

Online but Disconnected: Student Connectedness in Online Remote Learning in Higher Education in New Zealand

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ABSTRACT

New Zealand university students in the online learning environment may have feelings of disconnectedness, isolation, and suffer a lack of personal attention. Perhaps these universities are at a junction, where they can choose to offer students immersion into a virtual learning environment devoid of a physical presence, or a pathway which nurtures students' learning in a hands-on, face-to-face, physical space. Understanding student online connectedness, or their sense of belonging with the online virtual learning environment, may help navigate a path through this junction as the emergence of online remote learning becomes commonplace in New Zealand. This article suggests that universities should foster a virtual place of learning by developing an online social presence and promote open communication between faculty and students, and between students and their peers. Students are more likely to value online courses that foster a high degree of connectedness, and they are more likely to complete these courses. In this article, online student connectedness is defined and tools to measure it are described. Strategies to promote student connectedness in the online learning environment are suggested, for example, comprising social media and social networking sites which facilitate communication and increase social presence.

Keywords: connectedness, online learning, tertiary.

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I. INTRODUCTION

Since 2019 there has been a year-on-year increase in domestic student numbers enrolled in higher education providers in New Zealand (Ministry of Education, 2022). The overall number of students enrolled in formal study at tertiary education providers in New Zealand increased by 4.7 percent (17,695), from 380,090 in 2020 to 397,785 in 2021. The growth in participation in higher education in New Zealand is a powerful driver to deliver this education in an online virtual environment, and therefore the online learning environment has become favoured by many New Zealand universities. Online courses use computer technologies and the internet to allow instructors and students to communicate as they teach and learn, and these interactions may occur asynchronously, synchronously, or both. Technology-mediated remote learning environments have increased students' control over the learning process, but exercising that control requires both discipline and maturity. Also, university staff responsible for delivering an online learning experience need to be fully trained in the appropriate techniques which enable meaningful engagement (Brown *et al.*, 2021).

Concern has been raised over the quality of the student experience in the online learning environment (Allen *et al.*, 2019), and the instructional achievement of online remote learning remains equivocal. This is partly because of the minimal, or complete absence of, opportunity for face-to-face

interaction between learners, their instructors, and their peers (Adedoyin & Soykan, 2020; Joshi *et al.* 2020). Remoteness and physical distance in an online environment can inhibit interactions between instructors and learners—it is this loss of relational contact which can impact negatively on how a student feels connected to their course, their institution, and their peers. This negative impact is more serious where learners' participation, interactive communication, and collaborative learning are key elements of the learning outcomes of the course. Also, there is concern about a lack of sufficient interaction and engagement in the online learning environment between peers (Allen *et al.*, 2019). This lack of peer-to-peer interaction can leave students feeling isolated from other classmates (Garrison *et al.*, 2005), and possibly confused and frustrated with course content and assignments (Kaufmann *et al.*, 2016). Building connections between learners and teachers, and between learners and their peers in the online environment remains challenging yet developing this online connectedness should be a priority for institutions which are favouring the online delivery of their courses.

II. WHAT IS ONLINE CONNECTEDNESS?

Online student connectedness refers to human interactions in the digital world that allow individuals to participate comfortably in communities and achieve meaningful relational interaction with peers that can lead to learning

(Zimmerman & Nimon, 2017). There is perhaps an urgency to understand this connectedness and the need to develop this sense of community in today's virtual higher education environment. Rovai (2002) defined online connectedness as the feeling of belonging and the creation of bonding relationships in the digital world. Others (Jorgenson *et al.*, 2018) have suggested that online connectedness consisted of an overlapping, multidimensional network of relationships with old and new friends, and teachers. Jorgenson *et al.* (2018) also suggested that online connectedness was a function of relational development that occurred through a series of stages – it was achieved when students could fulfil tasks and perform roles while simultaneously meeting their interpersonal needs in an online environment. Connectedness may be considered as an overarching construct which can encompass students' sense of belongingness, integration, and satisfaction with their relationship to their institution (Jorgenson *et al.*, 2018). Students may feel connectedness through satisfaction with interpersonal relationships and various social groups (Rovai, 2002). Students can also develop connectedness to the institution through feelings of belonging and acceptance with organizations, programs, and faculty (Sidelinger & Booth-Butterfield, 2010). Connectedness is developed by students' perception of a supportive and cooperative environment between both teachers and peers in the virtual classroom (Dwyer *et al.* 2004). Online connectedness is important because it increases student engagement, is positively associated with student learning, and positively influences student success and wellbeing (MacLeod *et al.*, 2019). Online connectedness and a sense of community are significantly associated with perceived learning (Shea *et al.*, 2006) and this can increase student satisfaction when learning remotely. Online social connections have a positive effect on student retention by creating a social environment that motivates learners to persist (Thompson & MacDonald, 2005). This article proposes that building this online connectedness in higher education should become a priority for universities in New Zealand.

III. MEASURING CONNECTEDNESS

Connectedness is multifactorial, consisting of numerous constructs. It has been measured using a variety of questionnaires, or has been identified as a construct within a larger questionnaire by exploratory factor analysis. Table I summarises some of these inventories and their internal structure. For example, Rovai (2002) developed the Classroom Community Scale which combined items pertaining to the specific setting of the classroom (either traditional or virtual) and to the characteristics of sense of community (feelings of connectedness, cohesion, spirit, trust, and interdependence among community members). The Classroom Community Scale attempted to measure learners' feelings regarding interaction among community members and the degree to which community members shared values and beliefs regarding the extent to which their educational goals and expectations were being satisfied. From an initial set of 40 items, Rovai (2002) determined a two-factor inventory of 20 items with factors that corresponded to the

connectedness and learning components of the classroom community. These two factors accounted for all significant loadings where the connectedness factor accounted for 42.81% of the item variance, and the learning factor accounted for 11.24% of the item variance.

TABLE I: MODELS WHICH MEASURE STUDENT CONNECTEDNESS

Model	Model structure: Factors	Factor consistency (a)	Reference
Classroom community	Connectedness	10 items (0.92)	Rovai (2002)
	Learning	10 items (0.87)	
Classroom communication connectedness	Single factor structure	18 items (0.94)	Dwyer, <i>et al.</i> , (2004)
Connected classroom climate	Single factor structure	13 items (0.91)	Johnson (2009)
Community of Inquiry framework	Cognitive presence	12 items (0.95)	Shea & Bidjerano (2009)
	Teaching presence	13 items (0.96)	
	Social presence	9 items (0.92)	
	Mutual attention and support	6 items (0.8)	
Social presence	Affective connectedness	5 items (0.8)	Kim (2011)
	Sense of community	4 items (0.8)	
	Open communication	4 items (0.8)	
	Comfort	8 items (0.97)	
Online student connectedness	Facilitation	6 items (0.94)	Bollinger & Inan (2012)
	Community	6 items (0.96)	
	Interaction and collaboration	5 items (0.97)	
	Instructor behaviours	6 items (0.90)	
Online learning climate	Course clarity	3 items (0.88)	Kaufmann, Sellnow, & Frisby (2016)
	Course structure	3 items (0.87)	
Connectedness	Student connectedness	3 items (0.81)	Jorgenson, Farrell, Fudge, & Pritchard (2018)
	Student connections	7 items (0.95)	
	Faculty connections	6 items (0.90)	
	Connections with old friends	5 items (0.87)	
	Connections with new friends	5 items (0.88)	

Dwyer *et al.*'s (2004) Classroom Communication Connectedness Inventory (CCCI) was designed to measure connectedness among students in the university physical classroom. The original inventory of twenty items was refined using factor analysis and reliability analysis such that an 18-item CCCI scale was found to contain a single factor with high internal consistency (0.94). The structure of the CCCI was further analysed by Johnson (2009) and shown to contain a single factor of 13 items, also with high internal consistency. Classroom communication connectedness was positively related to both instructor nonverbal immediacy and

with student affective learning. Johnson noted that the building of relationships between peers and teachers was important in developing communication connectedness, however, the CCCI was not applied to the digital online classroom, where the vagaries of asynchronous delivery have the potential to undermine the validity of the CCCI.

The Community of Inquiry framework (Garrison *et al.*, 2000) has been identified as a potential framework in which to understand student connectedness. The framework focuses on the intentional development of an online learning community with an emphasis on the processes of instructional conversations that contribute to learning. In the Community of Inquiry framework (for review, see: Rourke & Kanuka, 2009) cognitive presence refers to the extent to which the participants can construct meaning and learn through sustained communication. Cognitive presence promotes critical thinking and academic discourse aimed at extending understanding, while social presence is the ability of participants to project their personal characteristics into the community and present themselves to others as real people. Social presence is a function that supports cognitive presence, indirectly facilitating the process of critical thinking carried on by the community of learners. When there are both affective goals and cognitive goals for the educational process, for example, where participants find the interaction in the group enjoyable such that they will remain in the cohort of learners, then social presence is a direct contributor to the success of the educational experience. The third element of the Community of Inquiry framework is teaching presence, and this consists of two general functions, which are likely to be the primary responsibility of the teacher. The first of these functions is course design—this includes selection, organization, and presentation of course content, design and development of learning activities, and assessment. The second function is facilitation—this aims to support and enhance both social presence and cognitive presence to achieve educational outcomes and promote positive experiences within the community (Garrison *et al.*, 2000). The framework describes the behaviours and processes required to nurture knowledge construction through the cultivation of these forms of presence. Through the development of these forms of presence between members of the community, a productive online learning environment is constructed in which learners feel connected and in which learning takes place. When validating this Community of Inquiry framework with factor analysis, both Swan *et al.* (2008) and Shea & Bidjerano (2009) confirmed a 3-factor model where each type of presence had high internal consistency.

In building on the concept of social presence in distance teaching, Kim (2011) developed a 4-factor model to quantify aspects of student connectedness when learning remotely. The first factor, “mutual attention and support,” was the degree to which participants became attentive and supportive to other participants and were aware of the others’ endeavours to do so. The second factor, “affective connectedness,” was the degree to which participants felt connected emotionally and socially with others. A “sense of community,” the third factor, identified the degree to which participants shared a sense of membership as a group, and the fourth factor, “open communication,” was the degree to which participants

understand other’s views and felt comfort and pleasure in communicating with others. In this 4-factor model of social presence, the factor “affective connectedness” was related to feelings of psychological and social connectedness and the degree to which intimacy and warmth were expressed in social interactions. Kim (2011) suggested that affective connectedness was an important construct in building up intimate relations for productive communication. This communication was not limited to the interactive responses of participants such as replying to the previous messages of others, it also included participants’ feelings towards openness of the environment in which they were free to offer their ideas and make critical comments. Open communication, critical discourse, and sharing of ideas is crucial in higher education where learners are required to pursue knowledge through critical inquiry. Thus, affective connectedness which facilitated openness in communication served to build both intimacy and trust among community members, and improved students’ learning and critical thinking skills.

Other 4-factor models of online student connectedness have been developed, for example Bolliger and Inan (2012) identified the factors “comfort,” “social community,” “facilitation,” and “collaboration and interaction.” This online student connectedness instrument contained 25 items and reliability of subscales was high for all factors. In Kaufmann’s (2016) 4-factor ‘online learning climate scale’, a factor named ‘Student Connectedness’ was identified which represented students’ perceptions of respect, cooperation, and comfort with other students in their online course. Although these student–student interactions were in the digital space they contributed strongly to the connection students felt they had with their learning. More recently, a five-factor model proposed by Jorgenson *et al.* (2018) identified the importance of relationships between friends and faculty in building a sense of connectedness. These five factors showed good internal consistency and had the relative simplicity of being delivered in a 28-item questionnaire.

IV. WHAT STRATEGIES CAN PROMOTE A SENSE OF BELONGING IN ONLINE LEARNING?

An opportunity to learn online maybe strong enough to attract students into higher education but not sufficiently strong to retain them—perhaps focussing on student connectedness during online remote learning could positively influence student retention and student academic success. Institutions should foster a virtual place of learning by developing an online social presence (Gunawardena & Zittle, 1997; Richardson & Swan, 2003) and promote open communication with and among students (Cercone, 2008; Duncan & Young, 2009; Garrison & Andersen, 2003). Students enrolled into remote learning are more likely to value courses that foster a high degree of connectedness built using tools such as wikis, blogs, and web conferencing (Garrison & Cleveland-Innes, 2005; Beldarrain, 2006; Yuan & Kim, 2014), and facilitate communication using both social media and the university learning management system. Building social connectedness facilitates the formation of learner identity (Soudien, 2008) and online courses need to develop both a supportive community and a culture of

learning by promoting social connections. This can partly be achieved by the provision of academic skills and creative workshops which develop social connectedness and agency throughout the student's journey (Pym *et al.*, 2011). Online courses should foster a community of inquiry (Garrison *et al.*, 2000) where social presence and communication are fully supported by both course design and teacher behaviours. These attributes are often under direct control of faculty and therefore maybe a good place to start in building student connectedness.

Online courses should offer avenues of communication which foster both student-student communication and student-teacher communication. Avenues for informal communication between students should be promoted, for example, social media (WhatsApp; Facebook; Discord), as these can facilitate social presence and social connectedness with other learners. Communication between teachers and students via the learning management system should be personalised, and the dissemination of course information should be delivered such that students feel supported and informed. Asynchronous structures aimed at supporting students, such as helpdesk email and discussion forums, need to be responded to in a timely way such that students feel connected with their instructors and that student support is a priority.

V. CONCLUSION

Higher education has consistently viewed community as essential to support collaborative learning and discourse associated with higher levels of learning—perhaps it is time shift focus and foster student connectedness in online remote learning environments. A student's sense of belonging to, or having affinity with, a course and an institution determines how connected they feel, and this connectedness is challenged when learners are isolated in remote learning environments. Proper attention must be given to building connectedness in online remote learning programs because it is this sense of connectedness that attracts and retains learners. Universities need to understand the value of connectedness in building online learning communities, and how this sense of community can be nurtured – this is essential to ensure a positive student experience in online courses offered by universities in New Zealand.

CONFLICT OF INTEREST

The author has no conflicts of interest.

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