Impact of Online Learning on Sense of Belonging Among First Year Clinical Health Students During COVID-19: Student and Academic Perspectives

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Abstract

Background

The need to belong is a fundamental human desire that provides the basis for relationships and community; it provides a sense of security that enables growth and development. This sense of belonging is pivotal to new University students, indeed, without it, students are at greater risk of failing or withdrawing from their studies. Yet developing a sense of belonging within a new cohort is complex and multi-faceted and further complicated by a sudden shift from face-to-face to online learning. Our study explores first year clinical health students' sense of belonging in the context of the rapid transition to online learning because of the COVID-19 pandemic.

Methods

We utilised a current mixed-method approach including a survey incorporating previously validated tools, demographic and open-ended qualitative questions. Data was also gathered from three focus groups: two dedicated student groups and one academic focus group. Qualitative data was subjected to thematic analysis whilst descriptive statistics were used to describe the quantitative data.

Results

179 first year students complete the survey and four students, and five academics were involved in the focus groups. All participants were from clinical health science courses at an Australian university. Our qualitative results indicated a global theme of: Navigating belonging during the COVID-19 crisis: a shared responsibility; with four organising themes describing (1) dimensions of belonging, (2) individual experiences and challenges, (3) reconceptualising teaching and learning, and (4) relationships are central to belonging.

Conclusion

While the rapid transition to online learning did not greatly impact knowledge acquisition of first-year students in this cohort, the lack of sense of belonging highlights the need for further research into development of this essential aspect of learning in the online domain. Although contextualised in the COVID-19 pandemic, it became clear that the findings will remain relevant beyond the current situation, as a student's need to belong will always be present in the face of challenges or change.

Background

When the COVID-19 pandemic occurred in early 2020, universities around the world were forced to adapt their approaches to learning and teaching by rapidly transitioning from face-to-face learning to online deliveries. For many students, especially those in their first year, this unplanned change to an online environment threatened their level of confidence and amplified their sense of loneliness [1]. The inability to foster sense of belonging in the way that is typically achieved face to face may negatively impact students' confidence, expectations and successful transition into university.

Sense of belonging has been defined as "a subjective feeling of value and respect derived from a reciprocal relationship to an external referent that is built on a foundation of shared experiences, beliefs or personal characteristics" [2]. The concept of belonging has recently gained wider recognition within higher education as it has been identified as a key enabler to improving students' transition into university and student retention rates [3, 4]. Belonging is typically developed through regular face-to-face interaction between students and with academics [1, 5, 6]. It develops when values are shared and when students feel validated, significant and not just another 'face in the crowd'[7]. Having a common agenda and shared experiences of hardship further encourages student peer interactions [8] and helps to create social connection [9].

Developing a sense of belonging is crucial during the first year of higher education [5, 6], particularly at a time when changes are occurring to existing relationships with family and friends. Students commencing university are typically functioning as independent adults with financial and time constraints and learning in a new academic environment [6]. Achieving a stronger sense of belonging in the first year is linked to a stronger commitment to the university and higher student retention [10]. Establishing belonging among first year clinical health science students is also integral to the development of motivational attitudes, professional identity, and relationships with future colleagues [10].

Fostering a sense of belonging via online learning was a challenging goal even before COVID-19. Earlier studies published before 2019 examined the impact of online learning on the development of the sense of belonging in higher education [11–15]. Findings suggested that students had difficulties with building a community in online learning environments, resulting in difficulty staying engaged with learning and feelings of isolation [13, 15]. Studies by Lee & Choi [11] and Ziegler et al. [15] also found that online learners had higher rates of attrition compared with face-to-face learners. The lack of ability to engage in meaningful social interactions with other students and academics leading to a reduced sense of belonging, was found to be a key factor in influencing attrition rates [11]. In addition, the work by Parker et al. [12] found development of intrapersonal, interpersonal, adaptability, and stress management skills to be important to the development of a sense of belonging via online

learning. Other studies have provided helpful guidelines and strategies to foster a sense of belonging [12–14]. For example, ice breakers and synchronous tutorials are used to develop a stronger sense of belonging [13]. However, none of these studies focused on the impact of online learning on clinical health science students, who typically learn in a face-to-face environment. Furthermore, COVID-19 may have further challenged students in their ability to foster a sense of belonging as well as staff's ability to facilitate meaningful interactions in a non-traditional teaching environment.

The aim of this study was to explore clinical health students' sense of belonging within the university in their first year of higher education in the context of a rapid transition to online learning because of the COVID-19 pandemic. This study also aimed to explore academics' perspectives around how online learning could be used to foster a sense of belonging across different student populations.

Situated Learning Theory (SLT) was used as a framework to consider the results of our study. SLT has been described as learning that is epitomised by the social context including the spaces outside the classroom; co-construction culture between those with more and those with less developed knowledge; and the often-unintentional learning that occurs through active learner participation [16]. SLT has been widely used within health professional education [17], either as a component of a broader framework [18], to investigate interprofessional learning [19], or to consider specific aspects of teaching and learning such as assessment [20]. Understandably, given its definition, SLT has also been used to consider the role of sense of belonging within the learning context [21]. Moving beyond the best-known aspect of the theory, Communities of Practice (CoP), we considered how the aspects of Legitimate Peripheral Participation (LPP) and identity could be used to conceptualise our findings and took account of Wegner's call to reflect upon purpose, stance, technical terms, and boundaries of the theory [22].

The purpose of SLT considers the social aspect of learning and allowed us to consider the role of learning through the peer group. But importantly, SLT also considers learning within the context of the time and location. Given the temporal context in students' lives (the beginning of both a university experience and roles as a novice health professional) and a broader societal time point (a worldwide pandemic and the forced move of education to an online platform), the roles of the social world and student learning and belonging could not be separated. Equally integral was the concept of identity when using this framework to consider belonging. Lave & Wegner [16] speak of the three interrelated aspects of identity: imagination, engagement, and alignment. All three are necessary for identity formation, and the learning process must provide opportunities for these to occur. When the learning process and indeed the learning environment or space changes, it is useful to consider these three aspects of identity as touchpoints to learners' experiences.

Methods

This study utilised a concurrent mixed-method approach with first year students asked to participate in a survey and focus group. Focus groups with academics were also conducted. The themes from the focus groups were triangulated with the findings from the survey to provide a comprehensive picture about how online learning impacted the overall sense of belonging among first year clinical health science students. This study obtained ethics approval from the Western Sydney University Ethics Committee (H13857).

Online student cross-sectional survey

All students enrolled in first year health-professional specific units across seven different clinical health science courses, at the host university in Sydney, Australia, were eligible to participate in the online survey which was disseminated electronically from May 2020 to October 2020. First year units were specifically chosen for eligibility into the study as they are purposefully designed with introductory content for each of the health-professions. These introductory health-professional units have also only been taught previously via a face-to-face model. In 2020, students only completed three weeks of face-to-face learning before rapidly transitioning to an online learning model for the remaining semester due to COVID-19. These students were invited to participate in the survey via email.

The online survey was a 25-item questionnaire which included open and closed-ended responses (Appendix 1) with questions derived from previously validated tools and some additional responses. Fifteen items were derived from the Sense of Belonging, Imperial College London Scale [3], which had previously adapted items from the Sense of Belonging in Higher Education Scale [6] and Harvard-Panorama Student Perception Survey scale [23] for use by university cohorts. All scaled items were rated on a 5-point Likert scale, with higher scores indicating a greater sense of belonging. Yorke's Scale was developed in response to a lack of a Sense of Belonging Scale for Higher Education, although such a tool did exist for schools [24]. Goodenow's work drew upon both the fields of development and educational psychology and acknowledged the importance of relationships in achieving positive educational outcomes. Indeed, its importance stemmed from the very essence of acceptance and Maslow's hierarchy of needs stating that "social acceptance and the sense of belonging are important throughout life" [24]. As such the initial pool of questionnaire items included aspects such as 'liking' and 'personal acceptance' and 'inclusion'. These themes remained in Yorke's scale which drew upon this earlier work and were incorporated into the current questionnaire.

The remaining 10 questions were inclusive of general demographic information and two open-ended questions; content covered i) age, ii) gender, iii) educational status prior to current enrolment, iv) if they were connected to other students within the course, either through previous acquaintances or social media and v) their perceived impact on their sense of belonging through the online learning experience. Survey drafts

underwent repeated review by members of the research team to ensure readability, face validity and structure and followed the guidance in relation to amendments to the survey [3]. Following refinement, the survey was circulated to students via the online survey platform Qualtrics (Provo, UT, 2020).

Data were entered into IBM SPSS version 26 (Chicago, USA). Nominal and ordinal data were coded for statistical analysis. Descriptive statistics were used to describe the sample and tested for normal distribution. Means and standard deviations reported for parametric data, and median and interquartile range (IQR), for non-parametric data. Categorical data were reported as sample size and percentages. In addition, a chi-square analysis was conducted to evaluate differences in close-ended responses between students who had no prior experience in higher education and students with previous higher education experience. Open survey responses were analysed using a descriptive content approach [25]. Data were coded into meaning units and consolidated into unique categories through a systematic analysis and independently reviewed by three researchers for consistency. Patterns and themes were identified through systematic analysis of the open-ended responses and independently reviewed by three researchers for consistency [26].

Student and Academic Focus groups

To develop further insight to the themes informed by the cross-sectional survey, focus groups were conducted with both academics and students to obtain rich and meaningful data about the impact of online learning/teaching on the overall perceived sense of belonging among students. A purposive sampling strategy was used to recruit for both the student focus group and the academic focus group, with the aim of recruiting 5–6 participants per group. For students, following completion of the online survey, students were asked to indicate their interest to participate in an online focus group via Zoom (Zoom Video Communications Inc, 2016). Upon receiving the expression of interest, a member of the research team contacted the respective students to obtain written informed consent electronically and schedule focus groups. Academics were recruited for focus groups because of their teaching input into the online first-year health-professional specific subjects. All academics, including casual team members, teaching a minimum of 20% of the online content were invited to participate via an email. Interested academics were then approached to obtain electronic written informed consent before a date and time for the online focus group via Zoom was scheduled.

All focus groups were facilitated by independent moderators external to the research team to minimise any likelihood of personal biases during the focus groups. All moderators were experienced in facilitating focus groups and had no direct teaching or supervisory relationships with any of the participants in the focus groups. Topics discussed during the focus groups were guided by a semi-structured interview guide which included questions related to impact and effectiveness of the online mode on student engagement, strategies implemented to create a sense of student belonging and their effectiveness, and the challenges to belonging posed by the online platform.

The focus groups were audio-taped and transcribed verbatim through the engagement of an external transcription company. Field notes were also taken before, during and after the focus group to capture expression of body language from individual participants and any additional points that were provided before or after the focus group. The final transcriptions from the focus groups were thematically analysed by four members of the research team using thematic analysis methods outlined by Attride-Sterling [27].

Four members of the team (BK, NT, RB and NP) analysed the student focus groups and the academic focus groups. Each interview transcript was first read in its entirety to gain an overall sense of the participants' perceptions. Each data set was initially read, and then the process of assigning open codes through identification and isolation of words or statements that reflect meaning were independently completed for all data. Coders for each data set compared coding and any differences were resolved by returning to the transcript and by consensus. Following independent coding, the two researchers analysing the student data, and the two analysing the academic data, collaborated to identify themes for each aspect of the study. The research team then met to discuss these findings, and commonality was found across the student and academic data sets. Hence, the research team decided that the data would be combined to present themes inclusive of both student and academic perspectives. Themes were documented with the perspectives of students and academics presented. Other members of the research team also contributed and agreed to the final identification of themes of the study, and the diagrammatic representation of the thematic network was developed, consistent with methods outlined by Attride-Sterling [27] whereby a global theme, organising themes and basic themes are developed and related pictorially. The results from the descriptive content analysis were also integrated with thematic networking [27] to present themes that were inclusive of data from both surveys and focus groups.

Results

Online student cross-sectional survey

Demographic characteristics

A total of 179 out of the possible 663 students (27% completion) completed the online survey in June 2020. Students were between 17 and 51 years of age, with the mean age of 24 years (Standard deviation (SD) = 8.6) (Table 1). There were approximately three times as many females as compared to males which is reflective of the undergraduate cohort more broadly. The majority of the students were from the occupational therapy (26%; n = 47), paramedicine (21%; n = 38), physiotherapy (17%; n = 30) and speech pathology (13%; n = 13), programs of study, reflecting their

comparative program size. Just over half (53%; n = 94) of student had no prior experience in undertaking a Bachelor degree, and 76% of students had not completed any online courses prior to enrolment. Seventy percent (70%) of students reported using social media to connect to other students within their programs.

Table 1
Demographic characteristics

Demographic characteristics	N = 179
Mean age (years, 95% CI)	24 (22.7 to 25.4)
Gender (n,%)	139 (78)
Female	29 (16)
Male	11 (6)
Unknown	
Program of study (n,%)	47 (26)
Occupational Therapy	38 (21)
Paramedicine	30 (17)
Physiotherapy	24 (13)
Speech Pathology	14 (8)
Recreational Therapy	12 (7)
Podiatry	9 (5)
Undisclosed	5 (3)
Traditional Chinese Medicine	
Highest prior educational experience (n,%)	94 (53)
Completed high school, college or vocational institute	40 (22)
Started but did not complete Bachelor degree	27 (15)
Completed Bachelor degree or higher	18 (10)
Others	
Connected with other students within program via social media (n,%)	126 (70)
Yes	46 (26)
No	7 (4)
Undisclosed	
Prior experience in completing online courses (n,%)	136 (76)
No	36 (20)
Yes	7 (4)
Undisclosed	

Quantitative results to the Sense of Belonging questionnaire

The majority of students felt 'quite' or 'extremely' welcomed by the university (68%) and respected by both staff (70%) and students (60%), ranked on a 5-point Likert scale (Table 2). Most students were also 'quite' or 'extremely' happy with their choice of university (74%) and program of study (68%). Connectedness with both peers and staff, within profession-specific courses, were ranked lower with only 15.6% and 27.4% respectively feeling 'quite' or 'extremely' connected. Only 13% felt they 'quite' or 'extremely' mattered to others at the university, and less than half (49%) felt there was high level student respect in the online environment (Table 2). There were no statistically significant between-group differences with students who did and did not have prior experience in higher education.

Table 2
Results from Sense of Belonging questionnaire [6, 23]

Question	Responses based on a five-point Likert Scale, n(%)						Percentage of students who gave ratings of 4 and above (%)	Median scores (SD)	Between group differences $\chi^2(df)$, p
	No response	1: Not at all	2: Slightly	3: Somewhat	4: Quite	5: Extremely			
How happy are you with your choice to be a student at university?	12 (7)	2 (1)	11 (6)	21 (12)	92 (51)	41 (23)	74	4.0 (1.0)	2.7 (5), 0.8
How happy are you with your choice to be a student in your enrolled course?	21 (12)	4 (2)	13 (7)	20 (11)	66 (37)	55 (31)	68	4.0 (1.2)	6.5 (5), 0.3
How much respect do members of staff at university show toward you?	13 (7)	0 (0)	8 (5)	32 (18)	87 (49)	39 (22)	71	4.0 (0.9)	4.5 (4), 0.3
How welcoming have you found the university to be?	12 (7)	2 (1)	10 (6)	34 (19)	92 (51)	29 (16)	67	4.0 (1.0)	3.6 (5), 0.6
How much respect do other students at university show towards you?	13 (7)	0 (0)	9 (5)	49 (27)	82 (46)	26 (15)	61	4.0 (1.0)	7.0 (4), 0.1
How connected do you feel toward staff at the university?	12 (7)	21 (12)	53 (30)	51 (29)	37 (21)	5 (3)	24	3.0 (1.3)	3.7 (5), 0.6
How well do people (both staff and students) at university understand you as a person?	12 (7)	20 (11)	53 (30)	58 (32)	24 (13)	12 (7)	20	3.0 (1.3)	1.3 (5), 0.9
How much do you matter to others at university?	13 (7)	30 (17)	45 (25)	67 (37)	19 (11)	5 (3)	14	3.0 (1.3)	7.5 (5), 0.2

Table 3 shows how the online learning experiences impacted on students' sense of belonging with the course and their discipline-specific unit. Overall students were less positive when it came to evaluating the impact of online learning on sense of belonging. Less than 50% of students perceived that they were 'quite' or 'extremely' respected by other students during online learning (Table 3). Students also rated their ability to connect with other students and staff during online learning as low, with majority of students giving a rating of 3 (somewhat) and below (Table 3). There were no significant between group differences between students who reported no prior experience with a Bachelor degree and students who previously attempted a Bachelor degree in all but one question. Students with no prior experience were 3.5 times more likely to consider leaving the program of study after their online learning experience compared to students who had prior higher education experience (OR = 3.5, 95% CI 1.1 to 10.9).

Table 3
Impact of online learning experience on sense of belonging to the course

Question	Responses based on a five-point Likert Scale, n(%)						Percentage of students who gave ratings of 4 and above (%)	Median scores (SD)	Between group differences $\chi^2(df), p$
How much has the online experience...	N = 179								
	No response	1: Not at all	2: Slightly	3: Somewhat	4: Quite	5: Extremely			
Developed your understanding of your chosen health profession	20 (11)	3 (3)	28 (16)	31 (17)	50 (28)	47 (26)	54	4.0 (1.3)	4.5 (5), 0.5
Developed your knowledge and skills in your chosen health profession	20 (11)	2 (1)	26 (15)	43 (24)	44 (25)	44 (25)	50	4.0 (1.3)	6.2 (5), 0.3
Allowed other students to show respect towards you	20 (11)	0 (0)	20 (11)	52 (29)	65 (36)	22 (12)	48	4.0 (1.1)	5.9 (4), 0.3
Influenced your intention to continue with your current course	20 (11)	45 (25)	28 (16)	31 (17)	33 (18)	22 (12)	30	3.0 (1.7)	*14.5 (5), 0.01
Facilitated your connection with academic staff in your course	20 (11)	19 (11)	39 (22)	52 (29)	39 (22)	10 (6)	28	3.0 (1.4)	3.1 (5), 0.7
Facilitated your connection with other students in your course	20 (11)	42 (24)	57 (32)	32 (18)	21 (12)	7 (4)	16	2.0 (1.6)	3.6 (5), 0.6
*denote $p < 0.05$									

Qualitative Results

The 179 questionnaire responses also included open ended questions that were subject to qualitative content analysis and integrated here. Three focus groups were conducted: two student sessions, each with two female students covering Speech Pathology and Paramedicine, and one academic session with five participants: four full time academics and one casual academic.

Global Theme - Navigating belonging during the COVID-19 crisis: A shared responsibility

We are in this together...making the best of this

The global theme revealed that students and academics were *navigating belonging during the COVID-19 crisis*, and this journey was a *shared responsibility* during this time of crisis. Both groups were working together in the online learning environment to achieve positive student engagement that would in turn create a sense of belonging in first-year students. A strong commitment of being “in this together”, working hard to “make the best out of this” was acknowledged.

Students perceived academics had done “a really good job at making sure we belonged ... in those first few weeks that we were on campus but even more so probably while we were in Zoom [online learning platform]”. Academics perceived students were actively engaged in making online learning work, and were collegial and collaborative:

I think there was often that sense of, you know, camaraderie within the group of “we’re in this together”, “okay, this has maybe not gone 100% according to plan, let’s make the best out of this”...both ways. So...them sort of supporting...me. But also...they could see that I was obviously doing my best...to try and make things happen as well for...the students.

The shared experiences about *navigating belonging during the COVID-19 crisis*, have been captured under four organising themes: *dimensions of belonging, individual experiences and challenges, reconceptualising teaching and learning, and relationships are central to belonging*. Within each organising theme, basic themes were identified that provide depth to the organising theme (Fig. 1).

Organising theme: Dimensions of Belonging

Students and academics identified several dimensions of belonging in relation to first year students’ experiences, as illustrated by two basic themes: *what it means to belong*, and *layers of belonging*.

Basic theme: What it means to belong

Academics and students agreed that having a sense of being valued by the University and a desire to have an active connection across all aspects of university life was important for students. One academic commented:

I guess...probably just feeling like you’re a part of something. Maybe a part of something bigger...having commonalities with...other people that you’re studying with...I guess, belonging to...the course..., belonging to university. (staff)

Belonging as a student was gained through a connection with the “vocation” or the course and career, and also with people who will “be there” for them:

At the end of the day, um, for me uni is a vocation, and – and the people who are in the uni is what brings me in there; that they’re the people that, ... want me to go to uni...I know I can go there and there will be someone there that I can talk to. (student)

The support of academics was critical to gaining a sense of belonging as one student noted:

I think that was the thing that struck me straight away, was how welcoming and supportive I felt they were. Like, I don’t know what I was expecting uni to be like, but I feel like the tutors really care and just want you to feel really supported. (student)

It was noted by academics and students, that when students feel they belong at university, they are actively engaged in their learning, and this sense of belonging in turn shapes their overall identity. Students can then “actually sort of relax and become themselves” (staff).

Belonging to their cohort, their course, their future profession, and their university was important for students. One academic noted that the “concept of acceptance” is part of the sense of belonging and goes “both ways”:

...acceptance in the sense of that perhaps as an individual, the student feels that they are...valued and acknowledged within the community, whether it be their...professional community, their class community or the university community as a whole. But also, that they also see something within those communities that actually attracts them, or really aligns with their values or their aspirations, so that they have that motivation to want to be part of that group as well. (staff)

Both academics and students agreed that the rapid change to online learning due to COVID-19, meant that developing a sense of belonging was challenged.

Basic theme: Layers of belonging

Layers of belonging can exist for first year students, and it was important that a sense of belonging occurred across the different layers. One academic member summed it up by saying:

...there’s several layers of it...and it sort of radiates outwards, maybe from the immediate core sense of belonging or professional sense of belonging into those wider...university areas and more and more people as well...the immediate peers, but then educators and then, other sort of departments within the university as well. (staff)

Comments about how each layer contributed to belonging were made by academics and students, with the below examples illustrating key points.

Peers

Belonging to peers was described as “*having that connection to someone that’s going through exactly the same thing as what you’re going through*” (student). Students were concerned that when learning moved online that this sense of belonging would be jeopardised:

...they [academics] stressed that we rely on peers to support each other because we do go through some challenging things...so they were emphasising how important it is that we have each other and have each other's backs...And they were like...“You’ll get to know everybody”, and then COVID sort of hit, and...I remember just being disappointed. I was like, how am I meant to...meet everyone and create that?” (student)

Academics

Being connected with academics was perceived by students as having a direct impact on learning, with one student commenting: *“...when they’re not connecting with the teacher, they’re not connecting with the content, they’re not connecting with the feedback. That’s when you develop this sense of feeling like you just don’t belong” (student).*

University

Academics were keen for students to have a sense of belonging to the University, with one commenting, *“I think that’s important to feel part of the bigger university picture and university experience as well” (staff).*

Profession

Belonging in the professional sense was also identified by academics and students in their discussions. Studying a degree with a clear professional identity was perceived as making it easier for first year students to feel they belonged to their profession compared to those undertaking general health science degrees which may have multiple pathways and career options that were not yet obvious to first year students.

One student commented:

...clinical specific students...can identify...who they want to be when they graduate. So that identity, I think, would really make a difference in that sense of belonging, especially with the online [learning]. (student)

One academic actively encouraged first year students to belong to their professional association as a way of fostering belonging in first years:

...one thing that I did for my students, and I think we should do it for all students in following years, is get them to sign up to the professional body of [their] particular profession. (staff)

Organising theme - Individual experiences and challenges

Academics and students reflected upon personal impacts of the COVID 19 pandemic upon their teaching or learning and how they responded as individuals to the ensuing challenges. Two basic themes emerged: *Challenges of transition* and *recognising different learning preferences*.

Basic theme - Challenges of transition

For some students, the transition to online learning offered potential benefits of flexibility and reduced travel time. Two of the four students in the focus groups reportedly opted for online learning opportunities available in other units of study prior to the pandemic to efficiently manage their study and external commitments. Nonetheless, the pandemic brought a raft of personal challenges that diminished these expected benefits. Covid-related changes to family employment, reduced access to childcare support and non-optional home schooling presented new concerns:

It was the transition outside as well...worrying about, you know, am I going to have enough money to feed my family?...Am I going to have internet that works to be able to attend my classes?” (student)

Clearly, students missed the opportunity to focus attention on their learning needs when balancing childcare demands and home-schooling during lockdowns:

My headphones are on, mute and I’m screaming, “Get off the internet. Mummy needs the internet.” (student)

Unlike a conventional online course where students choose or plan to be online, the sudden, unexpected, and unplanned move to online study was prefaced by a short period (four weeks) of face-to-face class time. This initial face-to-face time was identified as being key to relationship building:

I met two people doing the same course as me and got their social media info. So, when the transition to online came about, I already had friends I could talk to. That is the only thing that has made me feel I belong. (student)

Academics identified positive experiences and challenges during the transition to online learning. The rapid change presented a problem to be solved and individuals could “embrace it and to work effectively...as a team” (staff). Quickly strategising and responding to the demands of online learning required team knowledge, experience, and support. Hence, enhanced team culture was a further positive outcome for academics, being “present for each other” (staff).

Basic theme: Recognising different learning preferences

Students also identified personal attributes, individual expectations and learning preferences as key factors impacting their ability to maintain focus on academic goals after the rapid change to online learning. Some students reflected that some barriers were not a feature of online learning environments, reporting that competing priorities, including, "Work commitments, limited contact time with staff" (student) as pre-existing challenges to belonging:

My age [mature age student] and the distance that I live from university I believe have a greater impact on my ability to form relationships with other students than the online learning aspect of the courses at the moment. (student)

However, some students directly attributed their limited engagement and reduced motivation to the online learning environment:

Online - No motivation...Not engaging. Even the teachers sound asleep. I could listen to a 10hr lecture and still feel like I've learned nothing. (student)

Students suggested that active engagement "comes down to personality" (student). If a student was "not shy" they were comfortable to come forward and participate online. Some students perceived a clear link between personal discipline, engagement, commitment, and achievement:

We're a different personality and we turn up and we do all the work and stuff, like, we set ourselves up for success. I just really feel for the people that are struggling with that and...don't have the same kind of discipline. (student)

Further, successful (and ineffective) online group functioning was perceived to reflect the personalities of individual members, with some groups/personalities seen as being able to organise others:

Where some of the groups fell down is where they didn't have the mature-age student in the mix, or they didn't have a dominant personality that was able to cohesively organise them. (student)

Students who perceived themselves as active engagers reported being drawn towards other students who demonstrated motivation to interact and learn. Other students perceived that their personalities or learning preferences were misaligned with the expectations of belonging in online learning environments, and as one student commented, chose to opt out of the need to belong:

Developing a sense of belonging in the online environment seemed to require overt participation in online learning activities. This was contrary to my 'keep your head down' approach to learning. For this reason, I personally...did not prioritise acquiring a sense of belonging. (student)

Academics recognised student diversity and reported a need to reflect and re-evaluate expectations of students in online environments. They accepted that some students may be quietly engaging and learning to belong:

...it's recognising different learning preferences and...some students' preferences to actually be a little bit quieter and a little bit in the wings...and I've heard...that they are highly, highly engaged students. (staff)

Organising theme - Relationships are central to belonging

For both, students and academics, the relationships and connections formed throughout the semester constituted a fundamental aspect of fostering a sense of belonging. Two basic themes were influential in shaping perceptions of how relationships and connections contribute to belonging: *collaboration with peers is fundamental*, and *effective and regular communication with staff is necessary*.

Basic theme - Collaboration with peers is fundamental

Students in our sample expressed that their degree of social interaction with peers and opportunities to create friendships contributed to feelings of belonging.

I had a really great first semester...I was in one particular tutorial where I had really like-minded people. (student)

The people that I go to uni with...definitely helped me with the sense of belonging. (student)

Students also discussed the problem when other students neglected to turn cameras on during classes, making interaction very difficult even in smaller activities. The visualisation of peers and use of cameras in online classes should have contributed to students getting to 'know' each other. However, this was found to often not be the case:

Majority of people don't even have their cameras on in online classes so even the people you do connect with you won't recognise in person lol. Hence it is hard to connect therefore feel a sense of belonging. (student)

The challenges posed by online learning were further highlighted in the student survey through the focus on non-academic aspects of university and campus life. Campus life, it was suggested, may lead to additional learning and personal development. Absence of this type of interaction was

linked to difficulties in developing friendships and consequently a lesser sense of belonging as reflected in students' comments about challenges of this time:

Not making any friends. Not being able to see faces of the other students during class time. Not having any social time to interact. (student)

Lack of friendships have made it difficult, as we no longer have anyone to talk to about assessments/exams to see if we are on the right track. (student)

Basic theme - Communication with academics is necessary

With less peer support, there was a stronger reliance on the academic-student connection to build a sense of belonging among students. Students employed both positive and negative phrasing to illustrate their communication with academics.

Positive interactions and individualised communication with academics enhanced student sense of satisfaction and belonging. Furthermore, a feeling of trust and a bond created by a shared experience fostered a sense of belonging.

...our tutors did a really good job at making sure like we belonged, um, like, in those first few weeks that we were on campus but even more so, probably, while we were in Zoom...I thought we'd go into class and you'd not really feel like you have a relationship with the tutor, but they're just so caring and lovely, and you feel – well, I feel like I can definitely go to them for anything if I had an issue...and they would help. (student)

Survey responses echoed this sentiment, noting that academics were “non-judgmental and supportive” and that academics created a sense of camaraderie, building a “we are in it together” attitude (students and staff). However, when students perceived impersonal communication with academics, they expressed feeling less connected, or that teaching was a “transaction”. The level of enthusiasm and engagement from academics influenced the feeling of connection and belonging.

Students identified that the online environment was a barrier to communication:

There have been a few personal obstacles to study that I would have liked to discuss with the teachers but am not comfortable formalising into an email or discussing in an online class. (student)

Systematic and university level communication had little importance in comparison to individualised communication:

...getting emails from [the University] saying, like, 'We hope you're all okay.' Like, that is nice, but it's more about people and having support from people or relationships with people. Yeah. (student)

Academics felt effective communication was also challenged in the online environment, missing the “non-verbals” and “responsivity” of the classroom environment. Although the online learning environment provides an opportunity for academics to connect professionally with students, there are students who leave their cameras off, with one academic noting they “didn't push it” as there are “lots of different reasons” students may choose this option.

Organising theme: Reconceptualising teaching and learning

Academics and students encountered a rapid change to online learning that saw them reconceptualising what it meant to be teaching or learning. It was not easy – for academics or students, and many strategies were employed to make it work, with two basic themes emerging: *challenges to online teaching and learning*, and *strategies to engage and connect*

Basic theme: Challenges of online teaching and learning: “How do I make this work?”

With the rapid change to online learning, academics asked themselves, “How do I make this work?”

Managing workload

Academics found that their workload increased significantly, and they “found it a juggling act” (staff) to meet their teaching requirements and the increased ‘admin’ that went along with not having any face-to-face contact with students due to the increase in emails. There was also a lot to learn about teaching online in a short time frame and it felt all encompassing:

So really, I felt that teaching has been 24/7 this whole year and that has been quite exhausting...Learning has been hard too. I've had to learn Zoom. I've had to learn all different ways of...filming myself, filming classes, putting up...transcription, all of that kind of things. (staff)

The rapid switch to online learning meant academics had a significant workload implementing and adapting content to see how material “might play out in a Zoom environment”, where “everything takes longer”.

Some students found the temptation to disengage from learning was there, which meant that balancing their workload and study demands became a challenge as they also faced significant workload and stresses in their personal lives due to COVID-19.

Class dynamics

Academics and students spoke about the change to the dynamic in the classroom. The online environment was noted as being one in which it was difficult to 'read the room' to see how students were progressing with their work.

Trying to get some form of feedback, did you understand my instruction? Do you need some help? Blank faces or black squares made it very hard for me to judge what I needed to change in a particular class to adapt to the students in that room at that time. (staff)

Others tried to use humour to enliven a class, only to have the Zoom frame freeze, killing the mood they were trying to create. Teaching online was less "conversational", less "flexible" and less "responsive". Missing the "hands on" practical elements in a classroom also meant a big shift for some programs.

Technological challenges

Academics learnt new skills fast, but often these skills would be challenged when things went wrong with technology. Some felt a "sense of vulnerability" about their "complete ineptitude" but were happy to make mistakes in front of students to humanise the experience of teaching and learning online.

The spontaneity of the white board in a classroom was easier than using a mouse to draw on the Zoom whiteboard. One academic participant commented that:

...it just didn't have the same effect and so, having to just rely on words and text and slides, I felt like there was a big section of my teaching missing. (staff)

There was acknowledgement by academics that some students did not have adequate technological resources to meet the change in their learning requirements when classes were placed online:

Tutorial interaction is quite low as not all students have access to laptops with mics and cameras and I feel this has impacted [on learning]. (staff)

Basic theme: Strategies to engage and connect

The academics worked hard to enhance online learning and hopefully connect with students and engage them in their learning. Students too were active and appreciated academics' efforts to facilitate engagement and connection.

Underlying many of the strategies adopted by academics was a deep concern for student welfare during this time. One academic participant noted the following concern:

...a student...said to me, "Thank you for all your work this semester...I love the classes, but as soon as I leave the Zoom room, my world goes black". And that was really, really sad. (staff)

Therefore, many of the strategies employed by academics aimed to ensure students were engaged and connected with each other and with the academic team. Academics built in small group opportunities during online teaching as these were times when students could connect via zoom, and as one student commented, "to socialise and possibly have a positive impact". Academics saw that small groups promoted more interaction and so built these opportunities into teaching. One academic participant spoke about their 1-2-4 approach to teaching planning:

So across the tutorial, they get some opportunity to work individually on a task, some opportunity to work in pairs..., some opportunity to work in a little group of four...And I think, eventually students got used to that formula a little bit...I think that gives some familiarity and comfort and predictability as well. (staff)

Staff also spoke about letting students know that they could reach out to staff. One staff member called this "crossing the divide", which aimed to break down the sense of "them and us" between students and staff.

A variety of teaching tools were identified by staff to build connection and promote engagement such as interactive quizzes, ice breakers activities, integrating reflective practices into activities and 'drop in' sessions. Staff also encouraged students to establish social media groups or other group experiences outside the classroom. Some staff members even came early to zoom classes and left late to allow students to interact with them:

So you're there and if somebody comes early, they might want to have a chat...like, reciprocating what you would do...on campus, where you're there beforehand. If you're not going to have to rush off to another lecture, you're kind of there outside the door as well...when you're leaving...so being available on that platform, just seeing if anyone's got any questions at the end. (staff)

Students appreciated staff attempts such as “getting to know everyone activities”. Students commented that these initiatives were helpful, recognising that staff put a lot of effort into knowing “students personally” and enabling student “wellbeing and best achievement”. Students cited examples such as being provided with extra resources, being given “mini-lectures”, extra question and answer sessions, and fast response times to student queries.

Students also initiated their own strategies, including using group and personal messaging over platforms such as Facebook messenger. Some noted that being online was positive in the sense that they were “able to interact with everyone in the class” whereas in ordinary classes they would “tend to stick in groups”.

Discussion

We used SLT [16, 22] to conceptualise student and academic perspectives on sense of belonging gained through our mixed methods study following a rapid move to online teaching. Consistent intersection of comments from students and academics were identified in many themes and the results of both the quantitative and qualitative arms of the study overlapped leading to the essence of our global theme “We are in this together...make the best of it”. As this epitomises the essence of sense of belonging, to be accepted and part of a community [28], we could interpret this as demonstration of a strong sense of belonging among participants, but it is the latter part of the theme, “make the best of it” and the layers of belonging identified in the organising themes that demonstrate the complexity.

Using the SLT approach to explore the experiences of academics and students during this rapid transition to online teaching provided insights into academics’ and students’ experiences. The approach enabled us to discuss the importance of the social aspect of learning and the role of relationships to drive learning, but also went beyond this to consider the ‘unintentional’ learning that occurs during the rapid transition to online learning [16]. We are aware that some themes identified may be considered artefacts of the COVID-19 pandemic and the associated rapidity of the move to online teaching and learning. Nonetheless, our findings align with previous commentary in this area and contribute valuable insights for the clinical health sciences student population, reinforcing the continued need for study into how to address and develop an online sense of belonging [1, 8, 9].

Belonging is clearly more than a unidimensional concept that can be ‘given’ to or ‘received’ by students. Comments from both academics and students corresponded to previous definitions of belonging [2] indicating a connection to something bigger or a sense of acceptance. In our study, the connection refers to the layers of belonging including peers, academics, university, and the profession. The relationships between these layers were central to belonging. Students noted that connections needed to be genuine rather than tokenistic, preferring to be known as an individual even if it was at a more local level, in accordance with the findings of Yuan & Kim [14]. Understandably then, given the barriers to physical interactions, we found it was this student connectedness that was most drastically impacted compared to the connections to university, prospective profession, and staff. This peer connection conceivably developed through legitimate peripheral participation within an on-campus learning environment, becomes the crux of fostering a comprehensive sense of belonging in an online environment and was identified as “fundamental” by students in developing a sense of belonging. Concerningly, our findings suggested that when students ‘log on’ for a class, the opportunity to engage in any form of unintentional learning experience was immediately replaced with a purposeful interaction bracketed within a finite timeframe. Our findings indicated students gained a strong understanding and knowledge of their future professions suggesting that online classes met some of the needs of knowledge transfer and development, but it was the serendipitous connections before, after and between classes that no longer existed and, their absence limited a pivotal social aspect of belonging [9]. Consequently, the academic-student relationship became more important, developing into a proxy peer relationship for some students who had no other peer supports.

The key factor, from both academics and students, was the need for reciprocity in the development of a sense of belonging, a finding consistent with Mahar and colleagues in their 2013 review to conceptualize belonging [2]. An unexpected finding was the way in which the rapid move to the online setting both facilitated and hindered reciprocal engagement. Clearly, academics and students perceived the rapid transition to online learning threatened the co-construction of learning culture during the first stages of health science education. This threat gave both academics and students a distinct sense of ‘being in it together’ which led to a breakdown of many typical student-teacher barriers; an experience which has been evidenced worldwide [29]. In this regard, sense of belonging was being developed as roles of support and co-construction of knowledge, central to SLT, moved between student and academic and the concept of the classroom became more amorphous.

For clinical health sciences students, the classroom was traditionally defined through a physical set space. Yet an unplanned move ‘online’, suddenly moved the ‘classroom’ to bedrooms, kitchens or even cars as each participant found their own learning space. SLT highlights the importance of non-classroom learning as central to the learning process [17] although doubtless the authors did not envisage such a variety in locations when the theory was conceptualised, nor were they indicating that a simple move from the physical classroom would lead to learning. However, the importance of location, proximity, and infrastructure to learning, identity and belonging cannot be underestimated.

Logistical and infrastructural complexities to place of learning and belonging were identified through the organising theme: individual experiences and challenges. With the loss of the physical learning space, came incremental impacts from other aspects of life (family and work) and consequently erosion of the opportunity to develop a sense of identity within a community and through that a sense of belonging. Importantly, this

incursion into non-university life was highlighted by both academics and students. In students, reduced access to a shared physical learning space, led to a decrease in sense of belonging and in academics it resulted in increased workload and a sense of exhaustion. Such negative effects could conceivably lead to academic disengagement and further impact student sense of belonging during prolonged learning experiences [30]. Indeed, life 'outside' university and individual 'personality' factors impacted developing connections and sense of belonging irrespective of where learning took place. SLT espouses the concept that learning is a social experience, one built on relationships, where those more experienced support those still developing. Yet clearly socialisation requires extra effort or "overt participation" as one student noted. Many students perceived that they did not have the time nor energy to participate in learning to this level and therefore, although they acquired content knowledge, the opportunity for developing a sense of belonging was lost. This lack of engagement was by no means universal amongst students. However, without the incidental connections that are made through LPP outside the classroom by those who were engaging, students struggling to engage may be further disadvantaged.

An argument may be made that the external 'life' influences during the Covid-19 pandemic are not representative of the 'normal' university experience and therefore impact transferability of our themes. The pandemic presented innumerable challenges. However, the transition from school to university, or the workforce back to university, is always a tumultuous time representing many firsts. As such, we argue that the challenges and responses identified through our research will remain relevant beyond the context of a pandemic and present an important opportunity for future educators and researchers to address. Nonetheless, significant challenges provided opportunities for creating a learning culture grounded in motivation to adapt and achievement of learning outcomes.

Despite the significant challenges occurring with the rapid transition of online learning, academics and students rose to the challenge and reconceptualised learning and teaching processes. Indeed, this reconceptualisation of the learning and teaching process and strategies to connect were evident as organising and basic themes, including reconceptualising teaching and learning and a focus on 'how do I make this work'. One of the greatest hurdles presented was a decrease in spontaneity of the experience with online teaching, either due to a lack of visual cues or technological lags [31]. These hurdles were addressed through both pedagogical and technological means; changing class sizes, having consistent student groups and, using myriad technology and apps. However, although students and academics acknowledged this work, the level of connectedness was perceived as stilted and the ability for reciprocity was limited [13]. These changes indicate the willingness of academics to trial, evaluate and adapt their teaching (and technology) to achieve not just knowledge transfer, but also a sense of belonging. Identifying hurdles that were more difficult to surmount may also facilitate academics in the development of strategies to better manage future rapid transitions to online learning; an ongoing potential scenario in higher education. Optimistically, the findings from this study suggest that future innovations, and academics' creativity and willingness to trial interventions, may overcome some of the hurdles to sense of belonging that we have identified.

Limitations

As with any study, our research had some limitations, and the results should be considered in light of these. Despite best efforts to increase completion rates of surveys for this project, we only had approximately 27% of the cohort completing the survey. In saying so, the demographic characteristics of students who responded to the survey were reflecting the sizes of each of the clinical health courses and the gender makeup of the first year students cohort. The academic focus group included five participants who were a range of full time and casual academics, however the student focus group included only four students and was skewed toward more mature students rather than school leavers. This could have impacted the qualitative results, however the themes from this focus group were supported by the qualitative responses gained through the survey which included data from a larger more diverse sample of students.

Conclusion

While the rapid transition to online learning has not greatly impacted on first-year students feeling respected and welcomed at the University, the lack of connectedness with peers and academics during this online learning experience has impacted on their overall sense of belonging. The ability to initiate and maintain connectedness with peers and academics was integral and fostering the overall sense of connectedness has been challenging due to the complexities faced at each level of belonging. While the rapid transition to online learning has sparked creativity among academics and students to reconceptualise their learning and teaching approaches, fostering the overall sense of connectedness which is essential in belonging has shown to be an ongoing challenge. Through the identification of the perception of belonging, and hurdles faced by both academics and students in the development of belonging, we can develop better strategies targeted at fostering a stronger sense of belonging among first year clinical health science students.

Abbreviations

CI	Confidence interval
COP	Community of practice
<i>df</i>	Degrees of freedom

LPP	Legitimate Peripheral Participation
IQR	Interquartile Range
OR	Odds ratio
SD	Standard deviation
SLT	Situated Learning Theory

Declarations

Ethics approval and consent to participate

This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of Western Sydney University (Date: 1st June 2020/ H13857).

Informed, written consent was obtained from all individual participants included in the study.

Consent to publish

Not applicable

Availability of data and materials

The data that support the findings of this study are available from Western Sydney University, but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are however available from the authors upon reasonable request and with permission of Western Sydney University Human Ethics Committee.

Conflicts of interest/competing interests

The authors declare that they have no competing interests

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Authors' contribution

All authors contributed to the study conception and design. Material preparation and data collection were performed by all authors and analyses were performed by Belinda Kenny, Nikki Tulliani, Rosalind Bye and Nicole Peel, Liz Thyer and Leigha Dark (qualitative) and Stefania Penkala, Yu-Ting Sun and Clarice Tang (quantitative). The first draft of the manuscript was written by all authors and edited by Clarice Tang and Liz Thyer. All authors read and approved the final manuscript.

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Figures

Figure 1

Pictorial representation of the global, organising and basic themes

Supplementary Files

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- [THYERBMCMESurvey.docx](#)