

Post-Secondary Student Belonging in a Virtual Learning Environment During COVID-19

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Article abstract

Psychological and social adjustment and academic success in post-secondary institutions are supported by a sense of belonging to a social group and having meaningful relationships with other students, staff, and faculty members. This exploratory study used a qualitative approach to investigate post-secondary students' sense of belonging in the virtual learning environment during the COVID-19 pandemic. The study was conducted at a small Western Canadian university. Semi-structured interviews were conducted with 20 participants who were undergraduate students, from various faculties, and in different years in their programs. Findings were clustered into three themes: (1) student expectations of university, (2) impact of virtual learning environments on students, and (3) the role of educators. Recommendations are included to enhance support and belonging for post-secondary students in virtual learning environments.

POST-SECONDARY STUDENT BELONGING IN A VIRTUAL LEARNING ENVIRONMENT DURING COVID-19

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Abstract

Psychological and social adjustment and academic success in post-secondary institutions are supported by a sense of belonging to a social group and having meaningful relationships with other students, staff, and faculty members. This exploratory study used a qualitative approach to investigate post-secondary students' sense of belonging in the virtual learning environment during the COVID-19 pandemic. The study was conducted at a small Western Canadian university. Semi-structured interviews were conducted with 20 participants who were undergraduate students, from various faculties, and in different years in their programs. Findings were clustered into three themes: (1) student expectations of university, (2) impact of virtual learning environments on students, and (3) the role of educators. Recommendations are included to enhance support and belonging for post-secondary students in virtual learning environments.

Keywords: post-secondary, sense of belonging, virtual learning, COVID-19

Résumé

L'adaptation psychologique et sociale et la réussite dans les établissements postsecondaires sont soutenues par un sentiment d'appartenance à un groupe social et par des relations significatives avec les autres étudiants, le personnel et les membres du corps professoral. Cette étude exploratoire utilise une approche qualitative pour enquêter sur le sentiment d'appartenance à l'environnement d'apprentissage virtuel des étudiants de niveau postsecondaire pendant la pandémie de COVID-19. L'étude a été menée dans une petite université de l'Ouest canadien. Une entrevue semi-dirigée a été menée auprès de vingt étudiants de premier cycle, de diverses facultés et années d'études. Les résultats ont été regroupés sous trois thématiques : (1) les attentes des étudiants vis-à-vis de l'université; (2) l'impact des environnements d'apprentissage virtuels sur les étudiants; et (3) le rôle des enseignants. Des recommandations sont proposées afin d'améliorer le soutien et l'appartenance des étudiants de niveau postsecondaire dans les environnements d'apprentissage virtuels.

Mots-clés : postsecondaire, sentiment d'appartenance, apprentissage virtuel, COVID-19

Introduction

A sense of belonging and connectedness, an important aspect of the post-secondary student experience (Moller et al., 2020), is developed through relationships with

different individuals and groups (Jorgenson et al., 2018). Ideally, school provides students opportunities to interact and form relationships with peers, for example in the classroom or clubs (Penner et al., 2021). This sense of belonging, which develops through these relational networks, can

support students with psychological adjustment during this transitional period in their lives (Gummadam et al., 2016). Post-secondary students often find university a time of transition and adjustment, which was made more difficult by the COVID-19 pandemic. The public health orders introduced during the pandemic changed how students interacted with one another, their educators, and their institutions. The pandemic provided a unique opportunity to explore belonging, virtual learning, and the student experience in post-secondary education. The researchers posit that during COVID-19 and the subsequent restrictions, students had more difficulty developing a sense of belonging to their post-secondary institution. This research aimed to explore the sense of belonging in a small-sized, rural setting in Western Canada during the global pandemic. The objectives of this study were to: (1) explore undergraduate students' sense of belonging within the online university environment, and (2) explore strategies to enhance belonging in virtual learning. Semi-structured individual interviews were considered the most appropriate data collection method, given the health restriction orders and the limited time students had to participate in research at that time. Findings will inform researchers on how post-secondary students in smaller-sized institutions view belonging and potential strategies geared to similar-sized institutions during a global pandemic.

Literature Review

Belonging in Post-Secondary Education

Belonging, described as acceptance and inclusion by an individual's peers (Thoits, 2011), is integral to social and institutional connectedness (Jorgenson et al., 2018). Strayhorn (2012) described a sense of belonging as the:

perceived social support on campus, a feeling or sensation of connectedness, the experience of mattering or feeling cared about, accepted, respected, valued by, and important to the group (for example campus community) or others on campus (for example faculty, peers). (p. 3)

Bettencourt (2021) noted that a sense of belonging includes multiple factors such as "value, respect, [and] support" (p. 765) and without it, students are at risk of "alienation, marginalization, and isolation on campus" (p. 765). A sense of belonging is developed when an individual feels like they "fit in" and have positive relationships and connec-

tions to others, the learning environment, and their topic of study (Meehan & Howells, 2019). University students form a sense of connection through relationships with friends, peers, instructors, and staff on campus (Jorgenson et al., 2018). Ahn and Davis (2020) concluded that a "students' sense of belonging to university is multidimensional" (p. 631) and described the following four domains: social engagement (the most important consideration), academic engagement, surroundings (described as geographic location, environment, living and cultural milieu), and personal space (described as life satisfaction, self-esteem, and identity). These dimensions may differ significantly between individuals and influence their post-secondary experience and success.

Students benefit from a sense of belonging to an institution for a variety of reasons. Belonging appears to play a protective function related to mental health issues, which are more salient for post-secondary students (de Moissac et al., 2019; Moeller et al., 2020). A welcoming social environment and a sense of community may play protective roles and assist students in coping with feelings such as stress (Benson & Whitson, 2021), as well as depression and anxiety (Gopalan et al., 2022). Furthermore, greater social support has been linked to better psychological health among post-secondary students throughout the COVID-19 pandemic (Haliwa et al., 2021). Students who feel like they belong in the university setting are more likely to have greater motivation, persistence, and achievement in their studies (Franco & Kim, 2018; Gopalan & Brady, 2019) which benefits the student and the institution. Post-secondary institutions should prioritize improving a sense of belonging to assist students in forming meaningful relationships (Maunder, 2018), to promote enjoyment of post-secondary experience (Pedler et al., 2022), to support positive mental health (Backhaus et al., 2021; McQuirk & Fraser, 2021), and to enhance academic behaviours that lead to academic success (Pedler et al., 2022).

Impact of COVID-19 on a Sense of Belonging

The pandemic led to abrupt changes in education systems. By spring 2020, most post-secondary institutions in North America required students to transition to distance education because of worldwide public health orders (Day et al., 2020). These directives forced educators to teach using virtual platforms (Dhawan, 2020; Oyedotun, 2020) and dis-

tance education (Al Lily et al., 2020). Learning from home became difficult for some students. According to Almendingen et al. (2021), the main concerns for students included the lack of social interaction; technological issues at home, such as lack of data/bandwidth for the internet; and motivation. Müller et al. (2021) identified that students were impacted by the stress of the situation, less in-person tutoring, and the abrupt change to online teaching. Additionally, many educators expressed that moving to the online platform became a barrier to connecting, engaging, supporting, and creating a positive student environment (Müller et al., 2021). With a stay-at-home order in place, students' school life was impacted, along with their work and home lives.

Student well-being and a sense of belonging to an institution may support academic success. However, a virtual learning environment may require additional efforts and strategies to build connections between and among students. There may be a need to deepen the understanding of students' sense of belonging in virtual learning environments. This article provides examples of strategies for educators that focus on developing and enhancing resources to facilitate connections and support students' sense of belonging in post-secondary institutions.

Methodology

Design and Procedure

This exploratory study used a qualitative approach to examine students' self-reported experience of belonging as it pertained to virtual learning during the first year of the pandemic. While the research design was exploratory in nature, it was also impacted by the restrictions imposed by COVID-19, as mentioned above. For example, before the pandemic we might have visited classrooms and hung posters for recruitment; in this case, after receiving institutional ethics approval (#22655), participants were recruited by email, with a digital invitation poster to participate in the research sent to all students through the Dean of Students Office. Additionally, faculty were asked to display the poster on their online class forums. Students were directed to contact the research assistant (RA) if they were interested in participating in the project. A fillable form was used to provide informed consent, and all potential participants read and returned this document to the RA before completing the study.

The primary investigator (PI) and most of the co-researchers are faculty that teach at the university where

the research took place. As power dynamics exist between students and faculty (Symonds, 2020), all students were interviewed by the RA. A semi-structured interview guide was developed by the research team, and questions focused on the students' expectations of the university experience and whether these expectations were impacted by the pandemic, students' feelings of belonging, the effect of belonging on personal well-being, and the supports and resources that could improve students' sense of belonging in the university. The RA was trained in semi-structured interview methods and provided guidance throughout the process; probes were discussed prior to the first interview, and one interview was also conducted with supervision. To maintain public health orders, all interviews were conducted virtually using a secure online platform and audio-recorded. Although this was a decision made due to pandemic restrictions, virtual interviews are an efficient way of conducting research that has proven effective in many settings (Archibald et al., 2019). The audio-recorded interviews lasted approximately 30 to 45 minutes. Each student received a \$20 honorarium e-gift card for participating in the study. Additionally, the informed consent form provided details of mental health supports and resources in the university and the community. All semi-structured interviews were transcribed by a RA who was provided training in transcription. Most students chose their own pseudonyms. Pseudonyms were used to maintain confidentiality and protect the students' privacy (Leedy & Ormrod, 2016) and ensured that the identities of students were not known to the research team members. However, it must be noted that gender was not a variable in the analysis, and so conclusions cannot be drawn based on the gendered nature of pseudonyms chosen by participants, except where participants noted it as impacting their marginalization.

Participants

In total, 20 undergraduate students from across the university participated in this study. The demographics of the students are identified in Table 1. Most participants were domestic students ($n = 17$), though three indicated they were international students. All students were between the ages of 18 to 37 years, with the mean age of participants being 23.1 years. Participants ($n = 11$) identified as marginalized by disability (invisible), physical ability, gender, sexuality, and/or race. The following table includes the age range, whether they were a domestic or international student, and their pseudonym. Of the participants, 40% indicated that they were first-year students.

Table 1*Participant Demographics and Pseudonyms*

Age Ranges (years)	First-Year		2nd, 3rd, or 4th Year	
	Student Status	Pseudonyms	Student Status	Pseudonyms
18–25	Domestic	Jade, Nate, Daniella, Patience	Domestic	Annakay, Grace, Leanna, Levy, Macky, Penny, Rochelle, Sylvie
	International	Munroe	International	Dee, Shelly
26–37	Domestic	Max, Tim, Yani	Domestic	Beatrice, Rosie

Analysis

Qualitative inductive analysis was chosen to explore themes emerging from interview transcripts. The research team was provided with the anonymized transcripts labelled by pseudonym, with all identifying characteristics removed. Initial coding was completed by individual research team members (Saldaña, 2021). Initial codes were then discussed amongst the entire team, and a codebook was developed. The multi-disciplinary research team, including one member external to the university, worked collaboratively to identify the overarching common themes. After a final codebook was created, the PI reviewed all the interviews to ensure that the coding was consistent. The common themes identified through the process provide essential information about student belonging during the pandemic, indicating ways post-secondary educators and administrators can support students.

Findings

The inductive analysis revealed participants' belonging was dependent on several factors. These main themes were identified by the researchers from the data provided by participants as: students' expectations of university, the impact of a virtual learning environment on students, and the role of educators. The participants' own words are used to describe their experiences.

Student Expectations of University

Expectations of the university experience varied, as some participants indicated they came to university solely to

learn, while others anticipated building new connections and friendships. For example, Nate was not focused on building new relationships with others and reported, "I wasn't really focused on people; I was just focusing on university; focusing on me." Similarly, Shelly said:

I really came to university just to learn. I didn't care about making friends and stuff like that... So any friends that I acquired being here, I was just like OK yeah, whatever, but my existence is study, go work, go home, do it again, you know?

Nate and Shelly were focused on learning, rather than connecting, when they entered university, therefore their expectations were not impacted by the transition to the virtual learning environment. In contrast, some participants reported that they thought they would meet new people, make new friends, and socialize more at university. Grace stated, "I expected to meet lots of people in classes, and I did." Dee expressed, "I thought it was going to be like in the movies, where everyone is like, I don't know, talking to each other." Patience, a first-year student, anticipated making new friendships within the university setting: "I was expecting to make closer connections...I definitely expected there to be more relationships with classmates."

There were disparate expectations regarding connections and relationships that may develop at university, and some participant experiences were impacted by the shift to the virtual learning environment.

The Impact of Virtual Learning Environments on Students

As a result of the pandemic, all participants shifted to virtual learning environments. Many of the participants indicated this had a negative impact on the way they felt they belonged at university and as part of a student group. Participants described having difficulty making connections with other students. Annakay stated, "It's much easier to make connections when you're in person with people." Some participants described the lack of connectedness when participating in classes online. As Leanna stated, "It's much harder to connect to their classmates when you're online so you're not going to class with them or talking to them before class starts or anything like that." Max described the lack of belonging as "dehumanizing." Tim found it difficult to communicate virtually due to interruptions that occurred because of connectivity issues, such as time lag. Participants reported different issues that created difficulty connecting with peers and educators within the virtual classroom setting.

Furthermore, trying to connect with others was challenging, as classes and communication were, as Rosie explained, "through a computer, which isn't great." Munroe, an international student, stated "It's not like meeting someone one on one so I get to talk better and understand tests. Chatting online is not like chatting in person." Munroe expressed that in-person discussion led to improved understanding of course content and concepts.

Participants commented on the awkwardness of online communication and the negative impact of engagement with each other. Macky stated that it was "definitely weird to reach out to people in the [online] lectures to try and make friends." Sylvie found it difficult to find peers to study with and reported feeling "weird" having to track people down on social media in order to make the connection. Students reported being less likely to see their peers on video. They described how the lack of physical presence and ability to see and interpret visual cues and non-verbal communication impeded building relationships with classmates. For instance, Daniella stated:

I'm talking to black boxes. No one wants to turn their cameras on. Sometimes I will turn my own on, and the other five people in the room don't turn theirs on. I think the pandemic definitely made it harder, especially because you see the names of the participants; you see that there are some people in the same class as you. But because you are not sharing that face to face, there's not

that reaching out; there's not that arm reaching out like, "Hey, I saw you in that class, so let's maybe talk to each other and work through problems together or talk after exams." There's not that. Because no one wants to extend the arm and actually start that connection.

Non-verbal body language contributed to communication and relationship-building. The virtual learning environment limited opportunities for observing and interpreting visual cues, which negatively impacted learning and belonging.

Several participants indicated that group chats and break-out rooms were helpful tools to support learning and connecting with others. As Patience described, "One class has this massive group chat. So, it's nice because we can bounce ideas off one another. I've been able to make those connections with a handful of people." Yani explained that going from a larger class of 30 to a group of four people in a break-out room helped them to connect with others. Beatrice described break-out rooms as a place where

Everybody is a lot more eager to talk, 'cause we don't get to see a lot of people. So basically, we get put into break-out rooms and oftentimes it's like we're talking, and talking, and I'm like, this is the most talking I've done with people, pretty much, ever.... I turn my camera on immediately, I turn my mic on immediately, and I ask people questions. I'm like, "Oh, hey! How is everybody doing?"

Both group chat and break-out rooms were viewed positively and helped participants to connect with others.

In addition to engaged discussion through use of tools like break-out rooms, students appreciated a relational approach that facilitated positive relationships between peers. For example, Rosie reported how a positive relationship with peers and educators influenced their mood, level of involvement, motivation and participation, and the ability to connect with other students:

I'm more excited to be in that class and I'm more willing to get on my computer in the morning and comb my hair and be a part of it. When I don't have those close connections, even if it's just with the prof or with a couple of classmates, then it makes it less likely that I will be as willing to log on and actively participate. It's much easier to participate when you at least have a couple of connections in the classroom.

Jade reported some of the consequences experienced due to a lack of connection at school:

I was thinking of taking second semester off just because I didn't have that connection, so until then, I felt very impacted mentally...I wanted to stop school at that point, which wasn't good at all. And I have always been a strong academic student, and my grades were just dropping, and it wasn't good at all...being at home. I felt like I sleep a lot too. I just feel drained all the time, like not having the human connection. It's just communicating with my parents; I feel really drained at the end of the day.

Relationships and feeling connected to others, the role of and identity as students, and the social support usually experienced in the classroom setting changed due to the shift to virtual learning. The sense of belonging, a protective factor for mental wellness, was negatively impacted by pandemic restrictions.

Leanna expressed, "The more you feel like you belong at the school, the more you will want to go there." Beatrice described their identity as a student as a motivating factor: "Without school and without all that stuff, I would probably not be as mentally well as I am." Not being present on campus influenced some participants as well. Annakay described the impact on academic achievement, saying, "Life is all about relationships, so the more connected you feel, the happier you will be and the more motivated you'll be in your studies."

It is clear that participants were impacted by virtual learning environments in a number of ways. They described differences in how they connected with peers, the impact of speaking to black boxes and not seeing visual cues, the impact on their mental well-being, and concerns for academic success. Others noted that connection was dependent on the educator's engagement, the engagement of the class generally, and the activities presented within the virtual space.

The Role of Educators

Participants noted that educators played an essential role in belonging and described it as feeling welcomed or supported. Students elaborated on the traits that educators showed that either increased or decreased students' feelings of belonging. Grace shared:

Because I have, I guess, no other contact, it's kind of just between the profs and I. So if they respond to my emails politely and fast, I feel supported and welcomed, but if they don't reply or don't reply in a kind way, then I don't, which has happened both times like, both ways.

Annakay stated, "I guess when profs are trying to be not intimidating that's what makes me feel more welcome and supported, sometimes profs kind of scare you at the beginning, and I don't like that." Leanna described the benefit when educators try to "get to know their students then that definitely makes you feel more welcome and part of a group." Levy noted, "Some professors are just better at interacting with students. Some professors kind of come off as, you know, I'm always right, whereas other professors, you feel like you can come and talk to them about anything." Educators whose approach and responses demonstrated kindness, compassion, and a genuine interest in getting to know their students were appreciated and valued by participants. A sense of belonging was fostered through the creation of this more welcoming space.

Overall, most participants described educators as significantly impacting their sense of belonging and their hope for academic success. Daniella described the role of educators as "the most important pawn in this whole pandemic game." Rochelle shared that educators were "more encouraging of getting people in groups," which enabled students to make connections with their peers. Annakay noted that with some educators "[I] feel supported, they were the ones that make jokes and let you know that there's lots of ways to get help and that's really encouraging, and it makes me feel like I can succeed in a class." Educators who were supportive and welcoming positively impacted connections, belonging, and participants' perception of their ability to achieve academically.

In contrast, when educators were perceived as disengaged or non-supportive, students reported a negative impact on belonging and success in their studies. Penny stated:

Last term, it was very frustrating and very hard to reach the professor. And I'm guessing it was due to the whole being online thing and partially because he was lazy to comprehend how to teach online, if that makes sense... he still had the outline from last year, which has nothing to do with this term.

The role of the educator in increasing connection for students in the virtual setting is critical when considering that a sense of belonging had a personal effect on most participants' mental well-being. Daniella described belonging with other students as "the big network of support while you're going to school." Unfortunately, the lack of support and connection Daniella experienced due to virtual learning negatively impacted their mental well-being.

Because you don't have that support of people that understand what you are going through, so you come home, and you want to talk to your significant other, talk to your parents, talk to your dog, and they don't know what you're going through, they don't have the same professors, they don't have the same schedule. I feel like that lack of network and people that understand what you're going through affects my mental well-being because then I take the pressure out on my significant other.... It's just the matter of I'm stressed out, and you're my only escape valve. You only have your household as an escape valve rather than when you are at [school], and when you feel like you belong and you have that network, you have so many other escape valves.

From the participants' perspectives, educators directly impacted the connections that developed in the virtual classroom spaces. A sense of belonging was fostered when the participants felt valued by the educator who demonstrated a welcoming approach and created a positive space for learning. Participants also shared that a sense of belonging resulted in greater mental well-being.

Recommendations from Participants to Increase Belonging

The students provided information about what they felt would increase their belonging to the university during the pandemic. Communication via email was noted as both a positive and a negative. Some students felt that emails were helpful, stating, "I really like that they send out the weekly emails for first-year students" (Patience), and as evidence that people in the academic setting were "continuously reaching out" (Beatrice). Others, like Max, who stated, "I was surprised by the amount of emails," were not as positive. The dissimilar views of participants indicate a need for university settings to provide diverse opportunities and strategies to communicate with students.

A resource that participants agreed was helpful was the online learning platform. Jade commented:

I thought [the online learning platform] was also a super awesome platform because you have the opportunity to contact other students in your classes; even if you didn't have their number, you can text them saying like, oh, I have this issue with this question, can we please go through it together? I thought that that was very cool.

Beatrice recommended the university focus efforts on increasing a sense of belonging among more mature students, specifically 25 years of age and older, as they may be in a different stage of life and can find it challenging to connect with younger students:

I'm going to straight-up look at them and be like, I remember having those issues, and I'm so glad they're over 'cause I do not want to be 18 again. I know so many people who sit there and, ohh, to be young again. And I'm like nooo, nooo I'm happy being 30. So like something that would be aimed at older students because I know they're there. I know there's a bunch of us. It's just actually meeting them.

Participants shared that there were physical spaces at the university where they felt welcomed before the pandemic, such as the library. Restrictions prevented, then limited, access to these spaces. Grace stated, "That has probably been the hardest part for me, 'cause I always sit there with more than one person, and there's no point in going to the library to sit alone." Rosie summarized the general feelings of several participants:

I just mainly miss the library; that was my favourite thing. Before the pandemic, just being able to go and have a home away from home, where you sit and do as you please for the day, was the greatest thing ever.

Leanna advised that, due to the pandemic, "everybody is probably a lot more withdrawn from the university as a whole or as the group.... Everybody is feeling very alone in their studies at this time and even trying to contact other students or other professors... you don't get that in person contact." With email and virtual meetings usually the only options for connection with educators, Leanna recommended more focus on "making sure that everybody feels like they're heard and they're not alone."

Participants also made recommendations regarding teaching and learning strategies that were deemed helpful. Max benefited from "having access to the video, videos of every lecture that I go to, without having to be at the school." Another participant expressed the importance of recording lectures, especially when students had issues with the internet. Additionally, posting lecture material in advance was noted as positive. Overall, it was evident that student belonging at our university was negatively impacted by the restrictions resulting from the COVID-19 pandemic.

Discussion

This research explored undergraduate students' perceived sense of belonging to the university during the pandemic. Many participants indicated that a sense of belonging impacted their mental health and well-being. Factors that influenced a sense of belonging were the expectations they had coming into university, the learning environment (virtual or in-person), and the role of educators. It was apparent that the pandemic added challenges for students, one of them being the sudden shift in learning using online platforms. The pandemic added pressures on universities and forced adaptation, which meant that some students experienced hardships that affected their sense of belonging and mental well-being. From the literature, it is worth noting that sense of belonging is a crucial element for student adjustment and transition to university (Maunder, 2018), as well as student retention and academic achievement (Moeller et al., 2020; Pedler et al., 2022). Thus, these hardships must be understood and addressed, not only in pandemic restrictions, but because they can provide lasting benefit to both students and the institution.

The current study found that participants expressed more difficulty connecting with educators online as opposed to when they were in person. Similar findings have been reported in other studies, where university students have a negative attitude toward online learning and lack connection with their peers and educators (Adnan & Anwar, 2020; Serhan, 2020). Shim and Lee (2020) found that students were dissatisfied with online learning as they experienced poor communication with instructors and had difficulty collaborating effectively with others. In contrast, educators and students reported greater satisfaction in a virtual learning environment when a sense of belonging was intentionally fostered (Thomas et al., 2014), which is important to the current study because "positive social interaction is one of the fundamental requisites for a sense of belonging; as well as for success in college life" (Ahn & Davis, 2020, p. 628).

Clearly, there is no one-size-fits-all model for student virtual learning and belonging. However, emphasizing the usefulness and practicality of the supports offered may lead to greater outcomes. As Rughoobur-Seetah and Hosano (2021) note, "When the learners feel that the system is enhancing their learning, learning activities and performance, hence learning more effectively, they tend to see the e-learning system as useful and they are more likely to use the e-learning system/tool" (p. 422). Although forced into virtual learning environments, some students may now

prefer it; institutions may benefit from enhancing and supporting e-learning in the future. However, connection with students still needs to be considered, along with increased training and tools so that educators can produce online content quickly and effectively (Wieland & Kollias, 2020). Students who prefer a more independent learning style still deserve a high-quality learning experience (Thomas et al., 2014).

Participants valued a physical presence on campus to connect with others. Mulrooney and Kelly (2020) found that staff and students valued being physically present on campus and reported a reduced sense of belonging after moving to online learning. Physical spaces on campuses can nurture or impede a student's sense of belonging (Samura, 2018). Some of our participants noted that the library was a place where they would feel at home before the pandemic. According to Ahn and Davis (2020), the physical spaces on campus, such as the library, would be included in the domain of "surrounding," which contributes to the sense of belonging experienced by students. Restrictions negated the use of this space early in the pandemic, and then limited access and engagement, as students were unable to sit near each other and connect as usual. Post-secondary institutions must be innovative with creating a physical space for students in order to enhance a sense of belonging.

Participants shared that educators had a crucial role in creating a sense of belonging for students (Thomas et al., 2014). The sudden shift to virtual teaching and learning impeded the formation of typical student-educator relationships, which, according to Tice et al. (2021), created a barrier to developing a sense of belonging. Similar to other findings (Nieuwoudt & Pedler, 2021), some participants in this current study reported that educators positively impacted them, whereas others were affected negatively. Some participants found it challenging to form relationships with educators due to the lack of in-person social interactions. The ability to connect with educators was valued; however, opportunities to have informal face-to-face conversations was not an option for students due to pandemic restrictions. Tice et al. (2021) reported that the COVID-19 lockdown increased the social separation between students and their educators. Browning et al. (2021) recommends providing opportunities for social interaction and learning to enhance student belonging. Ensuring opportunities for safe social interaction is helpful for students who want to socialize more with their peers. Engaging students and fostering collaboration by using ice-breakers, low stakes assessments, online group work, and video-conferencing were all found

to increase a sense of belonging (Thomas et al., 2014). It is also helpful for educators to stay online after the lecture to allow students to communicate and form connections (Tice et al., 2021). Sousa (2021) noted the importance of dialogue in teaching and learning and recommended using discussion posts in differing forms (written, audio, or video) to connect and engage students and support interpersonal relationships.

Some participants shared that their mental well-being improved when they felt they belonged in the institution. Belonging is a protective factor for post-secondary students' mental health (Benson & Whitson, 2021; de Moissac et al., 2019; Gopalan et al., 2022; Moeller et al., 2020). Penner et al. (2021) noted that a sense of belonging might be increased among minority and culturally diverse student populations through targeted courses, use of a reflection, and connections with others. By being more intentional in their use of activities, educators teaching virtually can facilitate belonging, engagement, and enhance student interaction and mental well-being.

The findings add to a limited yet growing body of evidence demonstrating the impact of the transition to virtual learning during COVID-19 on students' sense of belonging. Further research would be beneficial. For instance, what are the issues, barriers, resources, and supports required for university students in a virtual learning environment to develop a sense of belonging? What differences are there between international students and domestic students in developing a sense of belonging? What are the factors impacting a sense of belonging for first year students compared to students who have been in university longer?

Limitations

There are several limitations in this study. The restrictions due to COVID-19 may have impeded recruitment, which was completed virtually, rather than in person. Additionally, the diversity of students provided richness to the data collected; however, that same diversity also made it difficult to complete comparisons among the groups. For example, we were not able to compare how belonging is affected by gender, whether there are differences between international and domestic students, or the effect of being in differing years and programs. Future research could consider the impact of these demographics and contexts when looking at belonging and virtual learning.

In addition, our study was conducted in a small region-

al university, where rurality impacts the experiences of our students. For example, in rural areas in our province, where many students live, internet access and infrastructure are not always available or consistent (Nantais et al., 2021). While this is expected to change in the future, it formed a limitation for our current study as it may have impeded some students from participating due to the virtual nature of our data collection methods, and as such, we were not able to fully capture the experiences of students who were attempting virtual learning in places without reliable internet. This is a significant inequity and one worth exploring in future studies.

Conclusion

The findings of this study indicate that participants' sense of belonging was impacted by restrictions due to the COVID-19 pandemic. The data was categorized into three themes: students' expectations of university, the impact of a virtual learning environment on students, and the role of educators. Participants reflected on the virtual learning challenges they experienced and provided suggestions on how faculty and universities can improve belonging in the virtual world. These findings may be used to identify areas for improvement and strategies to enhance and further develop resources and supports within post-secondary institutions. Future areas of research could include identification of student-specific issues related to belonging, such as year of study, international versus domestic students, barriers experienced, and resources and supports required to be successful in a virtual learning environment.

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