies. Tina expressed her thoughts on this matter, saying,

> Procrastination is a real struggle. Especially when it comes to online learning. After a long day of work, all I want is to relax and take a break. Sometimes, I find myself giving in to that temptation and telling myself: just a quick check of my social media feed. But those few minutes turn into hours, and suddenly it's late in

> the evening, and I realize I haven't made much progress with my studies. It's a bummer, honestly.

Olivia agreed with this and stated, "There's just so many potentials for distraction in the computer. You digressed to Facebook, social media, browser Googling everything, and that, you know, you go into those rabbit holes, and yeah, that's probably like my main challenges." Olivia came to the realization that distractions were hindering her progress and not aligning with her goals. In response, she proactively developed strategies that proved effective for her, for example,

> Like I can do an hour without being distracted. And then I'll give myself a break for five minutes. If I feel really tired, maybe just because of the nature today. I'll give myself a longer break. In my computer, I try not to mix schoolwork and leisure and work. So, I have my own windows for leisure, windows for work, and windows for schoolwork. And then I minimize that window for leisure but can barely like dismiss them. So, like okay, I can't touch on that after I do an hour of studying, reading or writing or whatever.

Implementing this strategy, Olivia actively worked toward evading distractions and maintaining her focus on her studies. She also found that incorporating positive rewards or incentives played a crucial role in deterring distractions and combating procrastination throughout her online learning journey.

5.3.4 Collaborative Engagement

Collaborative engagement involves actively cooperating with peers for academic purposes, such as participating in group discussions, joining study groups, and completing group tasks or assessments. Additionally, engagement with faculty and the

institution is seen as integral to collaborative engagement, including activities that contribute to the development of professional communities (Redmond et al., 2018). From the online survey, 39 out of 46 (85%) participants agreed that they felt more engaged when they work with other students. 43 out of 46 (93%) participants agreed that community building would help to improve their engagement in online learning.

Results from the interviews shows that most participants believed they benefited more from collaborative learning. For example, they became more engaged when learning in a community that includes members with common goals and facilitates effective communication. Some preferred peers with similar backgrounds in the community, as it helped with better understanding and easier connection building. On the other hand, some students preferred diversified backgrounds to enhance their learning of new knowledge. As Sophia mentioned,

> I think the group discussions were more beneficial for me. I'm a people person. So, learning with other people or through other people's examples and experiences and sharing ideas was very interesting. And then when it's interesting, it also makes it easier to learn. Especially if our work situations are similar, then if we're ever stuck, we can brainstorm ideas together, or we can share experiences. And sometimes, like in our fields, not everybody understands the struggles.

Sophia felt collaborative learning was more engaging for her, especially with peers from similar career backgrounds for a better mutual understanding and communication. James, on the other hand, shared a different opinion, and said,

> I think that I would really enjoy a diverse group of people who come from many different experiences. However, knowing that it's a professional education degree, I expect people to be taking this to learn about education itself. And so at least being in that kind of an affinity, but I don't want people to be exactly in the same place as me. I would say that I get more learning when I'm in a group discussion from like having more diverse backgrounds.

James preferred a community that incorporated diverse backgrounds, but relevant to his career. He sought a diversified community that aligned with his professional area, allowing for meaningful connections and interactions that contributed to his career goals.

For students like Emily, who valued collaborative learning but were frustrated by the challenge of coordinating a mutually acceptable meeting time for group discussions, it was sometimes easier for them to opt for individual learning. Therefore, the time zone difference created frustration for students like Emily when attempting to establish a feasible meeting time that accommodated everyone in the group. This challenge arose from students in the group being situated in various time zones and maintaining different work schedules.

As previously discussed, the online program is highly regarded for its flexibility, allowing students to adapt their studies to their own schedules and geographical locations. However, interviews conducted with students have shed light on the challenge posed by different time zones. With participants hailing from various regions in Canada and around the world, arranging synchronous meetings and coordinating group work has become increasingly complex. This FOMP program necessitates that students collaborate

and work simultaneously from diverse locations, which can be difficult due to the discrepancies in time zones.

Charlotte shared her personal experience, emphasizing the difficulties arising from coordinating group projects across different time zones. She stated,

> I find that to be one of the challenges in terms of just like time zones, there's a lot of like, group projects and stuff, which I think is really valuable in this program. But it can be sometimes complicated when we're trying to meet and it's, you know, seven am for one person and afternoon for another trying to organize all of those different elements is sometimes complicated and makes the process of doing your project much more difficult because of that.

Tina, too, encountered obstacles due to residing in a different time zone from the institution. As a result, she was unable to attend synchronous meetings, despite her strong desire to participate. She expressed her frustration, saying,

> I actually live in a different time zone than the institution, so when it's time for our synchronous meetings, I'm not home yet from my work, so I am not able to attend. It's a bit frustrating because I really want to be there, but I just can't make it.

These shared experiences demonstrated that students enrolled in the program come from diverse backgrounds, spanning across Canada and beyond. While online learning breaks the barriers of physical classrooms and attracts students from wider geographical areas, the issue of different time zones presents practical challenges when it comes to synchronous interaction and collaboration.

5.3.5 Social Engagement

Social engagement in this study can be illustrated through actions that build community such as using online learning platforms or social media to interact with each other, communication through synchronous meetings via self-introduction or group discussion. Topics of interaction can be related to academic programs or their daily lives. These social interaction opportunities are quite important, especially for fully online learners due to the lack of face-to-face interaction. Through social interactions, online learners will be able to establish trusted relationships and feel a sense of belonging to this community of online learning program. Social interaction is a key indicator of social engagement. As interaction holds significance in online learning, many students define it as the essence of engagement. This highlights the essential role of interaction in the context of online learning.

Students in this case feel they lack social interactions in online learning, as Tina mentioned: “It’s different from being in a physical classroom where you can have spontaneous discussions and build relationships with classmates and professors”. Because from a social constructive perspective, learning is constructed. As James said: “The drawbacks are that it’s far less social, and I find learning to be a social event.” James’s experience exemplified how constructivist approaches to learning strive to promote active learner participation and foster social interaction. Constructivists believe that learners, whether in traditional face-to-face education or online learning, construct knowledge by actively engaging with others, texts, and social media to make sense of the world and assimilate new information (Bryant & Bates, 2015).

Students expressed their utilization of texts and social media to engage with one another, attempting to establish a sense of community and belonging. Tools such as WhatsApp, emails, Google Docs, and Learning Management Systems (LMS) were employed for interactions among peers and with instructors. Nevertheless, students expressed dissatisfaction with this mode of interaction, as they preferred more face-to-face engagements. In discussing her experience, Charlotte remarked, “It’s a lot of text back and forth. It’s not a lot of conversations in person.” Ben shared his feeling as well, stating, “Sometimes when just reading comments, on discussion boards, you don’t hear the tone of folks.” Similarly, Emily echoed these sentiments, stating, “When I was in my undergraduate and got feedback from my instructors in person, it was more helpful to mold your thinking. Online, it’s kind of hard to get that feedback and improve the way you’re thinking.”

Real-time, face-to-face interaction for Emily resulted in greater engagement and the ability to receive immediate feedback. In contrast, asynchronous online learning hindered prompt feedback, leading to disengagement. Ben told me the only chance for him to meet the course instructor was the one meeting at the very beginning of the course, which he felt was a big deterrent. More students further expressed that they would definitely prefer more synchronous learning, as James stating,

> I think that we could still do synchronous learning opportunities. That would be really nice that type of participation, like group-based discussions would be really nice. Even if we aren’t in proximity with each other physically, we can be virtually, and that has been shown in COVID. ... I think it’s more robust of a discussion if we’re actually verbally saying it, rather than typing.

During Zoom meetings, which are intended to provide increased opportunities for real-time face-to-face interactions, many students opt to disable their cameras, resulting in a situation where face-to-face interaction is not fully realized. As Sophia conveyed, "Sometimes the courses or the lectures are a little less exciting, or they can be a little bit dry or boring, just because everybody has their cameras turned off." While students expressed a preference for more synchronous meetings, they often found that these meetings did not meet their expectations. Olivia shared her perspective, stating,

> We have a synchronous class once every two weeks. And I feel that it's not supposed to be sufficient to answer my academic questions. Additionally, it's not as interactive as they try to make it. It's not very appealing, I guess, depending on the professors as well. Some of them can make it really engaging by incorporating quizzes, but sometimes you don't want to solely interact through quizzes either, if that makes sense.

Creating a sense of belonging is another important indicator in social engagement (Redmond et al., 2018). The fully online learning program, as a form of distance learning, somewhat presents challenges in fostering a sense of belonging among students, instructors, and the educational institution involved. Students perceive a higher level of engagement when they are paired with familiar peers or have a preference for collaborating with individuals they know well. This positive rapport with their peers can, in turn, foster a profound sense of belonging. Students who shared similar professional development goals and career paths discover commonalities that facilitate connection and foster a sense of belonging.

Ben informed me that he successfully persuaded one of his close friends to join the program, which greatly increased his enthusiasm for working together. He expressed, "We actually got to meet face to face and actually got to work with each other. So that was a lot better." Sophia, on the other hand, had a positive experience in establishing relationships with her peers. She had been working with the same group of peers for multiple courses last year and this year, and she thought that was the biggest contributor to the sense of belonging. Due to their fruitful online collaboration, Sophia found great joy in engaging with her peers online. She stated,

> The group that we work together, there's the three ladies. And we are very, very grateful. And we were very lucky to have connected early on in the master's program because we work really, really well together. And I would even say that we've become friends throughout the program, which it will be very valuable.

Emphasizing their friendship, she further mentioned that their discussions went beyond academic matters, extending to personal issues as well. She said,

> We do share things about, like what's going on in our lives a lot about our pets, and our partners and just what we're doing on the weekends. And I think we're all planning to meet up when we graduate and be able to meet in person for the first time and go for dinner and celebrate. So that should be very fun!

On the contrary, a prevalent sentiment among students is the lack of a sense of belonging within the fully online program. Many students found it challenging to cultivate friendships in a fully online program, particularly when compared to the face-to-face interactions and the opportunity to develop closer relationships inherent in in-person

learning. Charlotte felt it was quite difficult to establish friendships with her peers. She further elucidated the reason, explaining,

> I don't feel like there's many belonging because there's just not many time for those other types of interactions that foster that sense of belonging, not like on campus, in person learning, you have the opportunity where like, I don't know, there's like a three-hour class, there's a break everyone goes and grabs a coffee, and they chit chat or whatever like that you miss out on those, like smaller moments. And I feel like those really add into that, that sense of belonging. So, for me, not so much, but I also don't feel like I don't belong either. It's just more we're here to work in a gray zone.

Considering the prevalence of asynchronous communication in this program, text-based interactions cannot foster significant closeness among students. For instance, James acknowledged a certain level of connection through textual communication but expressed a preference for more face-to-face interaction to truly experience a sense of belonging. He conveyed his perspective by stating,

> People will read my posts and be like, I found it really engaging, they know who I am, and I've shared stuff, and then I feel like I should know more about them too. But I just don't. ... The major way that I would get to know them is because I would have face-to-face physical discussion with them.

Apart from text-based communication pertaining to academic work, many students refrained from sharing aspects of their personal lives, as was customary in on-campus learning, resulting in a superficial and disconnected sense of belonging. Emily echoed this sentiment by stating, "I feel like I don't really know any of the students very well. I

feel like it's easy to communicate about the projects and assignments and stuff, but we never really, like, talk about anything other than that."

Group work or projects are incorporated into the FOMP with the aim of providing students with opportunities to connect and collaborate, thereby fostering closer relationships and a sense of belonging. However, at times, this objective remains unfulfilled. For instance, Olivia expressed her dissatisfaction with the approach, stating,

> I actually don't have that sense of belonging, because there's not many group work and that when we had a group work and I had the idea of like, okay, let's do a Zoom meeting so we can see each other's face. It didn't continue. People prefer to like, work on their own time and sort of like, work on a document where we can edit together. So, there is no component of like, seeing the person or space. So yeah, I don't feel like I have a sense of belonging.

Similarly, for other students, even in synchronous meetings intended for face-to-face communication, a strong sense of belonging eludes them due to the prevalence of students choosing to keep their cameras turned off. Tina expressed her desire for more visual engagement, stating, "I just wish to see more people's face in a Zoom meeting. However, a lot of time people like to turn off their cameras, which is not quite engaging." Sophia conveyed a similar viewpoint, noting that the sense of belonging was more challenging in online courses. She mentioned that with everyone present but cameras turned off and questions being asked, there was a feeling of being more on her own in such situations.

Sophia's experience served as an exemplary illustration of the approaches employed to foster a strong sense of belonging. She recounted her engaging encounters

and the ensuing sense of belonging when forming friendships with three fellow students who frequently collaborated as a group. They not only addressed academic matters but also shared aspects of their personal lives. According to Sophia, this collaborative engagement with her peers in the online program could lead to enduring relationships, particularly considering their shared future careers within the same industry. Such experiences had the potential to establish connections in their professional paths and support sustained relationships in the future.

In contrast to her positive and engaging experiences, Sophia also encountered a negative sense of belonging due to the absence of face-to-face interactions, even during synchronous meetings. Additionally, she expressed a lack of belonging with the institution, remarking,

> And then we get all the emails, hey, this is happening on campus. ... The campus is nine and a half hours away from me. So, they just got deleted often. ... But I know there were some virtual events, too, I didn't participate just because I was too busy.

Her experience highlighted the institution's desire to create opportunities for students to feel a sense of belonging, but many of these efforts had proven ineffective.

Sophia's negative experience with the institution was not an isolated incident. Emily conveyed a similar feeling, explaining that she often received emails about in-person events or activities that seemed interesting. However, she faced limitations in participating due to the considerable distance, leading to a perception that she did not derive substantial benefits from the institution. James concurred with Sophia, expressing

his feelings of exclusion, stating, “I don’t think that I feel very included in the institution.”

While being a fully online student eliminates the need for commuting, it also deprives students of the opportunity to participate in on-campus activities. Olivia expressed her desire to engage with the institution but found it challenging, remarking, “It’s really hard being away from being not on campus there’s so many programs offered on campus, and then sometimes as like an online student you feel like left out.” She further shared her limited interactions with the institution, stating,

> I reached out to them if I could speak to a finance consultant, but they provided me with a link instead. And I kind of like wanted to be able to speak with a person, because I may have questions about my unique situations that I can’t just read online or write.

As a fully online student, Olivia was unable to physically visit the campus, and the support provided to her by the institution was solely through online channels. However, for certain circumstances like Olivia’s, there was a need for personalized support that goes beyond standard online resources. The lack of such tailored support can contribute to disengagement and a sense of neglect or inadequate support among online students.

5.3.6 Potential Under-recognition of Fully Online Degree Credentials

Another aspect of the problem arose from the interviews, which is the recognition issue of online degrees in the job market or in a credential society. Fully online degrees are often under-recognized due to their non-traditional nature or perceived inferior quality compared to on-campus degrees at the same level (Adams et al., 2012; Curran et al., 2017; Engel & Hays, 2019).

Charlotte believed that such thinking persists within society and must be addressed. She expressed her perspective by stating,

> I feel like both [online degrees and on-site degrees] are equally valid. It's just that we need to get that idea across to everybody. And I feel like for sure that COVID-19 plays a role. I feel like people will be more understanding of online degrees since COVID. But I still think that idea that an online degree is not as valuable as [in person learning] is still very common.

The COVID-19 pandemic has, to some extent, expedited the adoption of online learning. However, the question remains uncertain as to whether the recognition of online degrees will be enhanced in the post-COVID era.

Mia shared a similar feeling regarding the credibility of online credentials. Mia's apprehension revolved around whether her online degree would be acknowledged as equivalent to a regular master's degree, especially by academic institutions if she intends to pursue a doctoral program, as admission requirements play a crucial role. The ambiguity surrounding this matter caused her to worry about the credibility of her credential.

5.3.7 Technical Problems

Based on the findings of the online survey report, a minimal number of students, amounting to 6%, identified technical problems as a challenge they encountered. Likewise, a mere 1% of students expressed concerns about their limited computer skills. These statistics corresponded with the results obtained from interviews, where only Ben mentioned a preference for non-scanned PDF versions of reading materials. Ben's

suggestion stemmed from the idea that such documents could be easily converted into audible formats using specialized software.

5.4 Suggestions on Improving Online Learning Engagement

Participants were asked to offer suggestions to the program in order to improve engagement online. Results from online survey are shown in Table 5.2.

Table 5. 2

Suggestions From Students for Improving Engagement (Online Survey Participants, n=46)

Possible approaches for improving online student engagement	%	Responses
My faculty can offer me more frequent support	23%	20
Instructors use more interactive teaching method (e.g., use more visually rich learning materials)	25%	22
Collaborative and cooperative learning with peers from similar backgrounds	25%	22
Real-time communication/feedback can help to motivate my learning	24%	21
Other: please specify:	2%	2

Note. Other: please specify: More virtual synchronous learning, less online only discussion

The same question was also asked of the participants in the interviews. Suggestions from interviewed participants are presented in Table 5.3.

Table 5. 3

Suggestions from Students for Improving Engagement (Interview Participants, n=8)

Suggestion	Name of participant	Responses
More synchronous learning preferred	Ben, James, Mia, Tina	4

Create more opportunities for interaction and collaboration	Olivia, Sophia, Tina	3
More frequent deadlines	James, Olivia	2
More frequent nudges	Mia, Olivia	2
Multitude and different ways of assessment	Ben, James	2
Smaller group size for build close relationship with peers	Emily, James	2
Use more multimedia in learning	Ben, Sophia	2
Build cohort for people from same time zone	Charlotte	1

Based on the combined data from online surveys and interviews, participants offered the following suggestions to improve online engagement. These suggestions are arranged in descending order, starting with the most frequently mentioned and proceeding to the least mentioned by the participants.

1. More synchronous learning to boost real-time interaction and engagement.
2. Increased interaction and collaboration: Create more opportunities to collaborate.
3. Frequent deadlines: Encourage timely completion of tasks.
4. Regular nudges: Provide reminders for active participation.
5. Diverse assessment methods: Employ varied ways of evaluating learning.
6. Smaller group size: Foster close relationships among peers.
7. Multimedia in learning: Utilize diverse media for engagement.
8. Time zone cohorts: Build groups based on similar schedules.

5.5 Related Documents on Online Learning

Canada has a highly devolved higher education system, lacking a national agency for higher education policy. As a result, individual provinces take on the responsibility of higher education policy-making (Bates, 2018b). Partly because of the decentralized higher education system in Canada, there had been no comprehensive national data on

online learning in Canadian higher educational institutions (Bates, 2018b). In this section, I reviewed documents at three levels—national, provincial, and institutional—to provide a holistic view of relevant materials in online learning. The primary focus was on policies aimed at improving student engagement in online graduate learning. Given the limited number of policy documents specifically addressing the aspects of student engagement, I have included the most recent and pertinent documents in this section. To ensure the anonymity of the institution, the titles of institutional documents have been modified. The documents are listed in Table 5.4.

Table 5. 4

Documents on Online Learning Reviewed in This Study

Level of documents	Name of documents	Name of organization	Website
National	1. Digital learning in Canada in 2022: A changing landscape: 2022 national report	Canadian Digital Learning Research Association (CDLRA)	www.cdlra-acrfl.ca
	2. Uncharted Waters: A World-class Canadian E-learning Paradigm	Information and Communications Technology Council (ICTC)	www.ictc-ctic.ca
Provincial	1. Published plans and annual reports 2022–2023: Ministry of Colleges and Universities	Ministry of Education, Ontario	www.ontario.ca
	2. Government's Role in Digital Learning: Review and Recommendations for the Ontario Ministry of Colleges and Universities	Higher Education Quality Council of Ontario (HEQCO)	www.heqco.ca

	3. Contact North | Contact Nord's 10 preliminary observations and thoughts	Contact North	www.contactnorth.ca
	4. eCampusOntario strategic plan 2021-2024	eCampusOntario	www.ecampusontario.ca
Institutional	1. The Strategic Mandate Agreement of Riverside University (RU)	Riverside University	Anonymous
	2. Riverside University Strategic Plan	Riverside University	Anonymous

5.5.1 National Documents

In 2017, Dr. Tony Bates and his team conducted the first national survey of online learning in Canadian post-secondary education. Since 2017, a non-profit, national-level research organization named Canadian Digital Learning Research Association (CDLRA) has conducted national-level surveys related to online and digital learning. Another source concerning online learning policy in Canadian higher education system is the Information and Communications Technology Council (ICTC), a neutral, not-for-profit national centre of expertise with the mission of strengthening Canada's digital advantage in the global economy.

Documents examined here by these national level organizations include:

1. Digital learning in Canada in 2022: A changing landscape: 2022 national report. (Irhouma & Johnson, 2022)

2. Uncharted Waters: A World-class Canadian E-learning Paradigm. (Ivus et al., 2021)

Both studies were conducted across Canada to advance knowledge, strategies, policies, and practices related to online learning. The CDLRA report focused on the post-secondary education sector, and the ICTC report covers online learning from

kindergarten to university. The data from CDLRA report came from survey to the post-secondary institutions across Canada. This recent national report shows that increasing online and hybrid learning opportunities requires substantial support to ensure quality, student engagement, and accessibility. This report presents a general picture of online learning in post-secondary institutions of Canada but does not offer clear suggestions for policy makers.

The ICTC research is based on a survey and interviews. Beyond the identification of the benefits and challenges associated with distance learning, the research offers a strategic framework to facilitate the future incorporation of distance learning into the educational system in Canada. In addition to the recommendations on pedagogical perspective, this research offered suggestions for policy makers. The research argues that an effective e-learning roadmap for the entire Canada education system would focus on the four pillars: Educator Support and Training, Education System Transitions, Equity and Inclusion, and Flexibility and Experimentation. To further elaborate on detailed practices for the post-secondary sector, strategies include: provide support for educators for standardized digital skills, support building sense of community for student engagement and encourage student interaction, fostering improved equity and inclusion in online learning, ensuring that educators have freedom to tailor content based on the individual needs of the students, and using digital sandboxes to experiment with new programs and features. The suggestions put forth by ICTC remain largely overarching and lack a disciplinary focus. The study identifies online learning's student-centered nature, yet the recommendations fail to offer specific guidance tailored to distinct academic tiers, such as the undergraduate level or the graduate level, as policies can

significantly differ between these groups. While the research highlights equity and inclusion, it overlooks the issue of undervaluing online degrees and neglects to address potential policy interventions to rectify this concern.

5.5.2 Provincial Documents

Since this research is conducted in an institution located in Ontario, policy documents in Ontario are examined. The government of Ontario develops online learning policies for higher education institutions in Ontario. In addition to the government policies, Contact North and eCampusOntario are the two main meta-level organizations to help coordinate or encourage online learning (Bates, 2018a). Established by the Government of Ontario in 1986, Contact North is a not-for-profit corporation that receives annual funding from the Government of Ontario through the Ministry of Colleges and Universities for the purpose of supporting online learning in Ontario. eCampus Ontario is also a not-for-profit corporation established by the Government of Ontario in 2015 to promote innovation in digital learning for post-secondary education in Ontario on behalf of Ontario's publicly assisted institutions.

Another agency I refer to in this study is the Higher Education Quality Council of Ontario (HEQCO). Created through the Higher Education Quality Council of Ontario Act, 2005, HEQCO is an agency of the Government of Ontario that brings evidence-based research to the continuous improvement of the post-secondary education system in Ontario. As part of its mandate, HEQCO evaluates the post-secondary sector and provides policy recommendations to the Ministry of Colleges and Universities to improve the access, quality, and accountability of Ontario's colleges and universities.

The provincial documents examined in this research are as follows:

1. Published Plans and Annual Reports 2022–2023: Ministry of Colleges and Universities (OMCU, 2023).

In this government plan and report, virtual learning was identified as a key area of innovation and transformation for the postsecondary sector and was reported as below:

> A key area of innovation and transformation for the postsecondary sector is virtual learning. That is why the government is building on its initial $50 million investment by committing an additional $21.4 million over two years (2021–2022 and 2022–2023) to support the ongoing implementation of the Virtual Learning Strategy, including:
>
> - a second call for proposals by eCampusOntario to build on the initial investments made to expand the capacity and quality of virtual learning in Ontario's post-secondary education sector
> - the creation of laptop and internet loaner programs through Contact North | Nord to support students who do not have access to these resources at home
> - enhancements to the infrastructure at Contact North | Nord online learning centres to make it easier for students and post-secondary institutions to access their services

From the above plan, we can see that the Ontario government is investing over $70 million (2020-2023) to support the development of online learning in postsecondary education through Ontario's Virtual Learning Strategy. This strategy aims to enhance capacity, quality, and equity in online learning. It leverages existing digital learning institutions, Contact North and eCampusOntario, known for improving access and driving innovation in virtual teaching and learning.

2. Government's Role in Digital Learning: Review and Recommendations for the Ontario Ministry of Colleges and Universities (HEQCO, 2020).

This report is the latest publication from HEQCO, and it was requested by the Ministry of Colleges and Universities in May 2019 to review the digital learning initiatives and activities of the province's public post-secondary institutions and provide insights into two government-funded agencies that are involved with online learning: Contact North and eCampusOntario.

The HEQCO report indicated that the digital learning landscape in Ontario exhibited a lack of focus and coherence. The presence of numerous stakeholders and a dearth of coordination, coupled with the absence of a clear governmental direction, underscored the unfocused nature of digital learning efforts. Therefore, a clear system plan should be developed by the government and the plan should involve the relevant players and coordinate their activities.

It was suggested that the focus be primarily on fully digital courses and programs. This type of programming directly addresses the primary goal of greater access, particularly for students who have difficulty attending, or cannot attend traditional campuses.

Even after the government has shaped its objectives and the outcomes it wishes to achieve, it will be difficult to assess the roles and contributions of its agencies and the efficacy of its funding programs without better data. This report suggests the government should develop a set of metrics and measures—the more outcomes-oriented the better—which it will use to assess digital learning in Ontario. Furthermore, Ontario should

standardize reporting about digital learning by adopting the definitions of digital learning used by the Canadian Digital Learning Research Association.

3. Contact North | Contact Nord's 10 preliminary observations and thoughts (Contact North, 2020)

This is a report submitted by Contact North in response to the above-mentioned Document 2, the report published by HEQCO. This response by Contact North reaffirmed the HEQCO's strategy by highlighting the following aspects: create a policy framework which delivers rich, focused online learning experiences that improve learner outcomes, encourage the more widespread use of open educational resources (OERs), build collaboration within postsecondary institutions, Recognizing and encouraging the growth of micro-credentials (certificates and nanodegrees, which are modular and can be used as part of degrees and diplomas)

Contact North also offered different opinions on the following aspects: unclear definition of "digital learning" in HEQCO report, no rationale of quality assessment of online learning since the government does not get involved in student performance assessment or quality assessment for face-to-face learning. Contact North suggests the government could consider addressing online quality at the input/design level. Regarding accessibility of online learning, Contact North argues it should cover more diversified groups (e.g., mature students who also need online learning) than students in remote areas only.

4. eCampusOntario Strategic Plan 2021-2024 (eCampusOntario, 2021).

This most recent strategic plan by eCampusOntario mainly focuses on three key themes:

- Enabling flexible lifelong learning

- Facilitating capacity and contribution
- Supporting system-wide collaboration for future-focused global leadership

While this strategy places significant emphasis on lifelong learning, its primary focus is directed towards part-time mature students seeking rapid career-oriented training, which is why micro-credentials are introduced to meet the needs of these specific students. However, notably absent from the strategy's discourse are online graduate students pursuing advanced degrees.

Addressing perceptions about online learning quality is also a pivotal facet of the strategy. Despite contrary research findings, the strategy acknowledges the prevailing stigma that online learning is inferior to traditional in-person learning. The strategy states that the unexpected shift to e-learning prompted by the pandemic, combined with the introduction of the Ontario Virtual Learning Strategy, holds the promise of enhancing its standing and perception.

For a comprehensive approach, the strategy underscores the importance of system-wide collaboration. This includes an ongoing collaboration of open educational resources, wrap-around supports, and experiential learning for learners.

5.5.3 Institutional Documents

To ensure the confidentiality of RU, the titles of institutional documents have been kept anonymous. The institutional-level documents collected and analyzed include:

1. The Strategic Mandate Agreement (SMA) of Riverside University (2020-2025)

This SMA between the Ministry of Advanced Education and Skills Development and the university outlines the university's established position in Ontario's higher education system. It further elaborates on the university's strategy to utilize its current

advantages for achieving its goals and actively participating in broader system-wide objectives and government agendas. The core subjects of this SMA revolve around aspects such as performance-based funding, priority areas and performance metrics, skills and job outcomes, economic and community impact, productivity, accountability and transparency, and enrollment profile. However, it does not encompass online learning and its corresponding plan.

2. Riverside University Strategic Plan

Within the strategic plan issued in 2021, the university explained its focal points and ambitions, serving as the fundamental basis for public responsibility. This plan briefly mentions online learning, but its coverage is limited. While the university maintains a primary focus on traditional in-person education, it has gained some experience with distance and hybrid learning approaches over the past years. The university recognizes the increasing pace of digital advancements and emphasizes the necessity for its leadership to be receptive and supportive of emerging pedagogical technologies and methods proposed and developed by faculty, staff, and academic departments.

To better cater to the needs of mature learners aiming for degree-earning programs, the university plans to collaborate with its faculties to re-evaluate the lifelong learning model. This adjustment thus accommodates non-traditional students pursuing online graduate degrees within the comprehensive framework. The importance of fostering a sense of belonging is also stressed by the university in the plan, with international students being cited as an example. However, the acknowledgment of fully online students is notably absent within this context.

5.6 Summary

In this chapter, the presentation of findings is centered around data collected through an online survey, follow-up interviews, related policy documents on online learning, and the triangulation of information from other documents, such as the program webpage, recruitment webinar videos, course descriptions, and the course syllabus. By combining these diverse sources of information, a comprehensive understanding emerges regarding how students perceive and define engagement within the context of their online learning experiences. The students' definitions of engagement encompass a range of perspectives, informed by their individual encounters with the online program.

Noteworthy keywords that emerged from their definitions of online engagement include participation, question asking, contribution to discussion, and interaction. Moreover, the students provided nuanced descriptions of their personal engagement experiences within the online program. Furthermore, the challenges associated with engagement were identified through analysis of the responses obtained from the online survey and follow-up interviews.

The challenges students have experienced in online learning encompass various aspects. Maintaining a balance between demanding schedules and extensive academic requirements is a primary concern for these students. The noticeable lack of interaction within the online program contributes to a diminished sense of belonging among participants and within the broader virtual academic community. Additionally, concerns arise about the authenticity of performative engagement in the online setting. Procrastination and susceptibility to distractions are also challenges faced by many online learners. Different time zones cause difficulties for online learners trying to work

collaboratively or to attend synchronous meetings held by the institution. Furthermore, a potential undervaluation of fully online degree credentials by society raises concerns for students. Finally, technical problems add another layer of complexity to the online learning experience for students.

Based on these challenges, participants also provided suggestions, for improving engagement in a fully online learning program. More synchronous learning was proposed to boost real-time interaction and engagement. Participants recommended an increase in interaction and collaboration, advocating for the creation of more opportunities to collaborate. The suggestion of frequent deadlines was made to encourage timely completion of tasks, while regular nudges were regarded as beneficial to provide reminders for active participation. Diverse assessment methods were suggested to employ varied ways of evaluating learning outcomes. Participants also expressed the idea of fostering closer relationships among peers by advocating for smaller group sizes. Utilizing multimedia in learning was suggested as a means to employ diverse media for engagement, and the idea of forming time zone cohorts was put forth to build groups based on similar schedules.

Chapter 6 Discussion

This chapter provides a comprehensive discussion and synthesis of my findings presented mainly in Chapter 5. The chapter is structured by responding to my research questions below:

1. What systemic problems may graduate students encounter when they engage in online learning?
2. What factors may contribute to graduate students engaged and not being engaged in the online programs?
3. How can student engagement be improved in online graduate programs?
4. What policy implications may be drawn from this study?

As this research aims to find out how to improve student engagement in online learning, the two key words in this research include “improvement” and “engagement”. We often call schools or educational institutions as “systems” because they are usually complex and are the interactive products of among people engaged with them (Bryk et al., 2015). In the particular case of this study, the fully online graduate program operates within the framework of a university system, comprising various components such as students, instructors, program supporters, online learning platforms, department/faculty, and university administrative staff. These components are interdependent and interconnected.

To conduct research in such a complex system, my first step is to comprehend the learning process of students in the fully online program. The ultimate goal is to identify modifications or interventions that improve positive outcomes or reduce negative ones, thereby effecting improvements in the system’s processes or outcomes (Hinnant-

Crawford, 2020). Consequently, the initial research question is formulated to explore problems of students' experiences with learning engagement in the online graduate program. This question has already been addressed in Chapter 5.

It is important to highlight that participants perceived engagement in online learning from various perspectives, including participation, questioning, contribution to discussions, and interaction. As recommended by Redmond et al. (2018), student engagement in online learning encompasses five key elements: cognitive engagement, emotional engagement, behavioral engagement, collaborative engagement, and social engagement. Although students did not explicitly define engagement using these five perspectives, they illustrated these aspects in their descriptions, thereby indicating that they do experience these factors in their online learning process.

6.1 Authentic Problems Students Encountered in Online Engagement

My first research question intends to identify the systemic problems graduate students encountered when they engaged in online learning. According to Wieczorek and Hekkert (2012), systemic problems refer to factors that negatively influence the direction and speed of innovation processes and hinder the development and functioning of systems. They further point out that a system is made up of components (operating parts of a system), relationships (links between components) and attributes (properties of the components). In this study, the components of the online learning system include students, instructors, supporting staff, university administrators, and policy makers. Relationship among these components and attributes (e.g., students' self-regulation and support from the university) are the other aspects comprising a whole system. A system

cannot function as a system if there is a problem with any of these comprising aspects. Therefore, the essential step is to identify the problem in the system.

In order to find authentic or root causes of why students are not fully engaged in online learning, a systemic analysis is used to find authentic problems, rather than relying on commonly held deficit thinking, which means simply blaming the students per se. Root Cause Analysis (RCA) is a process used to clearly define problems of practices (Hinnant-Crawford, 2020; LeMahieu et al., 2017; Li, 2023) and helps answer the first improvement science question: What is the exact problem I am trying to solve when looking at student engagement in online learning of their graduate programs?

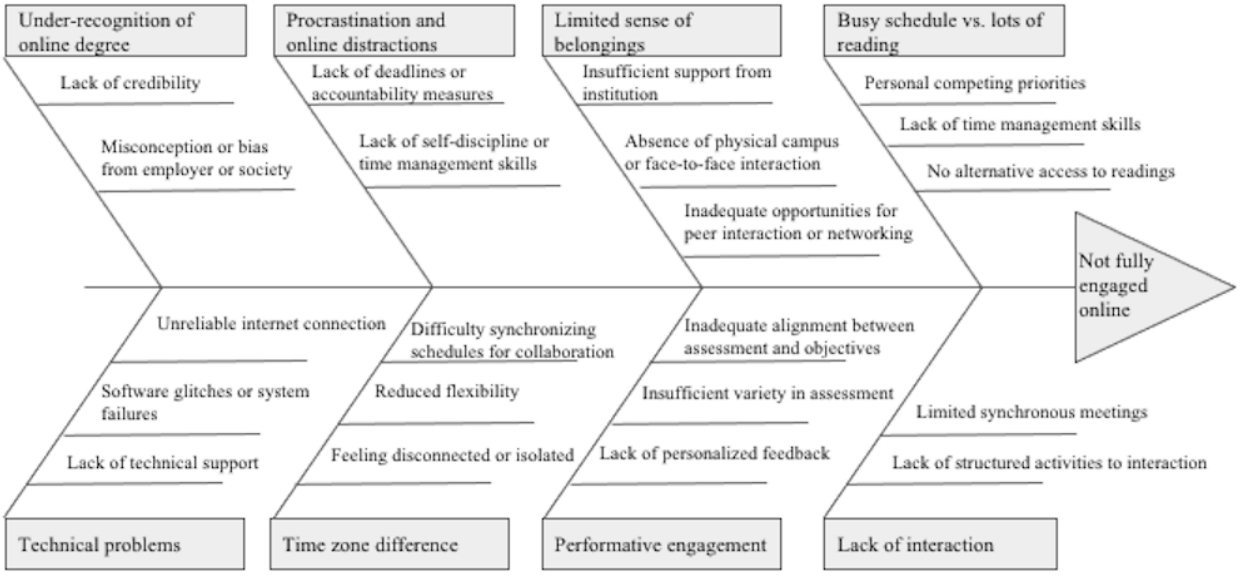
In this study, participants revealed the graduate program they were learning based on their personal experiences and beliefs of learning engagement. While my participants offered valuable insights of their experiences, their perspectives were limited, necessitating the use of RCA to connect the diverse viewpoints and gain a holistic understanding of the entire system (Bryk et al., 2015). The RCA process employed a tool called a fishbone diagram, which visually represents the discussions (Bryk et al., 2015; Hinnant-Crawford, 2020; Spaulding & Hinnant-Crawford, 2019).

The diagram features major “bones” that represent key factors contributing to unsatisfactory outcomes, with smaller “bones” representing the specific details discussed in relation to these factors. Figure 6.1 depicts the fishbone diagram resulting from the analysis of why students struggle to fully engage in online learning in this study. Within the diagram, eight major “bones” highlight the challenges perceived by students in their engagement experiences. Through the iterative process of repeatedly asking “why”, smaller “bones” emerged, aiding in the identification and articulation of a clear problem.

This technique, known as the “five whys”, is also commonly used in RCA (Bryk et al., 2015; Hinnant-Crawford, 2020; Spaulding & Hinnant-Crawford, 2019).

Figure 6. 1

Fishbone Diagram for Root Cause Analysis of Student Disengagement in FOMP



The primitive fishbone diagram is created by Karou Ishikawa in 1943 as a tool to advance quality control, and in education sector, the root cause categories can be different (Hinnant-crawford, 2020). The fishbone diagram is also used in this study to develop a conversation about the problems surrounding those causal factors of student disengagement in online learning, and in turn, increase knowledge and awareness within the higher education system (Spaulding & Hinnant-Crawford, 2019). According to Hinnant-Crawford (2020), pedagogical causes, organizational causes, and socio-structural causes are developed through the RCA, and thus can serve as the main causes concerning student engagement in online graduate program.

6.2 Pedagogical Causes

Hinnant-Crawford (2020) reminded us that although educators frequently employ the terminology of "best practice" and make an effort to incorporate such practices, it is important to recognize that our outcomes are sometimes influenced by our own practices. The factors contributing to this phenomenon are primarily associated with the design, implementation, and facilitation of teaching and learning activities. Here, pedagogical causes are the first category that needs to be discussed as the main factors concerning engagement in the case study. The pedagogical causes outlined below encompass factors such as lack of interaction, performative engagement vs. cognitive engagement, procrastination, and online distractions.

6.2.1 Lack of Interaction

The lack of interaction is the first factor I discuss in this section. As illustrated in Figure 6.1, the lack of interaction in this study can be broken down into smaller challenges that students encountered in FOMP, including limited social engagement and a lack of collaborative interaction. Detailed discussions are provided below.

6.2.1.1 Desire for More Social Engagement. Participants feel that they desire more interactions during learning fully online. Interaction plays an important role in online learning. Moore (1989) concluded three types of interactions in distance education: learner-content interaction, learner-instructor interaction, and learner-learner interaction. These three types of interaction are regarded as critical parts in all types of learning, especially in online learning, and are further discussed by other researchers (Alqurashi, 2019; Morrison, 2021; Purarjomandlangrudi et al., 2016). In this study, the participants' descriptions encompassed all three types of interactions: their engagement

with course readings, completion of assignments or projects, and interactions with both instructors and peers. Many students even consider interaction to be the core aspect of engagement. This underscores the crucial significance of interaction within online learning.

The findings highlight students' use of texts and social media platforms as a means to connect and create a sense of community and belonging. They utilized tools like WhatsApp, emails, Google Docs, and learning management systems (LMS) to facilitate interactions with both their peers and instructors. Utilizing social media and communication platforms as a format for social interaction engagement or social interaction in an online environment can be aimed at fostering a sense of community (Redmond et al., 2018). This encompasses the establishment of connections with peers and instructors, whether through informal interactions, friendships, or through effective collaborative work and study relationships. Therefore, social interaction is regarded as a vital element for success in university because it enables students to encounter alternative worldviews, facilitating the expansion and enrichment of their own opinions, beliefs, and perspectives (Pittaway, 2012).

However, students conveyed their discontentment with this mode of interaction, expressing a preference for more face-to-face interactions while engaging learner-leaner and learner-instructor interaction. As Tina mentioned to me, "It's different from being in a physical classroom where you can have spontaneous discussions and build relationships with classmates and professors". The findings align with the arguments that synchronous online learning has been used effectively for small-group sessions involving graduate students (Akarasriworn & Ku, 2013).

Furthermore, during current online meetings, students frequently chose to disable their cameras, leading to a lack of fully realized face-to-face interaction despite the intended purpose of such meetings. This has resulted in courses and lectures becoming less exciting or even boring, as expressed by Sophia, due to everyone having their cameras turned off. Although students expressed a preference for synchronous meetings, they often found them falling short of their expectations. Compared to on campus classes where nobody can mute their voices or faces, online meetings seems more flexible or relaxed where students have the option to turn off their cameras all the time. This can result in an overly relaxed scenario sometimes because students can do things they would not be able to do in a face-to-face classroom, leading to disengagement (Olt, 2018).

According to Olivia, live classes held once every two weeks were insufficient for addressing academic questions and lacked the desired level of interactivity. Overall, the absence of full face-to-face engagement during Zoom meetings and the limitations of synchronous classes left students longing for more stimulating and interactive learning experiences.

6.2.1.2 Embracing More Collaborative Engagement. Fully online learning entails a self-structured study model, characterized by greater autonomy and self-motivation compared to in-person learning. Unlike traditional classroom settings that facilitate group discussions, question-asking, and hands-on activities, online learning often lacks such structured opportunities for interaction due to the flexible nature of course delivery.

Consequently, most interactions in online learning occur through written text, such as discussion forums or emails. However, the research findings indicate that

participants desire more interaction, but the available opportunities are “limited, either on Zoom or on discussion boards”, as Ben mentioned in the interview. Participants express their frustration with the predominantly text-based communication, stating, “It’s a lot of text back and forth. It’s not a lot of conversations in person”, described by Charlotte. While text-based interaction allows for asynchronous communication, it may not offer the same level of dynamic interaction and immediate feedback found in face-to-face interactions. Participants struggle to engage in meaningful conversations or effectively exchange ideas without non-verbal cues or real-time dialogue.

Moreover, the absence of structured activities can result in a sense of isolation for students. Without designated times for interaction, students may feel isolated from their peers and the learning process itself, which is problematic because connecting with other students for both educational and non-educational activities is beneficial from an academic, social, and emotional perspective (Redmond et al., 2018).

Most of the participants believe that individual learning is important, while community learning in the program is also essential and more beneficial (Ben, Charlotte, James, Mia, Olivia, Sophia, Tina). This is critical because engagement can range from the micro level (e.g. individual learning) to the macro level (e.g. group discussion or collaboration) (Järvelä et al., 2016; Sinatra et al., 2015). Thus, researchers have identified the concept of collaborative engagement, which encompasses the development of relationships and networks that support online learning, including interactions with peers, instructors, industry professionals, and the educational institution itself (Redmond et al., 2018).

The findings of the study confirm that students desire increased opportunities for collaborative engagement. This aligns with previous research that has demonstrated a positive relationship between active collaborative engagement and improved student learning performance (Blasco-Arcas et al., 2013). Especially, this program is designed for professional development purpose, and most participants are employed and have work experience. This explains why collaborative learning is quite suitable for these students because it can involve them in solving problems or evaluating a real-world case that requires understanding of complex situations (Meyer, 2014). Recognizing the significance of collaborative engagement, students express their desire for more interactions and connections within their learning environment, highlighting its potential benefits for their learning outcomes.

6.2.2 Performative Engagement vs. Cognitive Engagement

The findings indicate that a significant number of participants did not feel genuinely engaged when fulfilling the requirement to contribute to discussion boards or comment on their peers' posts, to a certain extent. Participants perceive these activities as performative and lacking authenticity in terms of true engagement and meaningful learning. They often view these engagements as mere checkboxes to be completed, leading to a sense of wasted time and a lack of genuine engagement. As expressed by Ben, participants engage in these activities just to "fulfil a checkbox. So, it just didn't feel genuine and I feel like I'm wasting my time in these discussion boards". Emily shared a similar experience, where she randomly selected individuals to respond to, solely because she needed to "say two things to like, get your grade for the week, or whatever".

These findings demonstrate that students can exhibit performative or superficial engagement during online learning, where they appear to be busy but feel that it does not contribute to deep learning and is ultimately a waste of time. These findings align with the "critique of the superficial, descriptive, tick-the-box exercises that are usually designed to be monitored by computer rather than through human interaction" (Dyment et al., 2020, p. 1450).

I argue that performative engagement is not entirely useless because students do need to engage to some extent in performative activities, either as a baseline or to initiate learning. However, students should keep in mind not to sustain performative engagement in a lower-order or superficial thinking approach. In contrast, deep-level cognitive engagement entails higher-order intellectual thinking, which includes activities like offering a reasoned justification for a response in a forum supported by authoritative references, engaging in debates with peers, or employing critical thinking strategies that reflect metacognition and foster in-depth discipline-specific learning (Fredricks et al., 2004; Redmond et al., 2022).

Why has this situation occurred? By conducting a RCA, it is confirmed that this was not due to students' lack of willingness to engage or interact, nor is it a result of instructors failing to establish clear objectives or goals. The underlying issues lie in the inadequate variety of assessment methods used and the lack of alignment between assessments and objectives. Students are unable to receive personalized feedback on their online engagement, leading to superficial performance as they merely seek to fulfill requirements. It is imperative to reassess how we measure students' engagement in online learning. It is also important to point out that effective interaction or engagement occurs

only if learning and instruction are designed and implemented well, and it is about quality interaction, not quantity (Alqurashi, 2019).

6.2.3 Procrastination and Online Distractions

Academic procrastination refers to the act of postponing tasks and activities specifically associated with learning and studying. Formally defined, it involves the voluntary delay of an intended course of action, even when anticipating negative consequences resulting from the delay (Steel, 2007). While procrastination is typically viewed negatively, researchers have identified two types: passive and active procrastination (Chu & Choi, 2005). Passive procrastinators struggle with quick decision-making, while active procrastinators deliberately delay tasks but still manage to meet deadlines and achieve satisfactory grades. However, these studies were conducted in in-person learning contexts, and online learning presents its own challenges, particularly for adult students with competing responsibilities such as work and family (Dunn & Hayakawa, 2021). An online survey in this research revealed that 85% participants (39 out of 46) acknowledged increased procrastination issues in online learning. Follow-up interviews further proved that participants attributing procrastination to their busy schedules, online distractions (e.g., social media, gaming, streaming), and flexible study time in fully online programs. Consequently, the inclination to procrastinate tends to rise in online courses (Elvers et al., 2003).

While active procrastination may yield satisfactory results, research indicates that students are well aware that it can ultimately diminish the quality of their learning experience (Hensley, 2016). Moreover, active procrastination can be particularly detrimental in an online learning environment (Erichsen et al., 2014). For instance, it can

have a negative impact on the quality of online discussion activities, leading some students to avoid participating in discussions altogether due to procrastination, ultimately affecting their academic performance (Self et al., 2018).

Only a small body of literature has begun to explore the role of procrastination in online graduate students and what variables influence procrastination in online coursework (Rakes et al., 2013). Recent research on graduate students' procrastination in online learning has identified both internal and external attributions as potential reasons for academic procrastination (Dunn & Hayakawa, 2021; Rakes et al., 2013). Rakes et al. (2013) found that in asynchronous online graduate programs, the majority of procrastination attributions were external (65%), mainly due to time constraints arising from work and family responsibilities. In contrast, Dunn and Hayakawa (2021) discovered that adaptive self-regulation (i.e., learning strategy use) and effort-based attributional thinking played a significant role in predicting online graduate students' propensity to procrastinate in synchronous coursework. These studies shed light on the different factors contributing to procrastination behaviors among graduate students in the context of online learning.

In this case, the online program primarily utilizes a combination of asynchronous and synchronous learning formats. During interviews, participants attributed their procrastination to external factors such as work and family responsibilities, as well as internal factors like difficulty resisting online distractions or the comfort of being at home. The participants also emphasized the significance of frequent deadlines, which effectively reduced their tendency to procrastinate. From this research, it can be concluded that the reasons for procrastination among the participants encompassed a lack

of self-regulation or time management skills, as well as a lack of deadlines or accountability measures.

6.3 Organizational Causes

Organizational causes deal with the organizational structure that may create or maintain the problem of practice (Hinnant-Crawford, 2020). This is to see a problem from a systematic view. These causes are rooted in the organization's structure, processes, culture, and management practices. Here, organizational causes are the second category that needs to be discussed as the main factors concerning engagement in the case study. The organizational causes outlined below encompass factors such as the desire for a greater sense of belonging, time zone differences, and technical problems.

6.3.1 Desire for a Sense of Belonging

The findings indicate that participants felt an insufficient sense of belonging in two perspectives: peer-peer and peer-institution. Participants did feel a certain degree of sense of belonging within this program, through successfully establishing close friendship and potential future connection. For example, Ben felt some sense of belonging, especially when he had acquaintance from his previous work experience. Sophia's sense of belonging in this program was established through building friendships with three of her peers with similar career path. Research has shown that sense of belonging of learners has a significant impact on student engagement (Kahu, 2013), including the learning experiences of online students (O'Shea et al., 2015).

In the online survey I asked if participants felt no sense of belonging in online learning, and 83% (38 out of 46) of the participants agreed with this comment. As follow-up interviews showed, students felt an insufficient sense of belonging in online learning.

Participants felt they lacked the “coffee time” that in-person learning offers to establish a closer relationship with peers. They shared feelings about the limited opportunities to interact with peers, which had resulted in not knowing their cohort members well. Despite receiving positive feedback on their contributions, they felt a disconnect because they did not have a reciprocal understanding of others in the program. Students highlighted that face-to-face interactions during synchronous learning sessions had been valuable for forming connections, but these instances were infrequent. Overall, the lack of structured meet and greet sessions or community-building activities specific to their cohort had left them feeling disconnected and not fully part of the program. As Boling et al. (2012) demonstrated in their research, although online students use multimedia and opportunities to interact with others, they felt disconnected with each other.

Participants also expressed a desire for more support from the institution. The experiences of various students highlighted a common issue related to the sense of belonging and community building within the institution. Sophia, Emily, and James expressed feelings of exclusion and a lack of connection with the institution. Despite efforts by the institution to create opportunities for student engagement, fully online students like Olivia faced challenges in participating in on-campus activities and feeling connected to the institution. The lack of personalized support for online students, such as in Olivia’s case, further exacerbated feelings of disengagement and neglect. Efforts to foster a sense of belonging among online students have been hindered by the physical distance from campus and the limited effectiveness of virtual events and email communications. The findings show that online students can easily feel disconnected from the educational institution and their peers (Kumar, 2014).

6.3.2 Time Zone Issue

Time zone issues are an inductive theme in the findings. One of the benefits that online learning can offer is the "anytime, anywhere" flexibility that in-person learning lacks. Online learning provides the possibility for students to take the same online program from all over the world. The results in the research indicated that the online program did attract students from various backgrounds, both from Canada and other locations. This online program allowed for a broader geographical reach, but the issue of varying time zones posed practical difficulties for synchronous interaction and collaboration among students. Only a few previous research studies discussed this issue, arguing that it is essential to meticulously create the learning sets to ensure that members within each set share common interests and belong to similar time zones, which will help ensure that members of the learning set receive timely feedback (Deshpande, 2016; Kung, 2017).

6.3.3 Technical Problems

According to the online survey report, a small proportion of students, representing 5.56%, mentioned "Technical problems can happen" as a challenge they faced. Similarly, only 0.93% of students expressed concerns about their limited computer skills. These survey results aligned with the interview findings, where only Ben suggested a preference for non-scanned PDF versions of reading materials. Ben's reasoning behind this preference was the ease of converting such documents into audible formats using specialized software. The reasons that common technical problems (e.g., unreliable internet connection or low computer skills) were not an essential challenge here in this case include: (1) Students are fully aware that this graduate program is entirely online

before they enroll in it, so they are prepared for this learning format, which requires a basic level of technical competency for the program. (2) The research was conducted approximately three years after the COVID-19 pandemic, during which a paradigm shift occurred in educational and professional settings across Canada. With the widespread adoption of online communication, students have grown more accustomed to virtual learning and working environments, thereby minimizing the potential challenges associated with digital technologies.

6.4 Socio-structural Causes

Socio-structural causes can include societal systems that are difficult for people to manipulate such as poverty, racism, values, and ageism (Hinnant-Crawford, 2020). In this case, socio-structural causes concerning student engagement in online graduate program include students' busy schedule and undervaluation of online degrees by society. Detailed discussions are in the following section.

6.4.1 Busy Schedule

In this case, the majority of students opt for the fully online program primarily because it accommodates their demanding work schedules, allowing them to continue full-time employment while pursuing a master's degree. However, a significant challenge they encounter is the scarcity of time available for studying, given their busy lives. Many students, like Charlotte, expressed their other constraints due to familial responsibilities and other obligations. As a result, the only feasible time for studying is often after completing a full day of work, leaving little room for rest.

Furthermore, as a graduate-level program, the volume of required reading and research articles contributes to the students' stress. Ben shared his experience,

highlighting the overwhelming nature of the weekly readings, particularly for practicing teachers who struggle to balance their professional duties, including grading, alongside keeping up with the program's demands.

While students willingly accept the commitment required by this learning method and recognize the need to sacrifice leisure time for studying, they still experience significant pressure due to the challenging workload. Kahu (2013) used the word "lifeload" to describe the sum of all the pressures a student has in their life, including university, as a critical structural factor influencing student engagement in online learning. It was found that the most challenging aspect of being an online learner was balancing one's studies with other highly valued and time-consuming commitments, such as work and family responsibilities. This aligns with previous studies discuss non-traditional students facing the socio-structural challenge of busy schedule and competing priorities in online learning (Brown, 2017; Garner, 2018; O'Shea et al., 2015; Redmond et al., 2018, 2022; Thompson et al., 2013; Zepke & Leach, 2010).

6.4.2 Under-recognition of Online Degrees in the Job Market

Fully online degrees can face the challenge of being under-recognized by society due to their non-traditional nature or perceived inferior quality compared to on-campus degrees at the same academic level (Adams et al., 2012; Curran et al., 2017; Engel & Hays, 2019). Findings of this research showed 9% of the participants (4 out of 46) were concerned that their credential achieved via online learning will have lower recognition by the job market. For example, Charlotte and Mia both shared concerns about the societal perception of online degrees and their credibility.

Charlotte emphasized that some individuals still held the belief that online degrees might lack worth or value compared to in-person degrees. While she believed both learning formats were equally valid, she highlighted the need to overcome these societal prejudices. The COVID-19 pandemic has expedited the adoption of online learning, leading to increased understanding and acceptance of this learning format, but the full recognition of fully online degrees in the post-COVID era remains uncertain.

Similarly, Mia expressed her doubts about whether academic institutions would acknowledge her online degree at the same level as a traditional master's degree. This concern was particularly relevant as she contemplated pursuing a PhD program, where admission requirements played a significant role. The uncertainty surrounding the credibility of her online credential weighed on her mind and raised questions about its acceptance in academic circles.

In today's credential society, employers usually base their recruitment decisions on credentials obtained through formal education as these are believed to reflect an individual's ability in work (P. Brown & Souto-Otero, 2020). However, in the job market, applicants who earned credentials through traditional on-campus learning are overwhelmingly preferred over those who hold online credentials, whether partially or fully online (Adams, 2016). Findings of this case study highlight the need for continued efforts to bridge the gap between the perceived value of online learning and its actual merit in the eyes of society and educational institutions.

Therefore, to answer the second research question: What factors may contribute to students engaged and not being engaged in the online graduate program? The findings indicate that there are three main categories as: pedagogical factors, organizational

factors, and socio-structural factors. Specifically, the root causes in each category of factors that contribute to disengagement in the online graduate program can be summarized in Table 6.1:

Table 6. 1

Factors Contribute to Student Disengagement

Factors contribute to disengagement in online graduate program	**Problems**	**Root causes**
Pedagogical factors	Lack of interaction	• Limited synchronous meetings. • Lack of structured activities to interaction.
	Performative engagement	• Inadequate alignment between assessment and objectives. • Insufficient variety in assessment. • Lack of personalized feedback.
	Procrastination and online distractions	• Lack of deadlines or accountability measures. • Lack of self-discipline or time management skills.
Organizational factors	Limited sense of belonging	• Insufficient support from institution. • Absence of physical campus or face-to-face interaction. • Inadequate opportunities for peer interaction or networking.
	Time zone difference	• Difficulty synchronizing schedules for collaboration. • Reduced flexibility as time zone constraints. • Feeling disconnected or isolated.
	Technical problems	• Unreliable internet connection. • Software issues. • Lack of technical support.

Socio-structural factors	Busy schedule vs. lots of readings	• Personal competing priorities. • Lack of time management skills. • No alternative access to readings.
	Under-recognition of online degree	• Lack of credibility of online degree. • Misconception or bias from employer or society.

6.5 What Improvements Are Desirable?

Through the RCA process, it became evident that certain root issues intersected and intertwined across these five key elements. For instance, one identified root problem was the perceived lack of interaction during the program, which can translate to inadequate social engagement, according to Redmond et al.'s (2018) framework. Nevertheless, the findings revealed that the lack of interaction can lead to students feeling disconnected from their peers, resulting in reduced collaborative engagement and a sense of isolation. Consequently, according to Redmond et al.'s (2018) framework, the lack of interaction impacts not only social engagement but also collaborative and emotional engagement. Therefore, when we investigate why students lack interaction, we should consider not only social aspect, but also multiple aspects such as collaborative and emotional perspectives.

Similarly, when students express a limited sense of belonging, this can be attributed to insufficient social engagement, as indicated by the five-key-element framework. However, the RCA discovered that the limited sense of belonging may also arise from inadequate institutional support, the absence of a physical campus or face-to-face interaction, and insufficient opportunities for peer interaction or networking. Therefore, while the five-key-element framework allows us to attribute the limited sense

of belonging to social and collaborative engagement factors, it fails to account for the significance of institutional support.

As a consequence, the five-key-element engagement framework proves problematic in this context, as it does not provide a definitive and holistic analysis for improving student engagement in the research. This might lead to fragmentary and sometimes contradictory approaches to discussing student engagement (Baron & Corbin, 2012). A more inclusive and comprehensive approach is required to effectively address the multi-faceted nature of student engagement in the online graduate program. As discussed, educational improvement science can use a "bird's eye" view to see the whole system. The nature of educational improvement science is discipline-oriented, systems thinking and evidence-based from real-life scenarios (Li, 2023); therefore, it is more suitable to use educational improvement science to determine what change we can implement to improve student engagement in an online program. If we envision the various factors as threads, improvement science becomes the needle that weaves these threads together.

As discussed above, there are three categories of factors that concern student engagement in online graduate program: pedagogical causes, organizational causes, and socio-structural causes. I now discuss potential improvement strategies from each category respectively.

6.5.1 How to Resolve Pedagogical Causes?

A great number of scholars point out that the pedagogical theory of online learning is built on constructivism, which endorses the idea that knowledge is the outcome of social interchange, situated learning, and andragogy due to an emphasis on

interaction and collaboration in group activities (Brierton et al., 2016; Bryant & Bates, 2015; Garrison et al., 2010; Gordon et al., 2018; Humber, 2021; Leslie, 2020; O'Shea et al., 2015; Vaughan, 2014). Piaget's notion of constructivism theory assumes that learners have to construct their own knowledge, both individually and collectively (Keengwe et al., 2014). Social constructivism is dependent upon engagement, and most engagement research implies a belief in social constructivist learning theory (Meyer, 2014). Engagement is closely related to interaction, as Martin and Bolliger (2018) reviewed the relationship between interaction and engagement, finding that "engagement is developed through interaction" (p. 206).

As the findings have shown, students felt a lack of interaction in the program. More synchronous interactions were preferred by students, and keeping cameras on during synchronous meetings was strongly recommended. Structured online discussions should be designed to encourage more active learning through more real-time responses from both peers and instructors. The instructor's role in online learning is as a facilitator, and through authentic, challenging activities, the teacher gains the opportunity to offer feedback more effectively, to better guide the learner (Peterson, 2014).

Students also expressed that performative engagement happened when they were asked to engage in online discussions. Based on the discussions above, performative engagement does not happen due to students' lack of willingness to engage or interact, nor is it a result of instructors failing to establish clear objectives or goals. The root causes lie in the inadequate variety of assessment methods used and the lack of alignment between assessments and objectives. Students are unable to receive personalized feedback on their online engagement, leading to superficial performance as they merely

seek to fulfill requirements. Therefore, a greater variety of assessments should be designed to measure students' performance in this program. This was also suggested by the participants in their interview. For example, the program can consider using a combination of online quizzes, video or virtual presentations, self-assessment portfolios, or journals to examine student's performance in online learning.

In traditional in-person courses, students are encouraged to focus regularly on class materials through class attendance. The absence of such a structured physical classroom experience may increase the temptation to procrastinate in online learning. Students attribute their procrastination in online learning to external factors such as work and family responsibilities, as well as internal factors like difficulty resisting online distractions or the comfort of being at home. Therefore, an improvement strategy to decrease procrastination should be developed both externally and internally. From this research, it can be concluded that the reasons for procrastination among the participants encompassed a lack of self-regulation or time management skills, as well as a lack of deadlines or accountability measures.

Based on social cognitive theory, the three-phase, cyclical model of self-regulation includes forethought, performance, and reflection (Zimmerman, 1998, 2008). Forethought reflects students' planning, activation of prior knowledge, and other processes that occur before task performance. Regulation of performance involves students' actual use and management of the learning strategies intended to reach the learning goals. The reflection phase is also known as the attributional thinking phase (Dunn & Hayakawa, 2021; Järvelä et al., 2016). This cyclical model clearly describes the process of online learning. Based on this model, previous researchers have suggested that

learners should establish objectives and develop strategies to effectively participate in the task while also assessing their own level of motivation for the task. The performance phase involves exercising self-control through techniques like self-instruction, imagery, attention focusing, and task strategies. Additionally, learners should practice self-observation by recording and experimenting with their own actions. They must actively participate in the activity, regulate their approaches, and closely monitor their performance (Abrami et al., 2011). In summary, self-regulated learners are individuals who are metacognitively, motivationally and behaviorally active participants in their own learning and consequently are learners whose academic performance is higher than others (Zimmerman 2000).

In order to enhance self-regulation, studies have shown that effective strategies for online graduate students can include brief online self-regulatory training for self-efficacy, achievement goal orientation, learning strategies, attributional thinking, and targeted and timely feedback that focuses on specific ways students may grow to meet their personal learning goals (Dunn & Hayakawa, 2021; Rakes & Dunn, 2015). One of the participants, Olivia, shared with me that the strategies she learned from an online training program on time management skills have proven to be effective in her online learning.

For external factors contributing to procrastination, such as the lack of set deadlines or accountability measures, I recommend that instructors establish more frequent deadlines. Additionally, providing regular nudges to students, in the form of reminders, can actively encourage their participation and diminish the likelihood of procrastination. This proactive approach aims to create a more structured and accountable

learning environment, fostering a sense of responsibility and engagement among students.

Based on the findings, online higher education has unique characteristics. Simply uploading learning materials to the LMS and using traditional instructional methods designed for in-person learning may not be suitable for online education. We propose an emergent curriculum tailored for online learners (personal communication, May 10, 2024). Previous researchers have various perspectives on defining the curriculum (e.g., learning experiences, content, objectives, courses, assessment, etc.), but many agree it is one of the most significant aspects of higher education (Oliver & Hyun, 2011). As online education in higher education transitions from teacher-centered to learner-centered approaches, curriculum design must also shift. It should move from focusing solely on content delivery and performance-oriented assessments to emphasizing the learning process and strategies to motivate and engage students (Koh, 2015; Valdez & Reed, 2020).

Developing a curriculum for online learning differs from traditional curriculum design due to the predominance of new technologies and online interactions. The rapid development of technology necessitates continual adjustments to keep pace with technological advancements as they are integrated into education. Previous research highlights the necessity of developing an online curriculum by a team with expertise in various disciplines, including pedagogy, technology, and content related to the student learning experience (Burrell et al., 2015; Lambert et al., 2014). I argue that online learning curriculum design in higher education must focus on a learner-centered approach, with student engagement as the key concern. Thus, online curriculum design

should be an integrated, systemic, dynamic, and sustainable process based on pedagogy, technological capability, and improvement science.

6.5.2 How to Tackle Organizational Causes?

For fully online graduate students, the main medium connecting them to the campus is the internet. As a form of distance education, online learning attempts to decrease the distance via building a sense of belonging and create an environment for students to feel connected with each other and with the program/institution. Establishing a sense of belonging is essential for fully online students as they already lack the physical connection with the program/institution, and feeling that they belong to a community of learners significantly impacts their learning experiences (O'Shea et al., 2015). As students have expressed, they prefer an environment where they can feel belonged, connected, and supported. Both the online survey and interview show that most students agreed that community building would help improve their engagement in online learning.

There are certainly steps individual instructors can take to improve sense of belonging, such as using active and collaborative learning techniques and having more synchronous meetings to increase interaction. Many researchers, however, argue, that student engagement cannot be successfully pursued at the level of the individual teacher or faculty but must be pursued holistically in a 'whole-of-university' approach and with a common understanding (Baron & Corbin, 2012). Current institutional supports such as the library, career advice, learning support, administration, and counseling services are heavily focused on full-time on-campus students (Farrell & Brunton, 2020). Research findings indicate that higher education institutions need to provide tailored support for online learning students, such as emailing them virtual training, seminars, or other virtual

events rather than activities physically on campus; they should also offer personal support such as virtual office time rather than text communications only or simple web links. Regarding online students from different time zones, the institution can consider allocating these students into different cohorts based on their time zones to increase flexibility in collaboration and interaction. Institutions should also supply technical support and offer tailored assistance to online students. As previous studies have argued, higher education institutions play a central role in enhancing the quality of online learning. Therefore, they need to provide professional development for instructors, training for learners, and technical support for the content development and delivery of online courses to address the challenges in online learning and enhance the effectiveness of online teaching and learning (Kebritchi et al., 2017).

The findings indicate that although online education benefits students through its flexibility and its democratic values of openness, sharing, interactivity, diversity, and community (Costa & Harris, 2017), it requires structural support. Guided by the theory of educational improvement science, it is highly suggested to accelerate improvement through particular kind of professional network. In recent years, Professional Improvement Communities (PICs) have been recommended by researchers to enforce systematic change and improvement (Li, 2023). Professional Online Graduate Program Improvement Community is therefore recommended to establish a discipline-specific, evidence-based improvement across institutions or in the whole nation to improve online graduate program.

6.5.3 How to Fix Socio-structural Causes?

The findings from this study indicate that engagement in online graduate program is impacted by the socio-structural causes of lifeload and undervaluation of online degree by society. It was found that one of the most challenging parts for these non-traditional students was how to balance their busy work and other responsibilities. This aligns with previous studies discussing non-traditional students facing the structural challenge of busy schedules and competing priorities in online learning (Brown, 2017; Garner, 2018; O'Shea et al., 2015; Redmond et al., 2018, 2022; Thompson et al., 2013; Zepke & Leach, 2010).

Although some researchers argue that no significant outcome differences have been found between online and face-to-face instruction (Thompson et al., 2013), school principals were apprehensive about hiring online graduates (Huss, 2007). A national survey of high school principals (N = 683) in the US was used to assess the acceptability of job applicant qualifications that included degrees earned either online, partly online, or in a traditional-residential teacher-training program (Adams et al., 2012). The research shows that the applicants with coursework taken in a traditional on campus setting were overwhelmingly preferred over applicants holding a degree earned partly or fully online.

As previous researches described, socio-structural causes may come from stable, interconnected societal forces that systematically advantage some social groups and disadvantage others (Amemiya et al., 2023), and may include large wicked problems such as poverty and racism that are difficult for individual or organization to change. Policy makers need to take into account these underlying societal forces as they formulate corresponding policies aimed at improving the status quo. Before presenting strategies to

policy makers, it is necessary to examine the existing policies concerning online learning in Canada.

6.6 Implications From Policy Documents

In Chapter 5, I analyzed the most recent and pertinent policy documents addressing the improvement of student engagement in online learning. The documents I examined encompass three levels—national, provincial, and institutional—with the aim of offering a comprehensive overview of the landscape of online learning in Canadian higher education. While searching for relevant policies related to online learning, I found the pan-Canadian data regarding online learning in the Canadian postsecondary education sector are minimal, as shown by other researchers (Veletsianos et al., 2021). Policies on improving student's engagement in online learning are only emerging. The two national level documents by CDLRA and ICTC have shed light on online learning's landscape and implications, but while ICTC's research offers a strategic framework, it falls short in addressing distinct academic tiers and undervaluation concerns in online degrees.

The lack of a centralized higher education policy agency in Canada's decentralized system has led to provincial-level policymaking. Ontario's online learning policy is guided by the provincial government and supported by organizations like Contact North and eCampusOntario. Challenges of online learning include a lack of focus and coordination within digital learning, as highlighted by HEQCO and Contact North. Recommendations emphasize system plans, digital skill support, and standardized reporting. HEQCO advocates for outcome-oriented metrics, while Contact North emphasizes rich learning experiences and accessibility. eCampusOntario's plan focuses

on lifelong learning and quality enhancement, with the Ontario Virtual Learning Strategy playing a key role. System-wide collaboration is encouraged for comprehensive growth.

The institutional documents provide insights into RU's strategic orientation, with the SMA highlighting its broader objectives and the Strategic Plan emphasizing traditional education while acknowledging the importance of adapting to online learning trends. Analysis of different levels of policy or documents shows there is much incoherence and fragmentation at the heart of current practice and policy in online learning (Baron & Corbin, 2012).

In light of these insights and an extensive review of current policies, recommendations have been formulated to improve the online graduate education experience. A key proposal involves adopting a learner-centered approach to improve the quality of online learning. As evidenced by this study, graduate students encountered pedagogical, organizational, and socio-structural problems during their online learning process. This initiative aims to address the current situation through policymaking at both the provincial and institutional levels, given Canada's decentralized education system with policymaking occurring at the provincial level. At the provincial level, I propose the development of a detailed policy for learner-centered online learning to serve as guidance for continuously improving online learning in higher education. This policy can outline how the provincial government can support students, instructors, and Higher Education Institutions (HEIs) in online learning. Detailed measures may involve strategic planning, financial support, and cross-institutional collaboration. Additionally, the establishment of continuous quality assurance mechanisms is recommended to regularly assess program

outcomes, student satisfaction, and industry relevance, ensuring the consistent delivery of high-quality online educational offerings.

At the institutional level, policymakers should also formulate a learner-centered policy that includes a strategic plan for the development of online learning programs within the institution. This policy should involve provisions for supporting and training faculty in online learning methodologies, designing curricula aimed at improving student engagement, and establishing personalized support structures through dedicated academic advisors. Furthermore, it is recommended to implement financial incentives, such as scholarships exclusively for working students pursuing online graduate education, to reduce financial burdens and encourage ongoing studies while working. Additionally, the formation of PICs is advised to facilitate continuous improvement in online learning practices within the institution.

It is important to note that national-level support is not negligible, as online learning should extend beyond provincial boundaries. Collaborative approaches are important to develop high quality online learning, and COVID-19 has made clear is that the whole system can benefit from greater collaboration, synergies, and sharing of expertise (Veletsianos et al., 2021). Implementing a standardized national credential framework is proposed to enhance transparency regarding the competencies and skills gained through online degrees. Additionally, a system-wide collaboration is proposed for national or international-level improvements in online learning within HEIs.

6.7 Reflections on the Frameworks Applied

Educators believe student engagement is essential for learning (Pittaway, 2012). In the past, student engagement has been studied on what is happening at that moment or

throughout a whole learning process (Henrie, 2015). Student engagement can be perceived as either an individual or collaborative behavior—manifested through self-reflective and intentional actions and interactions with the surrounding environment (Klemenčič, 2015). Student engagement can also be studied at a micro level such as an individual's learning process, or a macro level such as learners in a school or a community (Sinatra et al., 2015). The findings of this research align with the five-key-element framework on student engagement in online learning, which includes cognitive, emotional, behavioral, collaborative, and social engagement. The research also underscores that student engagement in online learning is complex and challenging to define. Using RCA, this study explores pedagogical, organizational, and socio-structural factors as contributors to authentic problems in student engagement in online learning. In contrast to previous singular perspective approaches, this qualitative study delves into educational improvement science (EIS) to explore student engagement in a systemic way.

By integrating survey results, interview data, and document analysis, improvement strategies are proposed from pedagogical, organizational, and socio-structural perspectives, guided by EIS. The study also provides relevant policy recommendations for systemic change. Adopting a problem-oriented approach, this study examines the process of graduate students' engagement in FOMP at RU, aiming to improve education at individual, institutional, systematic, national, and/or global levels. Through the case study, nuanced descriptions of student engagement experiences are revealed and analyzed. Applying a systemic view, the analysis considers the entire education system, revealing the current problems in student engagement in online learning. Employing disciplined inquiry, the study explores how to improve students'

engagement in Canadian HEIs. Therefore, this study is rooted in promoting authentic educational improvement through evidence-based research and the establishment of PICs (Li, 2023).

Chapter 7 Conclusion

This chapter revisits and synthesizes the thesis by highlighting the research questions that directed this research. Additionally, it reflects on some key findings, implications, and contributions of this research. The chapter concludes by acknowledging the significance of the study and identifying areas for further research.

7.1 Revisiting the Four Research Questions

This research asks four research questions guided by the integrated frameworks from improvement science and online student engagement. Recalling them, I summarize related findings to respond to each of the four research questions.

RQ1: 1. What systemic problems may graduate students encounter when they engage in online learning?

As many students in the case have full-time jobs while enrolled in the fully online graduate program, they must juggle various responsibilities, including their careers and family obligations. These non-traditional students employ different strategies for engaging with online learning. Many allocate specific times, such as weekends or evenings, for dedicated learning and reading. Most communicate with peers through asynchronous and text-based interactions, while collaborative group projects and discussions become more common, particularly as deadlines approach. Email serves as a prominent communication tool between students, instructors, and program coordinators. However, students express a lack of deep interaction and a sense of belonging during the engagement process. Problems such as procrastination and online distractions are also found in online learning. Additionally, performative engagement leads to superficial involvement, which does not result in genuine learning. Students also encounter issues

such as time zone differences, technical problems, and concerns about the undervaluation of online degrees. Overall, students feel they can engage in the fully online learning process, but improvements are needed.

RQ2: What factors may contribute to graduate students engaged and not being engaged in the online programs?

The study is guided by educational improvement science and focuses on a systemic analysis to understand the root causes behind students' lack of engagement in online learning. Instead of merely blaming students, the approach uses Root Cause Analysis (RCA) to identify underlying problems. Using a fishbone diagram, participants' diverse perspectives are connected to create a holistic view of the issues. The analysis reveals three main categories of factors contributing to students' engagement and disengagement: pedagogical, organizational, and socio-structural factors.

Pedagogical factors are analyzed through constructivism. These factors include a lack of interaction, with limited synchronous meetings, and absence of structured activities for engagement. Performative engagement, where students fulfil requirements without genuine involvement, stems from misaligned assessments and a lack of personalized feedback. Procrastination and online distractions result from insufficient deadlines or accountability measures, as well as inadequate self-discipline or time management skills.

Organizational factors include a limited sense of belonging, stemming from a lack of support from the institution, infrequent opportunities for interaction, and the absence of tailored campus activities. Time zone differences create challenges in scheduling collaborative efforts and contribute to feelings of disconnection. Technical problems,

such as unreliable internet connections and a lack of technical support, hinder engagement as well.

Socio-structural factors include how to balance students' busy schedules and the intensive academic requirements from a graduate level program. Students struggle to manage competing priorities in life, such as career and family responsibilities, and lack time management skills. Additionally, concerns arise from the undervaluation of online degrees in the job market and academic circles due to societal biases.

In conclusion, the study investigates the multifaceted explanations for students' disengagement in online graduate learning, highlighting a need for comprehensive interventions that address pedagogical, organizational, and socio-structural causes to foster more effective and engaging online learning experiences. From a systemic perspective, findings from this study are not fragmented but demonstrate a holistic mindset.

RQ3: How can student engagement be improved in online graduate programs?

Strategies are proposed to improve student engagement in an online graduate program from multiple aspects: pedagogical, organizational, and socio-structural aspects. First, pedagogical causes, rooted in constructivism, stress the need for increased interaction and collaboration. To address a perceived lack of engagement, it is recommended to improve synchronous interactions and employ structured online discussions, fostering more real-time responses. Instructors, acting as facilitators, should utilize more activities to provide effective feedback and guidance. Performative engagement issues can be reduced by diversifying assessment methods, aligning them with objectives, and incorporating varied evaluation techniques. Additionally, strategies

to reduce procrastination involve targeted training for self-regulation and time management skills, supported by timely feedback. Olivia's positive experience with time management training underscores its effectiveness. Overall, improving pedagogical causes in online learning entails refining engagement strategies, enhancing assessment diversity, and providing tailored support for self-regulation and time management.

Second, to address organizational causes in fully online graduate programs, creating a sense of belonging is crucial. Students emphasize the importance of community building, which can be facilitated by incorporating active learning and synchronous meetings. However, a comprehensive institution-wide approach is essential. Current institutional supports often focus on on-campus students, requiring tailored support for online learners, including virtual events, personal support, and technical assistance. Additionally, forming a Professional Online Graduate Program Improvement Communities (POGPICs) is recommended, guided by educational improvement science, to drive evidence-based improvements across programs and institutions and ultimately improve the quality of online graduate programs.

Finally, socio-structural causes also need to be addressed in online graduate programs. It is crucial to recognize the challenges faced by non-traditional students, such as balancing work and other life responsibilities. Despite arguments that there is no significant outcome difference between online and face-to-face instruction, concerns about the undervaluation of online degrees persist among some participants, indicating a societal bias against online degrees. Socio-structural causes may stem from societal forces, including issues like poverty and racism, which are challenging to change at an

individual or organizational level. Policymakers must consider these underlying forces when formulating policies to address the current status quo.

RQ4: What policy implications may be drawn from this study?

Recommendations for policymaking to improve the online graduate education experience include adopting a learner-centered approach to address pedagogical, organizational, and socio-structural problems. The proposal involves policymaking at both provincial and institutional levels within Canada's decentralized education system. At the provincial level, a detailed policy is suggested to guide learner-centered online learning, covering support for students, instructors, and HEIs. Furthermore, the establishment of continuous quality assurance mechanisms is recommended to regularly assess program outcomes, student satisfaction, and industry relevance, thereby ensuring a consistent delivery of high-quality online educational programs.

At the institutional level, policymakers are encouraged to make learner-centered policies that include strategic plans for the development of online learning programs. Such policies should aim for faculty training, curriculum design, and establishing personalized support structures. Additional recommendations involve implementing financial incentives, such as scholarships exclusively for working students pursuing online graduate education. The formation of PICs is also advocated to facilitate continuous improvement in online learning practices.

National-level support is also emphasized, calling for collaborative approaches that extend beyond provincial boundaries. The unprecedented challenges posed by the COVID-19 pandemic highlight the importance of greater collaboration, synergies, and the sharing of expertise across the entire education system. Proposals include implementing a

standardized national credential framework to enhance transparency regarding the competencies and skills gained through online degrees. Additionally, system-wide collaboration is recommended for national or international-level improvements in online learning within HEIs.

7.2 Significance of This Research

This research contributes to the nuanced understanding of student engagement within fully online graduate education in Canada. Employing a qualitative case study design, the study examines the complexity of students' engagement experiences in a fully online graduate program at a Canadian university. The findings enrich the literature on student engagement in graduate online learning in Canada, an under-researched area. With qualitative data added to the current literature, the research provides a vivid and in-depth analysis of this topic. Insights from this study will benefit readers, including students engaging in online learning in higher education, faculty members teaching or supporting online learning programs, institutional leaders administering online programs, and policymakers shaping relevant online learning policies.

Building upon the five-key-element online student engagement framework, this study conducted deductive analysis by providing empirical research data in higher education to strengthen the framework. Through inductive analysis of the collected data, the study developed the online student engagement improvement framework and conducted a systemic analysis guided by educational improvement science (EIS). Using RCA, the research systematically uncovers pedagogical, organizational, and socio-structural factors influencing students' engagement in online graduate learning. As an emerging theory, EIS is firstly used to analyze complex, hard-to-define, and dynamic

student engagement experience. Therefore, this study also provides empirical research data to enrich the application and development of EIS.

The concept of Professional Online Graduate Program Improvement Communities (POGPICs) is proposed to systematically address collaboration and enact discipline-specific improvements in online learning. This approach takes a holistic and systemic view to improve the online graduate program, avoiding fragmented recommendations. The study's findings hold the potential to guide policymaking and instructional strategies within the realm of online learning in Canada. Furthermore, this research serves as a catalyst for future explorations into online engagement, improvement science applications, and the enhancement of graduate education experiences.

7.3 Recommendations for Future Research

This research opens avenues for future investigations that can further enhance our understanding of student engagement in online graduate programs and inform effective strategies for improvement. The problem-oriented approach in this study has revealed tensions in the current online learning format, such as the conflict between the flexibility offered by online learning and the need for more structure to improve student engagement. Additionally, the usefulness of synchronous meetings is questioned when students turn their cameras off, suggesting that more options need to be explored to resolve these issues.

Future researchers can consider using a multiple-case design or mixed-methods study to examine students' engagement in online learning. Exploring the experiences of students across diverse online programs, institutions, and geographic regions could provide a more comprehensive understanding of the factors influencing engagement.

Conducting cross-cultural studies could unveil variations in engagement practices and shed light on culturally specific challenges and solutions.

Furthermore, longitudinal studies tracking students' engagement over an extended period could offer insights into the evolution of engagement patterns and the effectiveness of interventions. Future research on implementing the strategies recommended by this study and the subsequent evaluations of these strategies is expected to enable a full Plan-Do-Study-Act (PDSA) cycle for an organizational setting, as advocated by improvement science. By embarking on these future research directions, scholars can contribute to a more nuanced understanding of student engagement in different online graduate programs and gain evidence for supporting the advancement of blossoming educational improvement science.

7.4 Concluding Thoughts

Our society changes dynamically; change in desirable directions means we need to make improvement happen in online learning. From the first industrial revolution, which utilized water and steam power to mechanize production, to the ongoing fourth industrial revolution, where disruptive technologies enable machines to learn like human beings, education has remained a prominent topic of discussion among researchers. Can artificial intelligence alter the landscape of education? What constitutes the focal point of education today? Will teachers eventually be replaced by machines? However, as an educator, I would like to pose the question: if education is about guiding people from where they are now to where they want to be, we must always consider: how do we improve?

This study attempts to answer such a question. I firmly believe that the essence of life rests upon change; otherwise, we might still inhabit caves like our ancestors. Nevertheless, many individuals and institutions initially resist change, making the pursuit of improvement a challenging endeavor. Regardless of how we approach education, we must bear in mind that the quest for improvement should never cease, as it serves as the impetus for human progress.

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Appendix A: Ethical Approval

Approval Letter 1

Western Research

Date: 30 November 2022

To: Professor Jun Li

Project ID: 121722

Study Title: How may student engagement of online learning be improved: a case study of an online graduate program in Canada

Short Title: How may student engagement of online learning be improved

Application Type: NMREB Initial Application

Review Type: Delegated

Full Board Reporting Date: 02/Dec/2022

Date Approval Issued: 30/Nov/2022 11:49

REB Approval Expiry Date: 30/Nov/2023

Dear Professor Jun Li

The Western University Non-Medical Research Ethics Board (NMREB) has reviewed and approved the WREM application form for the above mentioned study, as of the date noted above. NMREB approval for this study remains valid until the expiry date noted above, conditional to timely submission and acceptance of NMREB Continuing Ethics Review.

This research study is to be conducted by the investigator noted above. **All other required institutional approvals and mandated training must also be obtained prior to the conduct of the study.**

Documents Approved:

Document Name	Document Type	Document Date	Document Version
Interview Questions – 220914	Interview Guide	14/Sep/2022	1
Non-participant observation guide – 220914	Non-Participant Observation Guide		
Online questionnaire 221114	Online Survey	14/Nov/2022	1
Email script 221118	Recruitment Materials	18/Nov/2022	1
Email script-observation invitation 221118	Recruitment Materials	18/Nov/2022	1
LOI Consent interview 221118	Verbal Consent/Assent	18/Nov/2022	1
LOI Consent Questionnaire 221118	Implied Consent/Assent	18/Nov/2022	1
LOI Consent observation 221118	Implied Consent/Assent	18/Nov/2022	1

No deviations from, or changes to the protocol should be initiated without prior written approval from the NMREB, except when necessary to eliminate immediate hazard(s) to study participants or when the change(s) involves only administrative or logistical aspects of the trial.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario. Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB. The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

Please do not hesitate to contact us if you have any questions.

Sincerely,

Ms. Zoë Levi, Research Ethics Officer on behalf of Dr. Randal Graham, NMREB Chair

Note: This correspondence includes an electronic signature (validation and approval via an online system that is compliant with all regulations).

Approval Letter 2

Western Research

Date: 10 November 2023

To: Professor Jun Li

Project ID: 121722

Study Title: How may student engagement of online learning be improved: a case study of an online graduate program in Canada

Application Type: Continuing Ethics Review (CER) Form

Review Type: Delegated

Date Approval Issued: 10/Nov/2023 21:06

REB Approval Expiry Date: 30/Nov/2024

Dear Professor Jun Li,

The Western University Non-Medical Research Ethics Board has reviewed this application. This study, including all currently approved documents, has been re-approved until the expiry date noted above.

REB members involved in the research project do not participate in the review, discussion or decision.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario. Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB. The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

Please do not hesitate to contact us if you have any questions.

Electronically signed by:

Mr. Joshua Hatherley, Ethics Coordinator on behalf of Dr. Isha DeCoito, NMREB Chair 10/Nov/2023 21:06

Reason: I am approving this document

Note: This correspondence includes an electronic signature (validation and approval via an online system that is compliant with all regulations).

Appendix B: Recruitment Email

Dear students:

You are invited to participate in a research titled: “How may student engagement of online learning be improved: a case study of an online graduate program in Canada”. The study is conducted under the direction of Dr. Jun Li, Ph.D., and Ying Huang, M.A., from Faculty of Education, Western University.

The aim of this research is to explore student experiences of engagement in an online graduate program, and to provide strategies to improve the students engagement via improvement science.

If you volunteer to participate in the study, you will first fill out a questionnaire, which takes approximately 10-15 minutes. Then, you will be invited to a follow-up interview. The interview will take you approximately 30 minutes, and conducted via Zoom.

Online discussion of this program, including your posts online and the zoom lectures will be observed. Because the investigator will not engage in the online discussion, this observation is a non-participant observation, just like the investigator will be sitting in a brick-and-mortar classroom.

Please be noted that data collected from the questionnaire will be anonymous. Data collected from interviews and observation will not be anonymous, as the nature of these methodologies would not make this possible.

If you participate in the questionnaire, you will be offered the opportunity to enter a random draw to win one of two $30 CAD e-gift cards (Amazon). Also, each interview participant will receive a $20 CAD e-gift card (Amazon). Your

participation is completely voluntary, and all information collected from the questionnaire is anonymous.

Please click the link to start the online questionnaire:

https://uwo.eu.qualtrics.com/jfe/form/SV_6YAqrdiL76RGt5c

If you would like more information on this study, please contact the co-investigator, Ying Huang, at [redacted] or the principal investigator, Dr. Jun Li, at [redacted].

Thank you for taking the time to read this email.

Best Regards,

Ying Huang, Co-Investigator, PhD Candidate

Faculty of Education, Western University

[redacted]

[redacted]

Dr. Jun Li, Principal Investigator

Faculty of Education, Western University

[redacted]

[redacted]

[redacted]

Appendix C: Letter of Information and Consent Form

Letter of Information and Consent Form (Online Questionnaire)

Project Title: How may student engagement of online learning be improved: a case study of an online graduate program in Canada

Principal Investigator:

Jun Li, Ph.D.

Professor

Faculty of Education, Western University

[redacted]

[redacted]

Co-Investigator:

Ying Huang, Ph.D. Candidate

Faculty of Education, Western University

[redacted]

[redacted]

1. Invitation to Participate

You are invited to participate in this online research study being conducted by Dr. Jun Li and Ying Huang, from Faculty of Education, Western University. This research is regarding how graduate student engagement of online learning may be improved. You are invited to participate in this research because you are a student of FOMP at Riverside University.

2. Purpose of the Letter

The purpose of this letter is to provide you with information required for you to make an informed decision regarding participation in this research.

3. Purpose of this Study

The aim of this research is to explore student experiences of engagement in an online graduate program, and to provide strategies to improve the student engagement via improvement science.

4. Inclusion Criteria

Participants must be current FOMP students at Riverside University.

5. Exclusion Criteria

Participants will be excluded if they do not meet the criteria listed above.

6. Study Procedures

If you agree to participate in the study, you will first complete an online survey, which takes approximately 10-15 minutes. The survey will be conducted online using the Qualtrics survey software. You will be asked at the end of the questionnaire if you wish to participate in a follow-up interview. You will be asked to leave your email address for entering the random prize draw. Online discussion of this program, including your posts

online and the zoom lectures will be observed. Because the investigator will not engage in the online discussion, this observation is a non-participant observation, just like the investigator will be sitting in a brick-and-mortar classroom. You are free to withdraw from the study at any time by exiting your browser prior to the end of the survey. Due to the anonymous nature of the questionnaire, you will not be able to withdraw the information you submit in the online survey. For interview participants, you can request to withdraw your data at anytime before the data analysis is completed.

7. Possible Risks and Harms

While there are no anticipated risks associated with this study, should you feel discomfort in answering any of the questions, you are free to withdraw from the study at any time by exiting your browser, and you are able to skip any questions if you do not wish to answer them. If you have any other questions regarding the study, please contact the principal investigator or the co-investigators for more information.

8. Possible Benefits

There are no intended direct benefits to participants, though the knowledge learned will contribute to the improvement of student engagement in online learning.

9. Compensation

If you participate in the questionnaire, you will be entered into a draw to win one of two $30.00 CAD e-gift cards (Amazon). The draw will take place when the data collection has ended. You will receive the e-gift card via email. For any draw, the odds of winning a prize depend on how many people are entered in the draw. As we do not know how many people will participate in this study and related draw, we cannot predict what will be the odds of winning a prize.

10. Voluntary Participation

Your participation in this study is voluntary. You may decide not to be in this study. Even if you consent to participate you have the right to not answer individual questions or to withdraw from the study at any time. If you choose not to participate or to leave the study at any time it will have no effect on you/your academic standing. You do not waive any legal right by consenting to this study.

11. Confidentiality

Your survey responses will be collected through a secure online survey platform called Qualtrics. Qualtrics uses encryption technology and restricted access authorizations to protect all data collected. In addition, Western's Qualtrics server is in Ireland. The data will then be exported from Qualtrics and securely stored on Western University's server. Qualtrics's privacy statement can be found at the following link: https://www.qualtrics.com/privacy-statement/.

Study data will be de-identified in the study database. Any identifiable study information (e.g., email addresses, gender, age, etc.) will be stored on an institutional drive and will be accessed remotely (via Western's Microsoft Teams) by the investigators. All data collected will remain confidential and accessible only to the investigators of this study. While we do our best to protect your information, there is no guarantee that we will be able to do so. We are collecting some sensitive information. For example, email addresses will be requested for those interested in entering a draw or an interview. We are also collecting demographic information (e.g., age, gender, major of study, etc.). These identifiers will be collected for the purposes of descriptive statistics and understanding the population/cohort that is being studied. After a minimum of 7 years, all data will be

destroyed. It is important to note that a record of your participation must remain with the study, and as such, the researchers may not be able to destroy your signed letter of information and consent. By participating in this research, you agree that the results may be used for research purposes, including publication in research journals. No individual information will be reported.

Representatives of Western University's Non-Medical Research Ethics Board may require access to your study-related records to monitor the conduct of the research. Your data will not be linked to you or your email in any way. All data will remain confidential and accessible only to the investigators of this study.

12. Contacts for Further Information

If you require any further information regarding this research project or your participation in the study you may contact the principal investigator, Dr. Jun Li, at [redacted], or the co-investigator Ying Huang, at [redacted]. If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Human Research Ethics [redacted], email: [redacted].

13. Publication

If the results of the study are published, only anonymous data will be used. If you would like to receive a copy of any potential study results, please contact Ying Huang at [redacted].

14. Consent

I have read the Letter of Information that explains the nature of the study, and I agree to participate. All questions have been answered to my satisfaction.

You indicate your consent to this study by selecting “Yes, I consent to participate” at the bottom of the screen, which accesses the survey.

Letter of Information and Consent Form (Interview)

Project Title: How may student engagement of online learning be improved: a case study of an online graduate program in Canada

Principal Investigator:

Jun Li, Ph.D.

Professor

Faculty of Education, Western University

[redacted]

[redacted]

Co-Investigator:

Ying Huang, Ph.D. Candidate

Faculty of Education, Western University

[redacted]

[redacted]

1. Invitation to Participate

You are invited to participate in this online research study being conducted by Dr. Jun Li and Ying Huang, from Faculty of Education, Western University. This research is

regarding how graduate student engagement of online learning may be improved. You are invited to participate in this research because you are a student of FOMP at Riverside University.

2. Purpose of the Letter

The purpose of this letter is to provide you with information required for you to make an informed decision regarding participation in this research.

3. Purpose of this Study

The aim of this research is to explore student experiences of engagement in an online graduate program, and to provide strategies to improve the student engagement via improvement science.

4. Inclusion Criteria

Participants must be current FOMP students at Riverside University.

5. Exclusion Criteria

Participants will be excluded if they do not meet the criteria listed above.

6. Study Procedures

If you agree to participate in the study, you will need to complete this interview. The interview will take you approximately 30 minutes, and will be conducted via Zoom. You may skip any question that you do not want to answer. Online discussion of this program, including your posts online and the zoom lectures will be observed. Because the investigator will not engage in the online discussion, this observation is a non-participant observation, just like the investigator will be sitting in a brick-and-mortar classroom.

7. Possible Risks and Harms

While there are no anticipated risks associated with this study, should you feel discomfort

in answering any of the questions, you are free to withdraw from the study at any time by exiting your browser, and you are able to skip any questions if you do not wish to answer them. If you have any other questions regarding the study, please contact the principal investigator or the co-investigators for more information.

8. Possible Benefits

There are no intended direct benefits to participants, though the knowledge learned will contribute to the improvement of student engagement in online learning.

9. Compensation

As compensation for participating the interview, each interview participant will receive a $20 CAD e-gift card (Amazon). The e-gift card will be emailed to you when the data collection has ended.

10. Voluntary Participation

Your participation in this study is voluntary. You may decide not to be in this study. Even if you consent to participate you have the right to not answer individual questions or to withdraw from the study at any time. If you choose not to participate or to leave the study at any time it will have no effect on you/your academic standing. You do not waive any legal right by consenting to this study. You may request to withdraw your information up until the point of data analysis. It is important to note that a record of your participation must remain with the study, and as such, the researchers may not be able to destroy your signed letter of information and consent, or your name on the master list. However, any data may be withdrawn upon your request.

11. Confidentiality

The researcher will keep all personal information about you in a secure and confidential

location for 7 years. A master list linking your study number/pseudonym with your name and your email address will be kept by the researcher in a secure locked place, separate from your study file. All data collected will remain confidential and accessible only to the investigators of this study. Your name will not be used in any reports, publications, or presentations that may come from this study. The interview will be conducted via Western Zoom. Zoom collects both audio and video recordings. Video recorded zoom meetings will be saved to a local file on the investigator's password-protected laptop in Canada. Zoom's privacy statement can be found at the following link: https://explore.zoom.us/en/privacy/

While we do our best to protect your information, there is no guarantee that we will be able to do so, because nothing over the internet is ever 100% safe. Like online shopping, teleconferencing/videoconferencing technology has some privacy and security risks. It is possible that information could be intercepted by unauthorized people (hacked) or otherwise shared by accident. This risk cannot be completely eliminated. We want to make you aware of this. We are collecting some sensitive information. For example, your full name will be requested for consent purpose, and your email addresses will be requested for scheduling an interview and sending you the e-gift card. We are also collecting demographic information (e.g., age, gender, major of study, etc.). These identifiers will be collected for the purposes of descriptive statistics and understanding the population/cohort that is being studied. Consent is requested for the use of direct quote from your interview. After a minimum of 7 years, all data will be destroyed, including the master list of study participants. By participating in this research, you agree

that the results may be used for research purposes, including publication in research journals. No individual information will be reported.

Representatives of Western University's Non-Medical Research Ethics Board may require access to your study-related records to monitor the conduct of the research.

Your data will not be linked to you or your email in any way. All data will remain confidential and accessible only to the investigators of this study.

12. Contacts for Further Information

If you require any further information regarding this research project or your participation in the study you may contact the principal investigator, Dr. Jun Li, at [redacted], or the co-investigator Ying Huang, at [redacted]. If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Human Research Ethics [redacted], email: [redacted].

13. Publication

If the results of the study are published, only anonymous data will be used. If you would like to receive a copy of any potential study results, please contact Ying Huang at [redacted].

14. Consent

I have read the Letter of Information that explains the nature of the study, and I agree to participate. All questions have been answered to my satisfaction.

Please select the below options:

1. I agree to participate in the interview.

YES NO

2. I agree to be video-recorded in this research.

YES NO

3. I agree to be audio-recorded in this research.

YES NO

3. I consent to the use of unidentified quotes obtained during the study in the dissemination of this research.

YES NO

Documentation of Verbal Consent

Project Title: How may student engagement of online learning be improved: a case study of an online graduate program in Canada

Do you have any questions?

☐Yes

☐No

Do you agree to take part in this study?

☐Yes

☐No

We would like to provide you with a copy of what we've talked about today, which will include your name and the study title and the other information you have provided via Zoom. Can we send this to you by email?

☐Yes

☐No

_____ _____

Name of Participant Date of Participant Verbal Consent

_____ _____

Date of SDM Verbal Consent

Name of Substitute Decision Maker (SDM)

_____	_____	_____
Name of person obtaining consent	Signature of person obtaining consent	Date

Appendix D: Online Survey

1. What is your age category?

a) Under 20 b) 20-24 c) 25-29 d) 30-34 e) 35-39 f) 40 or over

2. Gender:

a) Female b) Male c) Other, please specify:_____

3. Are you currently employed?

a) Yes, full-time employed b) Yes, part-time employed c) Not employed

4. What is (are) your previous degree(s)?

a) B. A b) B. Sc c) B. HSc d) B. Com e) M. A f) M. Sc g) M. Ed. H) Ph. D I) Other, please specify:_____

5. How many previous online courses have you taken?

a) 1 b) 2-3 c) 4 or more d) NA

6. Do you have internet access at home?

a) Yes b) No

7. What is your field of study in FOMP?

a) Applied Behaviour Analysis

b) Curriculum and Pedagogy

c) Early Childhood Education

d) Educational Leadership

e) Leadership in Aboriginal Education

f) Equity, Diversity, and Social Justice

g) International Education

h) Mathematics Education

i) Teaching Students with Exceptionalities

j) Other, please specify: _____

8. What is your subject specialty, that is, what was your undergraduate major?

a) Early Childhood Education

b) Art

c) Social Studies

d) English

e) Family Studies

f) Music

g) Science

h) History

i) French and/or French Immersion

j) Physical & Health Education

k) Geography

l) Mathematics

m) Other, please specify:_____

9. Why you choose to learn the graduate program fully online? Select as many as appropriate:

a) Transportation (e.g., do not have to commute)

b) I can take care of family needs/members at home while completing the course

c) I can do the course from any location

d) I can study for the course according to my own schedule

e) Since I do not like speaking in class, I get to speak online

f) I can still work while taking online program

g) I wish to be familiar with online learning approach which I might use to teach in the future

h) Because of COVID-19 pandemic

i) Other: please specify:_____

10. How often have you worked with other students on schoolwork in your online learning experience?

a) Very often b) Often c) Sometimes d) Never

11. How much time do you spend learning online on average each day?

a) Less than 1 hour b) 1-2 hours c) 2-3 hours d) More than 3 hours

12. How often have you used social media (e.g., Facebook, Twitter, Instagram etc.) to communicate with your classmates?

a) Very often b) Often c) Sometimes d) Never

13. How often have you had communications with other students on non-academic matters? (e.g., personal backgrounds, work, daily life, politics, etc.)

a) Very often b) Often c) Sometimes d) Never

14. How often have you participated in online class discussions?

a) Very often b) Often c) Sometimes d) Never

15. What are some of the challenges of online learning to you? Select as many as appropriate:

a) My level of computer skill is limited

b) Technical problems can happen

c) Lack of face-to-face interaction

d) Lack of support from faculty

e) I am not motivated to engage in online learning

f) Procrastination happens more often than face to face learning

g) I have limited time and energy to study because of my job or family responsibility

h) I am concerned that my credential achieved via online learning will have lower recognition by the job market

i) Other: please specify:_____

16. What are the useful approaches can be used to improve your online learning experience? Select as many as appropriate:

a) My faculty can offer me more frequent support

b) Instructors use more interactive teaching method (e.g., use more visually rich learning materials)

c) Collaborative and cooperative learning with peers from similar backgrounds

d) Real-time communication/feedback can help to motivate my learning

e) Other: please specify:_____

Please use this 5-Point scale to describe the answers as follows:

1—Strongly Agree

2—Agree

3—Undecided

4—Disagree

5—Strongly Disagree

17. I have good computer skills.

1 2 3 4 5

18. I need to upgrade my credential as soon as possible for career development

1 2 3 4 5

19. I prefer online learning than face-to-face learning experience.

1 2 3 4 5

20. I would like to recommend this program to other people.

1 2 3 4 5

21. I have clear goal of learning before I enroll in the online program.

1 2 3 4 5

22. I feel the online learning experience lack of social presence.

1 2 3 4 5

23. I have good self-discipline in learning.

1 2 3 4 5

24. I feel online learning experience helped me think critically.

1 2 3 4 5

25. I prefer studying with people who have similar backgrounds or career with me.

1 2 3 4 5

26. I have more procrastination issues in online learning.

1 2 3 4 5

27. I feel more engaged when I work with other students.

1 2 3 4 5

28. I gained analytical skills during my online learning experience.

1 2 3 4 5

29. I feel I have no sense of belonging in online learning.

1 2 3 4 5

30. Support from my peer classmates can make me feel motivated in online learning.

1 2 3 4 5

31. Community building will help to improve my engagement in online learning.

1 2 3 4 5

32. I would like to participate in a follow-up interview.

a) Yes (if yes, please provide your contact email address) b) No

Appendix E: Interview Questions

1. Is this your first year or second year of FOMP program?
2. Are you currently employed?
3. Why you select this fully online program? Do you have clear goal after you finish this program?
4. What are the benefits and challenges of this fully online program for you?
5. How will you define engagement in your online learning experience?
6. Could you please give me some examples of how you engage in your online learning, for example a typical day for you?
7. What are the main motivations in your online learning?
8. Do you have problems of being not engaged while learning fully online? Why do you think it happened to you?
9. What kind of resources have you used while learning online? What else resources do you wish to have?
10. Do you feel a sense of belonging to the program in your learning?
11. How is your relationship with peer students? Do you communicate well?
12. Do you benefit more from group study/group discussions or from individual learning? Why?
13. If you can learn in a community that includes members who have common goals and have good communications, do you think you wish to participate more often in this community?
14. How much has the online learning program helped you in critical thinking and/or analytical skills?

15. How much has your online learning experience helped you to solve complex real-world problems?
16. Do you think the faculty members are helpful and supportive in your online learning experience?
17. Do you feel that you are supported from the institution? Could you please give some examples?
18. Are you satisfied with this learning experience? Will you choose this online learning program if you could start all over again?
19. Do you think this online learning experience meet your expectations? Why?
20. Do you have concerns about the degree achieved fully online will have low market recognition? Why?
21. What kind of suggestions you can offer to the online program in order to improve your engagement?

Curriculum Vitae

Ying Alyssa Huang

Education:

Doctor of Philosophy 2019-2024
Critical Policy, Equity, and Leadership Studies (CPELS)
Faculty of Education
Western University, London, Ontario, Canada

Master of Education in Educational Studies 2002-2004
Faculty of Education
Western University, London, Ontario, Canada

Bachelor of Education in Educational Technology 1996-2000
Department of Education
Nanjing Normal University, Nanjing, Jiangsu, China

Professional Experience:

Research Assistant at Faculty of Education 2019-2024
Western University, London, Ontario, Canada

International Education Director 2018-2019
Beijing Megaway Consulting Co.
Beijing, China

Deputy Chief of Canadian Division 2005-2018
China Scholarship Council
Dongfang International Center for Educational Exchange
Beijing, China

Assistant Engineer 2000-2002
Network Center
Nanjing University of Technology, Nanjing, Jiangsu, China