

Student Perceptions of Place and Belonging in Online Courses

Bryan D. Orthel

Indiana University Bloomington
bdorthel@indiana.edu

Dana E. Vaux

University of Nebraska Kearney

Michael R. Langlais

Baylor University

Abstract: Sense of place in online learning environments supports students' identity, belonging, and success. Online learning environments present unique conditions as students engage with others from distinct physical locations through shared virtual interfaces. Differences of location and technology may alter how students' sense of community and place emerge in online learning courses. This article draws from literature on community and place before synthesizing findings from three sense of community scales for student perceptions of recent online courses. Results contradict and support previous research suggesting virtual platforms enhance identity and community by emphasizing human relationships. Recommendations for continued scholarship and teaching activities are discussed.

Keywords: place, sense of community, belonging, online learning, learning management software, videoconferencing, collaboration tools

Do Students Perceive They Belong in Online Courses?

Educators know the sense of community, place, and belonging they create in their classrooms affects student engagement and learning. The recent shift in teaching modalities prompted by technology and public health concerns altered how many post-secondary educators taught. The initial rush to transition from in-person to hybrid or virtual modalities was compelled by necessity rather than choice. Since then, students and educators have continued to value the flexibility and benefits of online learning (e.g., scheduling, commuting). While recent studies have aimed to explain how teaching and learning have changed post-pandemic (e.g., Fleischmann, 2022; Fallatah, 2020), there was broad consensus pre-pandemic that place, community, and belonging mattered in the in-person classroom—whether within a physical classroom or engaged in community or nature (e.g., Gruenwald, 2003a; Petrillo et al., 2016; Smith, 2017). Sense of community and place has similarly been linked with improved student learning outcomes (Balboni et al., 2018; Rovai, 2002; Seijo et al., 2023). At this inflection point, this study asked if students perceive sense of place, community, and belonging

in courses delivered via online learning methods. College students who had completed at least one online course were surveyed for their perceptions of place, belonging, and community. The study predicts (H1) students' sense of community and belonging in online courses will be associated with measures of the students' course interest, effort, happiness, learning, and satisfaction, rather than specific types of technology or delivery methods. Additionally, survey responses will be examined to understand correlations between types of technology (e.g., video-based, collaboration-based) regardless of disciplinary area (RQ1). The competing issues educators balance in designing courses (e.g., assessment, pedagogical goals) may be contradicted by how virtual technologies aid students in engaging with the course environment and a community of fellow students.

Literature Review

An interdisciplinary review of literature linking place, education, and online learning environments reveals a rich, critical, and ongoing exploration of place, community, and learning. While the concept of place is used in varying ways across disciplines, there is widespread acknowledgement that place remains a dynamic topic for exploration. The literature on place in education is less varied and critical than some other disciplines (e.g., geography) but raises important points about how place (including *sense of community*, *sense of place*, and *belonging*) alters students' learning experiences. As described below, place is more than a physical entity. *Place* encompasses how environments are experienced in an intermeshed way with social ideas and interpersonal relationships. *Place* is inherently about how individuals understand themselves in the context of community and society. *Place* encompasses community and belonging, merging these concepts with location (Canter, 1977).¹ Place is socially constructed and relational (Lefebvre, 1977).² Yet, there is surprisingly little exploration of how place matters within online learning environments. Exploring this literature emphasizes the importance of understanding philosophical approaches to education.

Place as phenomenological experience

The concept of place derives from geography literature exploring how humanity understands its physical and social relationships.³ Places are as varied as a forest, a street corner, a place setting at a table, a bathtub, or hearing the bells of a community church (e.g., Coleman, 2017; Cresswell, 2008; Orthel, 2022). Cresswell (2004) describes place as “a way of knowing and understanding the world. When we look at the world as a world of places we see different things. We see attachments and

1. Psychologist David Canter argues for the necessary interconnection of three spheres: place context, social activities, and psychological conceptions. Place, community, and belonging are inextricably interconnected.

2. Similarly, sociologist Henri Lefebvre's spatial triad highlights human interaction with space as multi-faceted, with multiple layers of human experience related to place meaning. He argues that every society creates a social space that is both an economic landscape of production and a social space of reproduction. Physical space, social production through human activity, and associated symbolic meanings link to create place in the context of community and locale.

3. Parallel discussions of the human-object relationship are explored in similar ways through archaeology, anthropology, heritage studies, and material culture studies under varying names (e.g., attachment, thingness). At the core of these discussions is how human understanding of a tangible entity is linked with meaning and cognition—which is further linked with actions and behaviors (e.g., Hodder, 2012; Orthel, 2022; Robb 2015).

connections between people and places. We see worlds of meaning and experience. ...Place, at a basic level, is space invested with meaning in the context of power” (pp. 11-12). Understanding place requires critically examining inherent structures of political, social, and economic power that exclude and deny (Antonsich, 2010; Hayden, 1997; Trawalter et al., 2021; Ypi, 2017).

Place is distinct from space. Space exists as tangible and intangible potential, separated from the value and experience-laden character of place. Place and space may overlap (e.g., a room providing meaningful experience for one person and only functional service for another person). Online places have limited tangible residue but remain powerful parts of individuals’ sense of community, belonging, and identity. These characteristics—community, belonging, and identity—are the result of interaction and meaning making, not mere connection (Gieryn, 2000; Schneekloth & Shibley, 1995). Manuel Castells argued the development of vast online networks (flow of information) has replaced the “space of places” in contemporary society (Alfieri, 2021; Castells, 2005). Castells’ definition of place prioritizes human systems over human experience. However, the phenomenological experience of an online place requires social exchange of meaning and value in the context of community (or, specifically, human connection), not simply an exchange of information. The online place requires the same phenomenological experience and construction of meaning as the physical place requires—even if the participants are not necessarily experiencing the same physical cues. The construction of meaning and experience is embedded in the resulting sense of community.

The idea of place relies on a range of tangible and intangible references. Relph (1976) explains that the meaning of place does not rely solely upon “locations, nor...the trivial functions that places serve, nor...the community that occupies it, nor...the superficial and mundane experiences—though these are all common and perhaps necessary aspects of places” (p. 43). Place embodies our relationships with individuals and how we belong to *communities*, as “individual and shared” meaning (Cresswell, 2008, p. 134; Yarker, 2019). Notably, place has location but may not have permanent, physical form (e.g., a fictional location in a story; virtual space; or an ephemeral gathering of people) (Cresswell, 2004; Easthope, 2009; Popov & Ellison, 2013). Ultimately, our sense of place allows us to distinguish our ‘selves’ from others, continually maintain our self-identity, and establish self-esteem (Twigger-Ross & Uzzell, 1996). These descriptions of place emphasize the tangible and intangible aspects of being within a specific space and its accompanying understandings, remembrances, and experiences that craft place with socially derived meanings resulting in a shared sense of community. Place is inherently about knowing who you are and identifying where you belong in the context of a specific environment (Allen & Molina, 1992; Easthope, 2009; Tan & Tan, 2020).

Community and environmental psychology scholars developed a similar understanding of identity and belonging related to place and sense of community. Understanding belonging in relationship to place is inherent to understanding *self-identity*. Concepts of self-identity require understanding relationships between the individual, others, objects, and values. Self-identity organizes an individual’s experiences and behaviors around understandings of physical environments and social norms. *Place-identity* records how an individual understands themselves and how they behave in different settings, whether consciously or subconsciously (Altman & Low 1992; Proshansky et al.,

1983).⁴ Place-identity responds to self, environment, social norms, and the behavior of other people. McMillan and Chavis (1986) outline how *sense of community* measures people's experience of cohesion and supportive structures, social bonding, and rootedness in a setting. They provide four measures (membership, influence, fulfillment, and emotional connection) that relate belonging to sense of community and identity. Like place, sense of community is linked with understandings of tangible physical environments, and intangible social relationships.

Understanding place requires belonging. Place aids us in recognition of insideness versus outsideness in terms of belonging versus othering; our relationship to the world (Cresswell, 2008; Relph, 1976). Actions and choices are prescribed to establish who belongs (e.g., ordering a sandwich a certain way or building a wall to separate one space/group from another or, in a virtual setting, unfriending someone on Facebook). The social construction of place, whether physical or virtual through technology, requires us to consider how our beliefs and actions produce place (Harvey, 1993; Massey, 1991; Kearney & Bradley, 2009; Pickles, 2018; Schein, 2009; Vaux & Langlais, 2023). A place may provide a mental short-cut or a tangible stand-in for layered, social meanings and values (Hayden, 1997).⁵

Place as flow of time and space

Beyond phenomenological experience linked with identity, place is also understood as social processes. Place as social process derives meaning from circumstances pinpointed by changing realities of space and time (Cresswell, 2004). In this way, the multiplicity and simultaneousness of human experiences layer, mix, and intersect (e.g., occupation of *a space for a time*). Once space becomes less important than time (e.g., meeting online versus meeting in a park), the values of location, ownership (capital), and experience shift. Space becomes interchangeable. Harvey (1996) recognizes this fluidity as the permeance problem of place. Experience matters more. Significantly, individuals with different identities (gender, race, ethnicity, religion, culture, ability) experience the same spaces as different places (Crouch, 2015; Massey, 1997). The power of who can define place, and consequently belonging, matters. Places do not have single stories (Massey, 1997).

Humanity increasingly lives within a transient and virtual society, altering the complexity of understanding and experiencing place. Easthope (2009) notes: "We are moving away from (rooted) identities based on place and toward (routed) hybrid and flexible forms of identity... [which includes the] continued importance of attachment to place in shaping our identities" (p. 62). Easthope argues mobility and place are not exclusive as characteristics of identity creation. Identity and belonging exists in the relationship of the individual (as mind and body) in context with time, place, and self-aware change (as a type of mobility) and impacts an individual's perception of belonging. This approach to identity requires exploring ever-changing reference points (i.e., place, location). Maintaining place attachment in this fluid context often relies on storytelling, cultural narratives (e.g., socially linking

4. Proshansky et al. (1983) explicitly link their discussion of place-identity with the human geography literature (e.g., Tuan, 1977 and Relph, 1976).

5. Hayden also argues for the interconnected triad of location, social connections, and individual perceptions/experiences, which correlate the interconnection of place, community, and belonging.

ideas between people), continuity of dialogue (in the form of communication across place, e.g., phone, social media), tangible reminders (e.g., material culture objects), intangible behavior and experience (e.g., traditional actions and language), and elasticity of identity (e.g., intersectionality) (Barcus & Shugatai, 2021). Our sense of place—our marking of self in a rapidly shifting world—is dynamic and essential to belonging and sense of community.

Place involves active social processes in the context of community. Massey's influential essay on place and globalization (1997) remains foundational to current discussions about place, identity, and community in an evolving world. Massey embraced the flux of contemporary place in four characteristics: places cannot remain static, places are not bound by finite edges, places do not have singular identities, places are simultaneously reproduced and unique. These characteristics emerged from globalization but continue to describe the realities of place in a digital and virtual world, and impact sense of belonging in online learning environments.

Place in learning environments

Place—as physical setting, as well as cultural understanding and a sense of belonging in the context of community—is broadly recognized as integral to the learning process (Allen & Molina, 1992; Bailey & Stegelin, 2003; Carter et al., 2018; Clary et al., 2013; Mulrooney & Kelly, 2021; Zuckerman, 2019).⁶ “Our experience of the environment is a result of the interlacing of perceptions, movements, thoughts, affects, and sensations” (Pint, 2016, p. 65). Alternatively, Johnson (2012) says: “Being-in-place is continually an act of engaged/active learning” (p. 833). Education literature emphasizes ways sense of place can be used to enhance or structure learning experiences (e.g., Butzow, 2019; Cowell et al., 2016; Danielsson et al., 2016; Dentzau, 2014; van Beurden & de Haan, 2019; Zuckerman, 2019). Gruenewald (2003b) wrote:

Places are fundamentally pedagogical because they are contexts for human perception and for participation in the phenomenal, ecological, and cultural world. What we know is, in large part, shaped by the kinds of places we experience and the quality of attention we give them (p. 645).

Sumrall et al. (2015) explained:

To fully understand the concept of sense of place, one must first understand that there is a knowledge component to this concept. Sense of place is not simply an attachment to a place, but it also contains a cognitive aspect. This knowledge of place and attachment to place can play a role in an individual's way of knowing, which may play a role in a student's way of understanding...material (p. 37).

6. Some education literature uses place (and sense of place) as characteristics or descriptors rather than as individual experience or identity (e.g., Getz & Iev-Ari, 2017). This approach might describe a student as from an archetypical place, such as a large city or specific socio-economic status rather than consider the student's tangible and intangible experiences of that place.

Place as a learning environment cannot ignore how community and belonging are inherent components of a student's experience. Often unspoken and tacitly understood, a student's experience of learning reinforces identity and position as within, without, similar, dissimilar, acceptable, or unacceptable. These boundaries establish how a student belongs and fits in community (socially, intellectually, tangibly). As Cresswell (2004) notes, place is invested with power. A student's sense of place is thick and multivalent—and requires broad support across families and communities (Strickland & Hadjiyanni, 2013; Zuckerman, 2019). Places of and for learning engage social relationships, cultural response, and experience (Williams & Anderson, 2015). Sense of place and sense of community are critical qualities for all students.

The distinction between place-based and place-enhanced learning recognizes intentional pedagogical designs to integrate place into learning. Place-based learning follows a specific approach that grounds the learning process in the details and experiences of one or more places. Place-based learning is situational, “multidisciplinary, experiential, and intergenerational” (Gruenewald, 2003a, p. 4; 2003b). Place-enhanced learning intentionally creates a learning environment as a place to enhance learning (i.e., *process* rather than *subject*) (e.g., Edwards-Vandenhoeck, 2018; Rovai, 2022; Sharples, 2017; Williams & Anderson, 2015). Gruenewald (2003a) wrote:

Being in a situation has a spatial, geographical, contextual dimension. Reflecting on one's situation corresponds to reflecting on the space(s) one inhabits; acting on one's situation often corresponds to changing one's relationship to a place. Freire asserts that acting on one's situationality, what I will call *decolonization* and *reinhabitation*, makes one more human. It is this spatial dimension of situationality, and its attention to social transformation, that connects critical pedagogy with a pedagogy of place (Gruenewald 2003a, p. 4; emphasis in the original).

Developing and using sense of place in the learning process requires care and thought. Educators must be attentive to consequences. Each student arrives to learn with their own sense of their place in the world based on their experience. Students are developing awareness of who they are, which communities include them, and whether they belong or experience sense of community. The learning environment then becomes a challenge to their place in the world by suggesting or requiring adjustment to new ideas and cultural norms (Gruenewald, 2003b; Kannen, 2014). Kannen (2014) explores sense of place in women and gender studies classrooms. The students explained their experience of these places as both conflict with their established identities and sense of place, and as learning and recognition. Beyond physical and emotional safety and positive interactions with peers and teachers, students require trust, agency, and social capital, all measures of sense of community (McMillan & Chavis, 1986), to negotiate this shifting understanding and to maintain their senses of place while learning (Riley, 2019). Significantly, these same characteristics can also enhance the learning process.

The literature emphasizes that learning environments (or teaching approaches) that exclude or other some students deny, stigmatize, and discriminate against students. Lack of sense of community and place results in students disconnecting, disruptions, and dissolution of social relationships caused

by lower self-confidence and self-worth, distrust of authority, discouragement, and limited notions of potential (Bailey & Stegelin, 2003; O'Connell et al., 2019; Sharples, 2017). Lack of sense of community and place may also decrease student persistence (Carter et al., 2018). In contrast, sense of place and belonging counteracts isolation, increases motivation and wellbeing, and improves academic performance and self-confidence (O'Connell et al., 2019; Pedler et al., 2022; Riley, 2019). Collaborative teaching techniques (e.g., seeking participation, team interactions) build community and sense of place among students but may have contradictory outcomes for minority students dealing with microaggressions and other biases from their peers (Carter et al., 2018). Educators have responsibilities to challenge normative assumptions and be conscious of place and community so teaching is “more relevant to the lived experiences of students and teachers” (Gruenewald, 2003b, p. 620; Ebersöhn, 2015; Kayama & Yamakawa, 2020; Taylor, 2004; Trawalter et al., 2021). Students and teachers should share accountability for their mutual place.

Consideration of place and belonging in the online learning community is understudied, as are the ways online learning environments promote a sense of community, place, and belonging. Rovai's (2002) exploration of community building within asynchronous online learning environments identified that lacking a sense of community (or belonging) resulted in students' feeling disconnected, isolated, distracted from learning goals, and unconnected to instructors. Conversely, developing community increased student persistence, peer support between colleagues, and satisfaction with learning. As noted, belonging is an essential contributor to an individual's sense of community (McMillan and Chavis, 1986). Seijo et al. (2023) argue online technologies can increase student participation, which enhances the students' perceived sense of belonging, wellbeing, and success. Lansiquot and MacDonald (2019) argue that virtual learning environments (specifically those integrating VR and AR or reliant on virtual interfaces such as online archives or student-created data visualizations) are inherently place-based. They contend virtual learning relies on place-based knowledge and requires building interdisciplinary connections to establish shared and common understandings, another contributor to sense of community. For example, courses that require students to use local knowledge or experience to address virtual, shared, and in-class exercises form shared sense of place. Seijo et al. (2023) and Blanchard (2008) contend online communities are prone to develop stronger sense of community because the intangible nature of the interaction places emphasis on community norms and person-to-person interactions, which strengthen the individual sense of identity.

Place as commonality

Identity, community, and belonging unite in place. Place encompasses our individual understanding of who we are; place requires understanding how our individual identities relate to others; and place captures the sense of whether we belong in any given setting. Place is inherently phenomenological, mixing conceptions of self with tangible experience, intangible performance, and social knowledge. Measuring place in educational settings is almost impossible, as students are typically still developing their own understanding of identity and the skills to express these complex thoughts. While place has historically been described through thick description (e.g., Tuan, 1977), the development of *sense of*

community scales in the community psychology literature (e.g., McMillan and Chavis, 1986) enable the use of finite questioning to determine the strength of existing place (tangible and intangible community and belonging). McMillan, in particular, explored how an individual's perception of their position and belonging was defined within social community (McMillan & Chavis, 1986; Peterson et al., 2008). These approaches seek to measure the same condition—place belonging—from distinct disciplinary perspectives. While the words are different—*place* versus *sense of community* or *belonging*—the concept ties to the same experience of individuals negotiating their identities within tangible and intangible space, such as physical classrooms, course policies, and the social dynamics of learning with others in an online class.

Methods and Procedures

Measuring students' experience and perceptions of place in online classes must encompass the multivalent, nuanced character of place, community, and belonging. Often, people can describe their experience but are unable or unprepared to connect experience with the more abstract and intangible components of place, environment, belonging, and community. While surveys of attitudes and experience have historically been used to measure place and sense of community, the validity and reliability of some surveys have been challenged (Peterson et al., 2008). For this study, three measures of sense of community and classroom community have been used to cross-reference aspects of place, community, online place, and belonging. Surveys were used to include a geographically and culturally diverse sample across multiple institutions while minimizing the obstacles to participation inherent in focus groups or interviews (e.g., time, discomfort) (Smithson, 2000).

College students were recruited through convenience and snowball sampling. Principal investigators shared information about this study with their peers at other universities and requested that they share details about this study with their undergraduate courses, as well as with their colleagues in their respective departments. To help increase sample size, the principal investigators shared information about this study with their own colleagues and courses. Participants were recruited from a variety of large and small colleges across the United States.

To participate in this study, participants needed to be legal adults in the area they were recruited (at least 19 years old in Nebraska and Alabama, 21 years old in Mississippi, and 18 years old in other states), and to have taken at least one online course in college. As a result of recruitment, a total of 212 individuals agreed to participate in this study. Participants were asked to complete an online survey where they answered questions regarding their online class, including the physical environment where they engaged in the online class, their experiences with the online class, as well as measures involving community. The online survey took approximately 30 minutes to complete, and all elements of this study were approved by the appropriate institutional review boards.

Participants

Participants for this study were undergraduate university students recruited in two different ways: convenience sampling with students in the principal investigators' classes or by snowball sampling in

which the principal investigators reached out to other professors in their social network via LinkedIn and email requesting to share the study with their own students. Some professors may have offered course or extra credit to students who participated in the study. As a result of these recruiting procedures, 212 participants completed the online survey. The majority of participants in this study were female (85.8%), with the rest being male (13.7%) (one participant left the question blank; 0.5%). The majority of participants were white (64.6%), followed by Hispanic/Latine (17.9%), then other/mixed (7.1%), Black/African American (6.6%), Asian/Pacific Islander (2.4%), and Middle Eastern (1.4%). The majority of participants stated that their sexual orientation was heterosexual (82.5%) and remaining participants identified with a sexual minority (17.5%). 93.9% of participants were enrolled in classes full-time; 3.8% were enrolled part-time, and 0.9% were enrolled in only one course. 8.5% of participants were first-year students, 36.3% were second-year students, 31.6% were third-year students, 18.4% were fourth-year students, 2.4% were fifth-year students, 1.4% were six or more years, and 1.4% left this question blank. The average age of participants in this study was 20.69 years ($SD = 3.42$) and the average GPA (on a 4.0 scale) was 3.58 ($SD = .50$).

Measures

The current study utilized an online survey compiled from three validated sense of community scales to collect quantitative data to address the study hypothesis and research question.

Online course data

Participants were asked to identify one online course that they have taken in college. Participants were then asked to identify what type of course it was (natural science course, social science course, design course, business course, liberal arts course, fine arts course, or other), and the structure of the course (lecture, lecture and lab, discussion seminar, studio, or other). Participants were asked to identify what percentage of the time the course was online, what technology was used for course delivery (such as Teams, Zoom, etc.), and whether the course was synchronous or asynchronous. Additionally, participants described how many times the class met, how long each class session lasted, how many students were in the class, and where they were physically while they engaged in the class (such as their dorm, coffee shop, etc.).

Participants also answered close-ended questions regarding how interesting the class was, how satisfied they were with the class, how challenging the class was, how much they learned from the class, and how much they enjoyed the class. Participants indicated their final grade in the class. Participants also answered the following questions that aimed to understand how participants integrated their virtual environments: “How frequently did you experience difficulties in separating home, school, and work when completing this course?” and “To what degree did you experience struggles with the following based on the setting in which you completed this course?” and “To what degree were you distracted in the setting in which you completed this course?” The scales for these three questions were 1 (*not at all*) to 5 (*all the time*).

The survey measured sense of place and belonging using established scales for sense of community. Three validated scales were selected for complementary breadth in examining face-to-face and virtual interactions and for connection to the classic literature on place and community.

Brief sense of community scale (BSCS)

Peterson et al.'s (2008) brief sense of community scale (BSCS) re-enforced the validity of the sense of community framework with a simplified eight-question survey. In this study, the BSCS was adapted to substitute the word "learning environment" for "neighborhood" in the eight questions. The scale included items such as "I can get what I need in this learning environment" and "I belong in this environment." The scale options ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). The internal reliability was acceptable for these items (Cronbach's alpha = .93).

Classroom sense of community scale (SOC-C)

The Petrillo et al. (2016) classroom sense of community scale (SOC-C) measures students' perceptions of community within a classroom setting, with attention to McMillan and Chivas' (1986) four original markers of sense of community as well as interpersonal relationships. Participants completed the 26-item SOC-C. Example items of this scale include "I feel I belong to this class" and "I think I have a lot in common with my classmates." Likert options for this scale were from 1 (*not at all true*) to 5 (*completely true*). This scale also reflected acceptable internal reliability (Cronbach's alpha = .97).

Sense of virtual community scale

The Blanchard (2007, 2008) sense of virtual community scale measures how virtual engagements develop place and belonging through the establishment of community norms, which may differ from face-to-face social norms (e.g., the socially constructed "us" versus the negotiated "you and me"). A key aspect of Blanchard's scale is discerning if respondents know the identity of others (and recognize that others know them). The language of the Blanchard scale was not modified for this study. This scale states that the word "group" reflects individuals that are in the course with respondents, as noted in instrument instructions. Example items from this scale include "I have friends in this group" and "I get a lot out of being in this group." Scale options are from 1 (*strongly disagree*) to 4 (*strongly agree*). This scale also reflected acceptable internal reliability (Cronbach's alpha = .96).

Control variables

Participants answered questions regarding their age, sex, ethnicity, education, sexual orientation, and relationship status. Participants also answered questions regarding the number of children they have at home. Ethnicity, gender, sexual orientation, and relationship status were dichotomized for analyses.

Data Analysis

Data from this study was analyzed using correlations, ANOVAs, and regression analyses. First, ANOVAs were used to compare all three measures of community based on different course characteristics, such as the course content (natural science, social science, design, business, liberal arts, fine arts, and other), course structure (such as lecture, discussion, lab, or studio), course format (virtual, in-person, hybrid), and course synchronicity (synchronous versus asynchronous). Next, all study variables were correlated using bivariate correlations to examine priori hypotheses. Subsequently, assumption testing was conducted to prepare for regression analyses (Laerd, 2018). Criterion and predictor variables were continuous, and there was a linear relationship between the criterion (all three measures of community) and predictor variables (course interest, course satisfaction, course effort, course challenge, amount learned in the course, course enjoyment, course grade, and course motivation). Additionally, through visual inspection, there was an independence of observations and no unusual or out of range data points. Data showed homoscedasticity of residuals and the residuals were normally distributed. Given the data passed these assumptions, regression analyses were used.

Results

Prior to conducting the main analyses, descriptive statistics were run to examine the courses that participants answered questions about. More specifically, participants selected one virtual course that they had enrolled in to answer questions regarding sense of community. Results of these analyses are presented in Table 1. Of the courses selected, the most frequent course was natural science (29.7%), followed by social science (22.2%), liberal arts (14.6%), other (9.9%), fine arts (9.0%), design (8.5%), and business (6.1%). Of the courses selected, the majority were lecture only (57.1%), followed by lecture and lab (22.6%), then discussion (11.3%), studio (5.2%), and other (3.8%). The courses were relatively equivalent regarding whether they were synchronous (50.9%) and asynchronous (49.1%). Some courses relied on video software, such as Zoom, for course delivery (77.4%), while others used collaborative tools, such as Google Slides/Docs and Miro collaboration boards (22.6%). ANOVAs were used to examine if there were any differences regarding sense of community based on these course topics and formats (see Table 1). First, design, business, and fine arts courses typically scored higher in sense of community compared to natural and social science, liberal arts, and other courses. Sense of community was typically higher in studio courses compared to other course structures. Sense of community was also higher with synchronous courses rather than asynchronous, regardless of whether video software was used or not. More precisely, sense of community and virtual sense of community was lowest in asynchronous courses that used collaboration software, such as Google Drive and Miro. Sense of community and virtual sense of community was highest in synchronous courses that utilized video software, such as Zoom. There were no mean differences regarding the brief sense of community scale based on synchronicity of the class.

Table 1.

ANOVA comparisons of course details for measures of community and connection (N = 212).

		N	Brief Sense of Community	Sense of Community	Sense of Virtual Community
Course					
Content	Natural science	63	2.03 (.86) _a	2.03 (.98) _a	1.98 (.57) _a
	Social science	47	2.40 (.86) _a	2.26 (.76) _a	1.88 (.64) _a
	Design	18	3.37 (1.24) _b	3.52 (.74) _b	3.08 (.49) _b
	Business	13	2.73 (1.10) _{a,b}	2.90 (.93) _b	2.41 (.70) _{a,b}
	Liberal arts	31	2.18 (.74) _a	2.10 (.70) _a	1.81 (.58) _a
	Fine arts	19	2.79 (1.16) _{a,b}	2.60 (.97) _{a,b}	2.04 (.72) _a
	Other	21	2.31 (.78) _a	2.19 (.79) _a	1.84 (.68) _a
<i>F</i>			5.99***	10.96***	10.63***
Course Structure					
Structure	Lecture	12			
	Lecture and Lab	1	2.33 (.89)	2.32 (.84) _a	1.97 (.71) _a
	Discussion	48	2.23 (.98)	2.17 (.75) _a	2.06 (.58) _a
	Studio	24	2.53 (.98)	2.31 (.77) _a	1.92 (.57) _a
	Other	11	3.06 (1.24)	3.26 (1.23) _b	2.97 (.78) _b
<i>F</i>		8	2.77 (1.27)	2.25 (.77) _a	2.03 (.56) _a
<i>F</i>			2.18	3.90**	5.94***
Course Synchronicity					
Synchronicity	Synchronous - video	79	2.33 (.90)	2.43 (.74) _{a,b}	2.19 (.60) _a
	Asynchronous - video	84	2.38 (.97)	2.18 (.83) _a	1.81 (.64) _b
	Synchronous - collaboration	28	2.66 (1.29)	2.88 (1.08) _b	2.56 (.82) _a
	Asynchronous - collaboration	20	2.22 (.86)	1.80 (.66) _c	1.72 (.55) _b
<i>F</i>			1.00	8.27***	12.58***

Note. Means with no subscript (a, b, c) in common differ at $p < .05$ using Bonferroni post hoc comparisons. Bonferroni post-hoc analyses were not computed with course synchronicity since this variable only had two options.

* $p < .01$; *** $p < .001$.

Table 2.

Correlations between course evaluations and community measure (N = 212).

Variable	Mean (SD)	1	2	3	4	5	6	7	8	9	10	11
1. Brief sense of community	2.56 (1.07)	---	.73**	.58**	.48**	.47**	.39**	.03	.49**	.51**	.12	.38**
2. Sense of community	2.53 (.94)		---	.85**	.51**	.43**	.36**	.06	.47**	.51**	.13	.41**
3. Sense of virtual community	2.21 (.76)			---	.40**	.28**	.28**	.22**	.38**	.38**	.03	.36**
4. Course interest	3.00 (1.10)				---	.62**	.39**	.09	.70**	.77**	.23**	.44**
5. Course satisfaction	2.79 (1.37)					---	.53**	.11	.57**	.64**	.33**	.44**
6. Course effort	2.31 (1.15)						---	.03	.47**	.44**	.39**	.58**
7. Course challenge	3.08 (1.16)							---	.17*	.07	.43**	.01
8. Course amount learned	2.79 (1.11)								---	.72**	.23**	.49**
9. Course enjoyment	3.12 (1.23)									---	.27**	.40**
10. Course grade	2.17 (1.86)										---	.30**
11. Course motivation	3.68 (1.14)											---

** $p < .01$; * $p < .05$.

Table 3. Regression results predicting community.

	Interest	Satisfaction	Effort	Challenge	Learned	Enjoyment	Grade	Motivation
Intercept	4.67 (.20)***	4.45 (.26)***	3.63 (.24)***	3.66 (.25)***	4.40 (.21)***	4.94 (.22)***	2.18 (.39)	2.21 (.23)***
Brief Sense of Community	.25 (.09)**	.43 (.12)***	.32 (.11)**	.11 (.11)	.33 (.10)***	.34 (.10)**	.03 (.18)	.21 (.11)*
Sense of Community	.49 (.16)**	.70 (.21)***	.34 (.20)	.51 (.20)*	.37 (.17)*	.60 (.18)***	1.15 (.32)***	.31 (.19)
Virtual Sense of Community	.11 (.17)	.56 (.22)*	.15 (.21)	.98 (.21)***	.07 (.17)	.27 (.18)	1.31 (.33)***	.09 (.20)
F	27.71***	24.88***	14.00***	8.34***	25.30***	30.54***	6.52***	15.52***

* $p < .05$; ** $p < .01$; *** $p < .001$.

Correlations were examined to address the hypothesis of this study, that sense of community as measured by the brief sense of community scale, the sense of community-classroom scale, and the sense of virtual community scale would predict course satisfaction, performance, and motivation. Results of these analyses are presented in Table 2. The brief sense of community scale (BSCS) was positively associated with course interest, satisfaction, effort, amount learned, enjoyment, and motivation. The brief sense of community scale was not associated with course challenge or course grade. The sense of community-classroom (SOC-C) scale was positively associated with course interest, satisfaction, effort, amount learned, enjoyment, and grade, but was not related to effort or motivation. The virtual sense of community scale was positively associated with satisfaction, challenge, enjoyment, and grade but not related to interest, effort, amount learned, or motivation. Consistently, all three measures of community were related to positive elements of the course that was selected.

To further test the hypothesis of this study, regressions were performed to see which scales of community, if any, predicted various experiences of virtual courses. Results of these analyses are presented in Table 3. All eight models were significant given large F values. For course interest, the beta coefficients for the BSCS and SOC-C scales were significant, whereas the virtual sense of community scale was not significant. All three measures of community significantly predicted course satisfaction. The BSCS scale predicted effort, but the SOC-C scale and the virtual sense of community scale did not predict effort. The SOC-C scale and the virtual sense of community scale significantly predicted course challenge, but the BSCS scale was not significant. Both the BSCS scale and the SOC-C scale significantly predicted the amount learned in the course, whereas the virtual sense of community scale was not significant. Both the BSCS scale and the SOC-C scale significantly predicted enjoyment in the course, but the virtual sense of community scale was not significant. The SOC-C scale and the virtual sense of community scale significantly predicted the grade in the course, whereas the BSCS scale did not predict the grade in the course. Last, the BSCS scale predicted motivation in the course, whereas the SOC-C scale and the virtual sense of community scale were not related to course motivation. Overall, these regression models show a trend where a general sense of community predicts course satisfaction, interest, effort, challenge, the amount learned, enjoyment, and motivation in the course.

Discussion

The survey results were consistent with literature on place, sense of community, and belonging. As discussed above, identity, community, and belonging unite in place. Place encompasses our individual understanding of who we are; place requires understanding how our individual identities relate to others; and place captures the sense of whether we belong in any given setting. As predicted, students' general sense of community in online courses was associated with measures of the students' course interest, effort, happiness, learning, and satisfaction, rather than specific types of technology or delivery methods. The three scales allowed for triangulation of elements that contribute to a sense of community and belonging. The results align with the seminal sense of community measures established by McMillan and Chavis (1986), which establishes belonging through membership, influence, fulfillment, and emotional connection. These four measurements align closely with the literature on place. Findings affirm these elements as participants positively reported course

satisfaction, interest, and enjoyment. Similarly, sense of place and community has been linked with improved student learning outcomes, increased student persistence and satisfaction with learning, specifically learning with online technologies (Rovai, 2002; Seijo et al., 2023). Study results confirm these findings with high correlations between course satisfaction, amount learned, effort, and motivation. Online technologies have also been shown to increase student participation, which links to perceived sense of belonging and wellbeing (Seijo et al., 2023). Finally, online communities have been shown to develop a strong sense of place, community, and belonging due to intangible aspects based on person-to-person interactions (Blanchard, 2008; Seijo et al., 2023). Students' reported interest, effort, motivation, and amount learned confirm these connections which in turn strengthen individual sense of identity and belonging. Overall, strong sense of place and community results in improved student outcomes, satisfaction, and learning.

These results align with long-established theories on place and community that recognize the social aspects of belonging. Physical learning environment can affect sense of place, community, and belonging. This result also reinforces the role of individuality in sense of place, community, and belonging. Individual students reported community and belonging in learning situations that involved little to no face-to-face human interaction and without similarly structured physical cues. Their sense of place and community was derived from individual perceptions of belonging, engagement, and accomplishment, which may have been supported by external cues (e.g., instructor or peer feedback) but was valued individually. Future research using qualitative methods (e.g., focus groups or interviews) may be developed to offer additional insight into the aspects of the online communities and individuality that drive place and community belonging.

Additionally, (RQ1) survey responses showed no difference in sense of community between types of technology (e.g., video-based, collaboration-based) but did indicate differences based on whether the course was delivered synchronously or asynchronously. Differences were also shown with regard to disciplinary area. This result is initially unsurprising. The social (or pseudo-social) aspects of synchronous online learning provide opportunities for students to see, visualize, exchange messages, and otherwise engage with their peers and instructors. These interactive cues provide opportunities for recognition, reinforcement of success (e.g., being acknowledged for interactions), and broad awareness of shared goals (e.g., learning together). In contrast, asynchronous online learning provides opportunities for delayed recognition and reinforcement but requires students to maintain a different type of internal motivation (e.g., learning for self). But, the distinction that synchronous online learning produced similar sense of community and belonging regardless of delivery technology complicates the expectation. Students who were able to see and communicate with instructors and peers using video-based instruction (e.g., Zoom) reported similar results to students who only interacted in text or graphic formats via collaboration software (e.g., Google Drive or Miro). While synchronous collaboration software (e.g., Google Drive or Miro) does allow for real-time exchange of information, the range of information differs substantially from video-based technologies. The collaboration technologies mirror social media and texting features commonly used by students. This commonality may mean their interactions with typed words, images, and related communication was familiar and held as much meaning for the type of interaction (e.g., perceived as recognition, reinforcement, and shared awareness). If true, this finding suggests new opportunities for considering

what types of technology support classroom community, belonging, and learning—and expand the technological gulf between native users of social media and individuals with less engagement with these types of technological communication (whether students or educators). Some students may have self-selected online courses with delivery methods and technological approaches that best matched their preferences, but self-selection will be limited by curricular and other factors.

Limitations to the study include the structure of the established scales and type of information gathered. First, the survey method provides detailed quantitative information but does not provide opportunities for participants to explain unique or contextual details. The cross-sectional design limits the ability to infer causal effects. Further research should include qualitative interviewing, ethnography, or other methods that can capture the nuances of sense of place, community, and belonging in longitudinal structure (e.g., across a course's length) and motivation (e.g., distinct individual experiences). Second, the study does not provide enough data to assess which specific technologies or student uses of technology best promote sense of place, community, and belonging. The implementation and integration of video and collaboration tools into a course would reasonably affect these characteristics. Many courses will use multiple types of technology that may impact student experience and learning independently or collectively. Further, students may be using parallel technologies outside the formal course structure (e.g., Snapchat, Instagram, texting, other online communication tools) that support sense of place, community, and belonging independent of instruction. Third, the study did not control for prior relationships or pre-existing social networks that may have affected students' perception of place, community, and belonging in a course. For example, the data revealed higher sense of community and belonging for students enrolled in design studio courses. This may be a factor of instructional approach, technology, class size, or pre-existing social cohesion. Design programs often feature smaller class and cohort sizes that are socially bonded inside and outside the classroom. While these limitations raise questions for future study, they do not undermine the study's findings confirming technology use in online learning environments results in differing degrees of sense of community and belonging based on delivery format (i.e., synchronously or asynchronously) rather than technology type.

Conclusions

Sense of place in learning environments supports students' identity, belonging, and success. The unique conditions of online learning environments (e.g., technology; synchronicity; interaction; collocation within shared online platforms, private physical setting, and individual social positioning) result in a learning environment distinct from the physical classroom. The technology interfaces students use support place, community, and belonging, but are not as important as how the students interact with the course (e.g., motivation, synchronicity). Future analysis and exploration should explore how disciplinary differences in subject and instructional approaches relate to students' reported sense of place. Future research should also examine the myriad ways students experience place, community, and belonging in online courses (e.g., physical environment, online environment, parallel online communications, and social contexts). While findings in the current study confirmed a stronger sense of community and belonging in synchronous online courses, how specific types of

teaching technologies (e.g., video conferencing versus other collaboration systems; layered uses of technology) are used may further enhance or hinder students' experiences. Sense of place, community, and belonging in the classroom are more complex than learning mode. Further research should explore how sense of place, community, and belonging are social constructs supported by the process of learning itself, irrespective of where or how the learning occurs.

Sense of place, community, and belonging in the physical world is interwoven with multiple identities and values. Additional research is needed to understand these intersections in virtual settings. Vaux and Langlais (2023) found virtual social environments interfaced with physical environments create a merged social space. Educators and students would benefit from understanding how the merging of virtual–physical in online learning environments impacts student experience and how students use technology to negotiate and control their position within the classroom community. The education–place literature raises the critical issue that homogenous understandings of place result in hegemonic learning environments that exclude and deny. Physical aspects of space are interconnected with political and social ideas that we use to position ourselves in the world (Massey, 1997; Schein, 2009). As Relph (1976) states:

The essence of the place lies in the largely unselfconscious intentionality that defines places as profound centres of human existence. There is for virtually everyone a deep association with and consciousness of the places where we were born and grew up, where we live now, or where we have had particularly moving experiences. This association seems to constitute a vital source of both individual and cultural identity and security, a point of departure from which we orient ourselves in the world (p. 43).

The online classroom offers similar opportunities for educators and students to establish their own sense of place, community, and belonging but uses different markers. The online classroom is a multivalent, experientially thick, fluid place (Easthope, 2009; Relph, 1976; Strickland & Hadjiyanni, 2013; Tuan, 1977; Vaux & Langlais, 2023; Zuckerman, 2019). As in the physical world, inaccessibility (e.g., technology platforms, limited or no internet access, internet speed) and bias can exclude individuals and hinder sense of community and belonging, and consequently educational access and gain. The sense of place we each have—whether positive or negative—shapes our learning (Gruenewald, 2003a, 2003b). Developing sense of place and belonging in the online classroom requires more than best intentions. The existing pedagogical literature on place recounts how educators must begin by investigating their own positionality and place (Edwards-Vandenhoeck, 2018; Kannen, 2014). Educators should consider how their teaching promotes place, community, and belonging. Multiple aspects of place, community, and belonging require further exploration. As scholars add to our understanding of place and online learning, educators and students can continue forward teaching and learning while using established strategies for inclusion augmented by awareness for how synchronicity and technology alter students' experience of community and belonging.

References

- Alfieri, A. (2021). Space of flows and space of places: Manuel Castells and the information age. In La Rosa, D., Privitera, R. (Eds.), *Innovation in urban and regional planning. INPUT 2021. Lecture Notes in Civil Engineering*, vol 146, (pp. 221-224) Springer, Cham.
https://doi.org/10.1007/978-3-030-68824-0_24
- Altman, I. & Low, S. M. (1992). *Place attachment: A conceptual inquiry*. Plenum Press.
- Antonsich, M. (2010). Meanings of place and aspects of the self: An interdisciplinary and empirical account. *GeoJournal*, 75(1), 119-132. <https://doi.org/10.1007/s10708-009-9290-9>
- Barcus, H. R. & Shugatai, A. (2021). The role of nostalgia in (re)creating place attachments for a diasporic community. *Geographic Review*, 112(1), 103-124.
<https://doi.org/10.1080/00167428.2020.1852406>
- Blanchard, A. L. (2008). Testing a model of sense of virtual community. *Computers in Human Behavior*, 24(5), 2107-2123. <https://doi.org/10.1016/j.chb.2007.10.002>
- Blanchard, A. L. (2007). Developing a sense of virtual community measure. *CyberPsychology & Behavior*, 10(6), 827-830. <https://doi.org/10.1089.cpb.2007.9947>
- Canter, D. (1977). *The psychology of place*. The Architectural Press, LTD.
- Carter, J., Hollinsworth, D., Raciti, M., & Gilbey, K. (2018). Academic ‘place-making’: Fostering attachment, belonging and identity for Indigenous students in Australian universities. *Teaching in Higher Education*, 23(2), 243-260.
<https://doi.org/10.1080/13562517.2017.1379485>
- Castells, M. (2020). Space of flows, space of places: Materials for a theory of urbanism in the information age. In R.T. LeGates and F. Stout (Eds.), *The City Reader*, 7th ed., pp. 240-251. New York: Routledge. Original work published 2005.
- Clary, R. M., Sumrall, J. L., Rodgers III, J. C., & Wandersee, J. H. (2013). The effects of geographic affiliation on student’s perceptions, awareness, and responses to the 2010 Deepwater Horizon oil spill. *Journal of Geoscience Education*, 61, 453-460. <https://doi.org/10.5408/12-357>
- Colman, K. (2017). The bathtub. *Phenomenology & Practice*, 11(2), 35-40.
<https://doi.org/10.29173/pandpr29346>
- Cowell, M. J., Gaines, K., Pearson, M., Corson, K., Wright, H. D., & Logan, B. J. (2016). Space, place, and privacy: Preschool children’s secret hiding places. *Family and Consumer Sciences Research Journal*, 44(4), 412-421. <https://doi.org/10.1111/fcsr.12169>
- Cresswell, T. (2004). *Place: A short introduction*. Blackwell.
- Cresswell, T. (2008). Place: Encountering geography as philosophy. *Geography*, 93(3), 132-139.
<https://doi.org/10.1080/00167487.2008.12094234>
- Crouch, D. (2015). Affect, heritage, feeling. In E. Waterton & S. Watson (Eds.), *The Palgrave handbook of contemporary heritage research* (pp. 177-190). New York: Palgrave Macmillan.
- Danielsson, A. T., Andersson, K., Gullberg, A., Hussénus, A., & Scantlebury, K. (2016). “In biology class we would just sit indoors...”: Experiences of insideness and outsideness in the places student teachers’ associate with science. *Cultural Studies of Science Education*, 11, 1115-1134.
<https://doi.org/10.1007/s11422-015-9702-8>

- Dentzau, M. W. (2014). The value of place. *Cultural Studies in Science Education*, 9, 165-171.
<https://doi.org/10.1007/s11422-013-9552-1>
- Easthope, H. (2009). Fixed identities in a mobile world? The relationship between mobility, place, and identity. *Identities: Global Studies in Culture and Power*, 16(1), 61-82.
<https://doi.org/10.1080/10702890802605810>
- Ebersöhn, L. (2015). Making sense of place in school-based intervention research. *Contemporary Educational Psychology*, 40, 121-130. <http://dx.doi.org/10.1016/j.cedpsych.2014.10.004>
- Edwards-Vandenhoeck, S. (2018). 'Over there, in the future': The transformative agency of place-based design education in remote Aboriginal communities. *International Journal of Art & Design Education*, 37(4), 622-637. <https://doi.org/10.1111/jade.12209>
- Fallatah, S. A. (2020). Senior interior design students' perceptions about distance learning in the shadow of COVID-19. *Journal of Public Health Research*, 9(s1), 29-37.
<https://doi.org/10.4081/jphr.2020.1914>
- Fleischmann, K. (2022). A paradigm shift in studio pedagogy during pandemic times: An international perspective on challenges and opportunities teaching design online. *Journal of Design, Business & Society*, 8, 247-272. https://doi.org/10.1386/dbs_00042_1
- Getz, S., & Lev-Ari, L. (2017). "Sense of place" and college placement. *Higher Education*, 74(6), 933-948. <https://doi.org/10.1007/s10734-016-0086-9>
- Gieryn, T.F. (2000). A space for place in sociology. *Annual Review of Sociology*, 26, 463-496.
<https://doi.org/10.1146/annurev.soc.26.1.463>
- Gruenewald, D. A. (2003a). The best of both worlds: A critical pedagogy of place. *Educational Researcher*, 32(4), 3-12. <https://doi.org/10.3102/0013189X032004003>
- Gruenewald, D. A. (2003b). Foundations of place: A multidisciplinary framework for place-conscious education. *American Educational Research Journal*, 40(3), 619-654.
<https://doi.org/10.3102/00028312040003619>
- Harvey, D. (1996). *Justice, nature, and the geography of difference*. Blackwell.
- Harvey, D. (1993). From space to place and back again. In J. Bird, B. Curtis, T. Putnam, G. Robertson, & L. Tickner (Eds.), *Mapping the futures* (pp. 3-29). Routledge.
- Hayden, D. (1997). *The power of place: Urban landscapes as public history*. MIT Press.
- Hodder, I. (2012). *Entangled: An archaeology of the relationship between humans and things*. Wiley-Blackwell.
- Johnson, J. T. (2012). Place-based learning and knowing: Critical pedagogies grounded in Indigeneity. *GeoJournal*, 77(6), 829-836. <https://doi.org/10.1007/s10708-010-9379-1>
- Kannen, V. (2014). These are not 'regular places': Women and gender studies classrooms as heterotopias. *Gender, Place & Culture*, 21(1), 52-67.
<https://doi.org/10.1080/0966369X.2012.759910>
- Kayama, M. & Yamakawa, N. (2020). Acculturation and a sense of belonging in children in U.S. Schools and communities: The case of Japanese families. *Children and Youth Services Review*, 119, 1-11. <https://doi.org/10.1016/j.childyouth.2020.105612>

- Kearney, A., & Bradley, J. J. (2009). 'Too strong to ever not be there': Place names and emotional geographies. *Social & Cultural Geography*, 10(1), 77-94.
<https://doi.org/10.1080/14649360802553210>
- Laerd Statistics. (2018). Pearson's product-moment correlation using SPSS Statistics. *Statistical tutorials and software guides*. Retrieved from <https://statistics.laerd.com>
<https://statistics.laerd.com/>
- Lansiquot, R.D. & MacDonald, S.P. (2019). *Interdisciplinary perspectives on virtual place-based learning*. Palgrave Macmillan.
- Lansiquot, R. D., & MacDonald, S. P. (2018). *Interdisciplinary Place-Based Learning in Urban Education: Exploring Virtual Worlds*. Palgrave Macmillan.
- Lefebvre, H. (1977). *The production of space*, Blackwell.
- Massey, D. (1997). A global sense of place. In T. Barnes & D. Gregory (Eds.), *Reading human geography* (pp. 315-323). Arnold.
- Massey, D. (1991). The political place of locality studies. *Environment and Planning A*, 23(2), 267-281. <https://doi.org/10.1068/a230267>
- McMillan, D. W. & Chavis, D. M. (1986). Sense of community: A definition and theory. *Journal of Community Psychology*, 14(1), 6-23. [https://doi.org/10.1002/1520-6629\(198601\)14:1%3C6::AID-JCOP2290140103%3E3.0.CO;2-I](https://doi.org/10.1002/1520-6629(198601)14:1%3C6::AID-JCOP2290140103%3E3.0.CO;2-I)
- Mulrooney, H. M. & Kelly, A. F. (2021). Belonging, the physical space of the university campus and how it is perceived by students: A quantitative analysis among a diverse student group. *Journal of Learning Spaces*, 10(2), 1-13. <https://libjournal.uncg.edu/jls/article/view/2042>
- O'Connell, T. S., Lathrop, A. H., & Howard, R. A. (2019). Sense of place and first-year student transition: Fostering capacity through outdoor orientation experiences. *Journal of Outdoor Recreation, Education, and Leadership*, 11(4), 287-300. <https://doi.org/10.18666/JOREL-2019-V11-I4-8949>
- Orthel, B. D. (2022). Geography, heritage, and things: An analysis of an agricultural landscape in southern Idaho. *Geographical Review*, 112(4), 569-590.
<https://doi.org/10.1080/00167428.2020.1865815>
- Peterson, N. A., Speer, P. W., & McMillan, D. W. (2008). Validation of a brief sense of community scale: Confirmation of the principal theory of sense of community. *Journal of Community Psychology*, 36(1), 61-73. <https://doi.org/10.1002/jcop.20217>
- Pedler, M. L., Willis, R., & Nieuwoudt, J. E. (2022). A sense of belonging at university: Student retention, motivation and enjoyment. *Journal of Further and Higher Education*, 46(30), 397-408. <https://doi.org/10.1080/0309877X.2021.1955844>
- Petrillo, G., Capone, V., & Donizzetti, A. R. (2016). Classroom sense of community scale: Validation of a self-report measure for adolescents. *Journal of Community Psychology*, 44(3), 399-409.
<https://doi.org/10.1002/jcop.21769>
- Pickles, J. (2018). Place, autonomy and the politics of hope. In D.B. Billings & A.E. Kingsolver (Eds.), *Appalachia in regional context: Place matters* (pp. 71-90). University of Kentucky Press.
- Pint, K. (2016). The experience of the interior: Outlines of an alternative anthropology. *Interiors: Design/Architecture/Culture*, 7(1), 55-72. <https://doi.org/10.1080/20419112.2016.1165438>

- Popov, L., & Ellison, M. B. (2013). Performance, space, time: The production of interiority in Black Rock City. *Interiors: Design/Architecture/Culture*, 4(1), 53-74.
<https://doi.org/10.2752/204191213X13601683874163>
- Proshansky, H. M., Fabian, A. K., & Kaminoff, R. (1983). Place-identity: Physical world socialization of the self. *Journal of Environmental Psychology*, 3(1), 57-83. [https://doi.org/10.1016/S0272-4944\(83\)80021-8](https://doi.org/10.1016/S0272-4944(83)80021-8)
- Relph, E. (1976). *Place and placelessness*. Pion Limited.
- Riley, K. (2019). Agency and belonging: What transformative actions can schools take to help create a sense of place and belonging? *Educational & Child Psychology*, 36(4), 91-103.
- Robb, J. (2015). What do things want? Object design as a middle range theory of material culture. *Archeological Papers of the American Anthropological Association*, 26(1), 166-180.
<https://doi.org/10.1111/apaa.12069>
- Rovai, A. (2002). Building a sense of community at a distance. *International Review of Research in Open and Distance Learning*, 3(1), 1-16. <https://doi.org/10.19173/IRRODL.V311.79>
- Schein, R. H. (2009). Belonging through land/scape. *Environment and Planning A*, 41(4), 811-826.
<https://doi.org/10.1068/a41125>
- Schneekloth, L. H., & Shibley, R. G. (1995). *Placemaking: The art and practice of building communities*. John Wiley & Sons.
- Seijo, D., Vázquez, M. J., Novo, M., & Fariña, F. (2023). Studying the effects of sense of belonging to virtual communities in psychological well-being and adjustment to academic setting. *Educación XX1*, 26(1), 229-247. <https://doi.org/10.5944/educxx1.31818>
- Sharples, R. (2017). Local practice, translocal people: Conflicting identities in the multilingual classroom. *Language and Education*, 31(2), 169-183.
<https://doi.org/10.1080/09500782.2017.1295980>
- Smith, C. (2017). The influence of hierarchy and layout geometry in the design of learning spaces. *Journal of Learning Spaces*, 6(3), 59-67.
<https://libjournal.uncg.edu/jls/article/view/1485/1158>
- Smithson, J. (2000). Using and analysing focus groups: Limitations and possibilities. *International Journal of Social Research Methodology: Theory & Practice*, 3(2), 103-119.
<https://doi.org/10.1080/136455700405172>
- Strickland, A., & Hadjiyanni, T. (2013). “My school and me”—Exploring the intersections of insideness and interior environments. *Journal of Interior Design*, 38(4), 17-35.
<https://doi.org/10.1111/joid.12016>
- Sumrall, J. L., Clary, R. M., & Watson, J. C. (2015). Geographic affiliation and sense of place: Influences on incoming online students’ geological and meteorological content knowledge. *Journal of College Science Teaching*, 45(1), 36-43. <https://www.jstor.org/stable/43631883>
- Tan, S.-K., & Tan, S.-H. (2020). Clan/geographical association heritage as a place-based approach for nurturing the sense of place for locals at a World Heritage Site. *Journal of Hospitality and Tourism Management*, 45, 592-603. <https://doi.org/10.1016/j.jhtm.2020.10.017>
- Taylor, L. (2004). Sense, relationship and power: Uncommon views of place. *Teaching History*, 116, 6-13. <https://www.history.org.uk/secondary/resource/93>

- Trawalter, S., Hoffman, K., & Palmer, L. (2021). Out of place: Socioeconomic status, use of public space, and belonging in higher education. *Journal of Personality and Social Psychology, 120*(1), 131-144. <https://psycnet.apa.org/doi/10.1037/pspi0000248>
- Tuan, Y.-F. (1975). Place: An experiential perspective. *Geographical Review, 65*(2), 151-165. <https://www.jstor.org/stable/213970>
- Tuan, Y.-F. (1977). *Space and place: The perspective of experience*. University of Minnesota Press.
- Twigger-Ross, C. L., & Uzzel, D. L. (1996). Place and identity processes. *Journal of Environmental Psychology, 16*(3), 205-220. <https://doi.org/10.1006/jevps.1996.0017>
- Vaux, D. E., & Langlais, M. R. (2023) Reframing third places: Environmental changes of merging places during COVID-19. *Journal of Interior Design, 48*(1), 12-28. <https://doi.org/10.1111/joid.12232>.
- van Beurden, S. L., & de Haan, M. (2019). How do Moroccan-Dutch parents (re)construct their parenting practices? Post-migration parenthood as a social site for learning and identity. *Learning, Culture and Social Interaction, 21*, 1-9. <https://doi.org/10.1016/j.lcsi.2018.12.003>
- Williams, D., & Anderson, J. (2015). Tongue-tied no more: Diversity pedagogy and sense of place in the Learning Gardens. *Canadian Journal of Environmental Education, 20*(1), 25-45. <https://cjee.lakeheadu.ca/article/view/1340>
- Yarker, S. (2019). Reconceptualising comfort as part of local belonging: The use of confidence, commitment and irony. *Social & Cultural Geography, 20*(4), 534-550. <https://doi.org/10.1080/14649365.2017.1373301>
- Yeh, C. J., Borrero, N. E., Suda, J. F., & Cruz, C. I. (2021). Place matters: Exploring Native Hawaiian youths' cultural selves, pride, and generativity. *Asian American Journal of Psychology, 12*(1), 76-86. <http://dx.doi.org/10.1037/aap0000226>
- Ypi, L. (2017). Structural injustice and the place of attachment. *Journal of Practical Ethics, 5*(1), 1-21. <https://philpapers.org/rec/YPISIA>
- Zuckerman, S. J. (2019). Making sense of place: A case study of sensemaking in a rural school-community partnership. *Journal of Research in Rural Education, 35*(6), 1-18. https://jrre.psu.edu/sites/default/files/2020-07/35-6_0.pdf