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Community and connectedness in online higher education: a scoping review of the literature

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ABSTRACT

Community and connectedness are important concepts in online higher education. However, researchers debate how they are defined, operationalized, or enacted in practice. A scoping study was conducted to review the research literature on the extent, range, and nature of research in community and connectedness in online higher education. A total of 66 studies published from 2001 through 2018 were identified for review. The findings illustrate how research on community and connectedness has focused on areas such as course design, technology tools, faculty, and students as well as highlight the important role these concepts have played in the last two decades in online higher education. The gaps in the literature suggest a need to further investigate the role community and connectedness play in different types of programs and other roles that faculty, staff, and students could play to foster these concepts.

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Introduction

Online learning is well established in higher education today (Paulse & McCormick, 2020). During the last decade alone, millions of people have turned to online courses and programs to further their education (Seaman et al., 2018). However, despite the growing interest and increased enrollments in online courses and programs, many educators and skeptics alike have questioned the quality of online learning and specifically how effectively instructors and students can interact and develop a sense of social presence and community online (Veletsianos, 2020).

Interest in social interaction, community, and learning dates back to the 1990s, and sparked by various theories of social learning, researchers began thinking about them in a number of different ways. For instance, some began focusing on the role community can play in formal education settings and specifically how developing communities of learners can improve learning (Jonassen, 1995; Rogoff, 1994), while others focused more on the development of communities of practice (Barab & Duffy, 2012; Wenger, 1998, 2000) and professional learning communities in informal or workplace settings (DuFour et al., 2008; Stoll et al., 2006).

This interest in social theories of learning in general and community in particular also influenced how early online educators thought about how people should and could learn using the Internet. From Gunawardena's (1995) early work on social presence and online learning (which researchers later identified as an important building block for community development) to later work focused on developing online learning communities (Haythornthwaite & Kazmer, 2004; Luppicini, 2007; Palloff & Pratt, 2007) or later virtual communities of practice (Bond & Lockee, 2014), online educators were and continue to this day to be deeply interested in better understanding community in online learning.

Educators, theorists, and researchers have demonstrated the importance of community in education (Bransford et al., 2000; Kaufmann & Vallade, 2020; Skelcher et al., 2020; Vescio et al., 2008). Online educators, though, have argued that community takes on even more relevance for online education because students typically do not meet and learn in the same place and time, which research has shown can lead to a sense of disconnectedness and feelings of isolation and loneliness (Garrison, 2007; Kaufman & Vallade, 2020; Ludwig-Hardman & Dunlap, 2003) and high attrition rates (Angelino et al., 2007; Boston et al., 2011).

Given this, community has been a topic of interest for researchers in online courses and programs for the last two decades (Hill, 2012; Kear, 2011; Lally & Barrett, 1999; Luppicini, 2007; Sloman & Reynolds, 2003; Swan & Shea, 2005; Zhu, 2012). Over this time, researchers have found, among other things, a relationship between a sense of community and student satisfaction (Baturay, 2011; Brown, 2001; Liu et al., 2007; Ni & Aust, 2008; Ouzts, 2006; Shea, 2006; Shea et al., 2005) as well as a sense of community and perceived learning (Baturay, 2011; Liu et al., 2007; Ni & Aust, 2008; Rovai, 2002a) in online learning.

Despite this continued interest over the years, we contend that many questions still remain about online learning and community. We posit that this is partly due to previous researchers using terms such as *social presence*, *belongingness*, *connectedness*, and *community* interchangeably (see Lowenthal & Snelson, 2017). Trying to tease apart highly related concepts like these can be difficult. However, based on Rovai's (2001, 2002a, 2002b) previous work, as well as our previous research, we believe that social presence and community are two related but entirely different constructs and that community and connectedness are highly related, if not synonymous.

There have been a few systematic reviews of the literature on community and connectedness to date. For instance, Delahunty et al. (2014) conducted a review of the literature looking at how interaction contributes to building an online community in higher education. They concluded that "without doubt the role of interaction is fundamental to identity construction, community building and learning" (p. 259). Then Malinen (2015) conducted one focused on user participation in online communities. Among other findings, Malinen discussed the need for a universally accepted definition for online communities and a theoretical and conceptual framework for user participation in online communities. Garcia-Moya et al. (2018) later conducted a scoping review on research relating to school and teacher connectedness. They too found it problematic how researchers defined and operationalized connectedness. And finally, MacLeod et al. (2019) conducted a review focused on student-to-student connectedness within face-to-face, hybrid, and online environments in higher education. MacLeod et al. notably found a positive influence of student-to-student connectedness on both students' learning and communication and behavior. Overall, though, each of these reviews point out issues with how these constructs are defined, operationalized, or enacted in practice (see

Malinen, 2015; Townsend & McWhirter, 2005), which in turn questions or at least complicates how these concepts are researched and practiced.

Given the growth of online learning in higher education, the interest and purported importance of community, connectedness, and online learning, and limitations of these past reviews, the purpose of this study was to examine the extent and nature of research pertaining to the community and connectedness in online higher education, how they are defined and operationalized, the strategies and/or recommendations that have been found to foster them, and the most prominent gaps and implications they have for future research.

Methods

We conducted a review of the literature to examine the research on community and connectedness in online learning in higher education. More specifically, we conducted a scoping review to better understand this literature. A scoping review, or scoping study, is a method used to “map the literature on a particular topic or research area and provide an opportunity to identify key concepts; gaps in the research; and types and sources of evidence to inform practice, policymaking, and research” (Daudt et al., 2013, p. 8). Scoping reviews have been conducted in multiple sectors, including health, social sciences, business, agriculture, software engineering, and education (Pham et al., 2014); they are particularly valuable when a body of literature “has not yet been comprehensively reviewed, or exhibits a large, complex, or heterogeneous nature not amenable to a more precise systematic review” (Peters et al., 2015, p. 141).

Arksey and O’Malley (2005) established a framework for scoping studies with five required stages consisting of (a) identifying research questions, (b) identifying relevant studies, (c) study selection, (d) charting the data, and (e) collating, summarizing, and reporting the results. An optional sixth stage is used as a consultation exercise to inform and validate findings based on stakeholder input. We conducted the five required stages as described below. We modified the optional sixth stage to follow a team-based approach similar to that by Daudt et al. (2013), whereby team members offer input based on complementary areas of expertise. Our team comprised five researchers, all with expertise in online education. Two of us also have expertise in connectedness and community, and one has extensive experience conducting scoping reviews.

Stage one: identifying research questions

Research questions in a scoping review tend to be broad in nature with the goal of mapping the breadth of evidence, key concepts, and knowledge gaps for a topic (Arksey & O’Malley, 2005; Armstrong et al., 2011; Levac et al., 2010). After much drafting, reviewing, and revising, we settled on the following research questions to guide this scoping review on connectedness and community in the context of online higher education:

- (1) What is the extent, range, and nature of the research activity on connectedness and sense of community in online higher education?

- (2) How have researchers defined and operationalized online connectedness and sense of community in online higher education?
- (3) What are the overarching strategies/recommendations that have been found to foster connectedness and sense of community in online higher education?
- (4) What are the most prominent gaps in the reviewed studies and what implications do they have for future research related to online connectedness and sense of community?

Stage two: identifying relevant studies

Researchers are faced with decisions about which sources to search, what search phrase(s) to use, the time span to cover, and the publication language to include while considering how to balance comprehensiveness with practicalities of time, budget, and personnel resources (Levac et al., 2010). These decisions should be established up front to identify the boundaries of the scoping review and guide the identification of relevant studies. The present study focused on peer-reviewed journal articles that emphasized research on connectedness and community in online higher education with no restriction on time span aside from the cutoff date in March 2019 when sampling occurred. Articles were restricted to those published in English.

We used the following academic databases to search for articles: Academic Search Premier, Education Research Complete, and ERIC through the EBSCO search interface. We consulted help documents in the search system to inform the development of the search phrase (“sense of community” OR connectedness) AND ((distance OR online) AND (education OR learning)) AND (college* OR universit* or “higher education”). Search results were limited to scholarly (peer reviewed) journals with no limit on time span. Finally, we exported the search results for review and screening to identify relevant studies.

Stage three: study selection

Study selection followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) process for review and screening of articles, as shown in the flowchart in Figure 1 (Tricco et al., 2018). A total of 1004 records were retrieved through the database search described in the previous section. The EBSCO search tool identified 309 exact duplicates during the combined database search. These were removed, leaving 695 records for manual review. These bibliographic records were copied into an online spreadsheet (i.e., Google Sheets) in preparation for the iterative screening process that involves multiple rounds of review (Levac et al., 2010).

Two members of the team conducted the first round of screening, reviewing article titles and abstracts to remove records that clearly did not meet the following eligibility requirements: peer-reviewed journal article, available in full-text English, must be a research study, and must emphasize some aspect of connectedness or sense of community in the context of online higher education. Each record in the online spreadsheet contained columns where records could be marked for exclusion based on failure to meet eligibility requirements or duplicates not previously identified. This process excluded 447 records, leaving 248 that were eligible for full-text review.

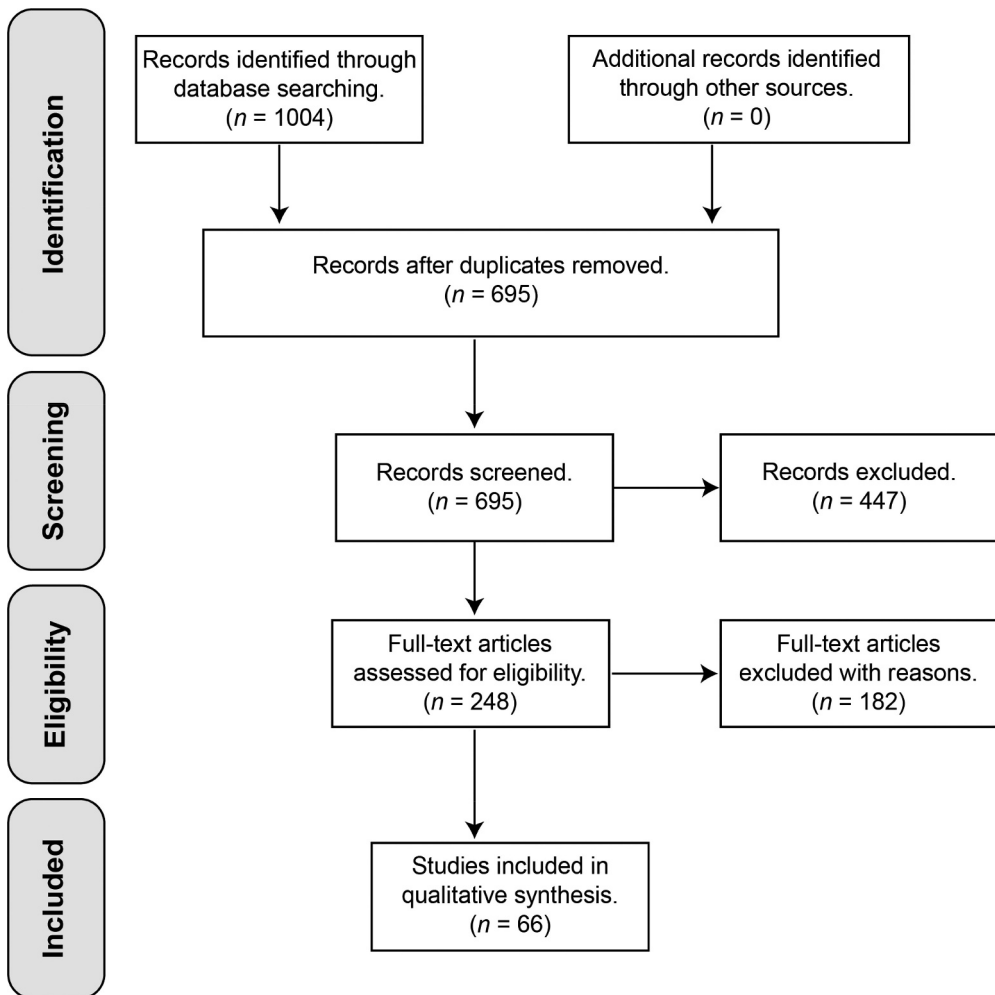


Figure 1. PRISMA flowchart for study identification and selection (Tricco et al., 2018).

The next round of screening was a full-text review of articles that could not be excluded during title and abstract screening. Bibliographic records of the 248 articles selected for full-text review were copied into a shared spreadsheet that served as a rating sheet during the review process. Full-text copies of the articles were placed in a shared folder along with the rating sheet. Two members of the team conducted an initial full-text review to screen out 99 articles that did not meet eligibility criteria. Next, each member of the team reviewed a portion of the remaining 149 articles and rated them on a scale of 1 to 3 with 1 as a *poor fit* and 3 as a *good fit* for the eligibility criteria. The first member of the team, who has expertise in connectedness and community research in higher education contexts, reviewed the accuracy of the ratings. The final sample of 66 articles was selected based on perceived fit to the eligibility criteria and a central focus on a sense of community or connectedness in the literature review, research questions, or the survey instrument. Articles where these two terms were mentioned only in the results or discussion sections in a tangential way were not considered further.

Stage four: charting the data

Charting the data is a process of extracting and collating information that informs the research question in a scoping review. Typically, this involves the use of a spreadsheet or table to collect information across rows and columns for comparison across studies. Armstrong et al. (2011) stated, "A spreadsheet or database may be created to chart relevant data, based on the focus of the scoping question. This will enable review authors to identify commonalities, themes and gaps in the literature" (p. 149). A data charting spreadsheet might include information such as authorships, intervention type, population, aims of the study, methodology, outcome measures, and important results (Arksey & O'Malley, 25). Based on these recommendations, we created an online spreadsheet to chart data relevant to the research questions. Columns in the spreadsheet included bibliographic information such as author, date, article title, and journal. Columns pertinent to each research question show extracted or summarized information about purpose, participants, context, method, definitions, theoretical or conceptual framework, data, strategies or recommendations regarding connectedness and community, limitations, and further research. Comments were added to each article in Google Drive to mark where the information came from.

Stage five: collating, summarizing, and reporting results

The data charting sheet was used to organize information into common categories. Headings were added to the spreadsheet for each research question with subheadings for categories of information pertinent to the question. For example, the second research question focused on how researchers defined or operationalized their studies on connectedness or community. The data chart was reviewed line-by-line to look for this type of information. Headings were added to the spreadsheet for each unique definition or framework identified in the analysis. Each occurrence of the definition or framework was marked in the spreadsheet to generate counts and identify prevalence across the sample of articles. A similar process was used to mark instances of information that informed each of the research questions. This information was used to collate, summarize, and inform the results, which are reported in the next section. Space limitations prohibit discussion of all 66 articles within the body of this paper, but a summary chart and bibliography are available online (see Trespalacios, 2020).

Findings

Research question 1: What is the extent, range, and nature of the research activity on connectedness and sense of community in online higher education?

A total of 66 articles met the inclusion criteria. The year of publication of these studies ranged from 2001 through 2018 as shown in [Figure 2](#), and they came from different countries, with a majority of them (81.8%) from the United States of America (see [Table 1](#)). During these years, there was an increased interest in the concept of community. This was likely due to the increased use, and criticism, of distance education in colleges and universities.

We were specifically interested in the academic disciplines that each study focused on. We found that most of the research studies were conducted in the education field (54.5%). From these 36 studies in education, for instance, 10 studies were from educational technology, and

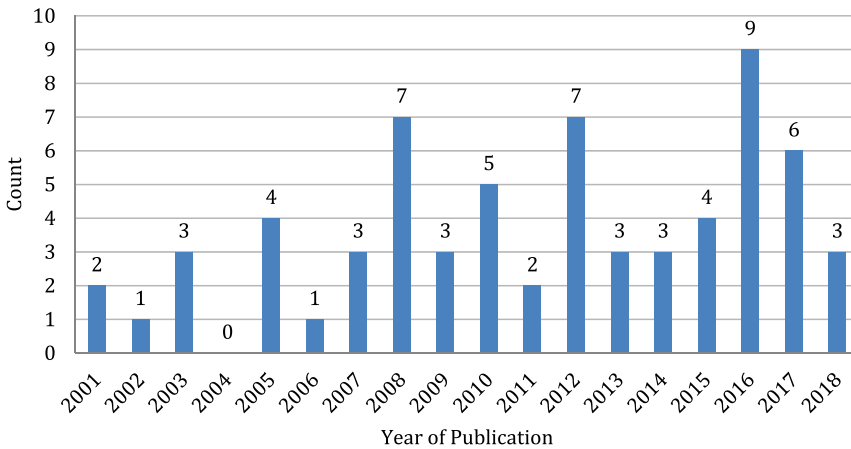


Figure 2. Articles distributed by publication period ($n = 66$).

Table 1. Articles distributed by countries of origin ($n = 66$).

Country	Count	Percentage
United States of America	54	81.8
Canada	4	6.1
Turkey	3	4.55
United Kingdom	2	3
Other	3	4.55

12 studies were conducted in doctoral-level courses. From the remaining 30 studies, 7 of them used participants enrolled in courses from multiple disciplines, 4 were from health science, and 15 studies were conducted in other disciplines such as communication or science (see [Table 2](#) for additional information).

Research question 2: How have researchers in online higher education defined and operationalized online connectedness and sense of community?

We found that there were a variety of ways that researchers defined connectedness and sense of community in the literature. In our sample, the two most popular definitions were Rovai's (2002b) definition of "classroom community" (29.6%) followed next by McMillan and Chavis' (1986) definition of "community" (23.7%) (see [Figure 3](#)). First off, it is important to note that McMillan and Chavis were not focused on community in online learning environments but their work nonetheless influenced Rovai's later definition. McMillan and Chavis defined a sense of community as "a sense that members have a belonging, members matter to one another

Table 2. Articles distributed by content disciplines ($n = 66$).

Academic disciplines	Count	Percentage
Education	36	54.5
Multiple disciplines	7	10.6
Health science	4	6.1
Unspecified	4	6.1
Other	15	22.7

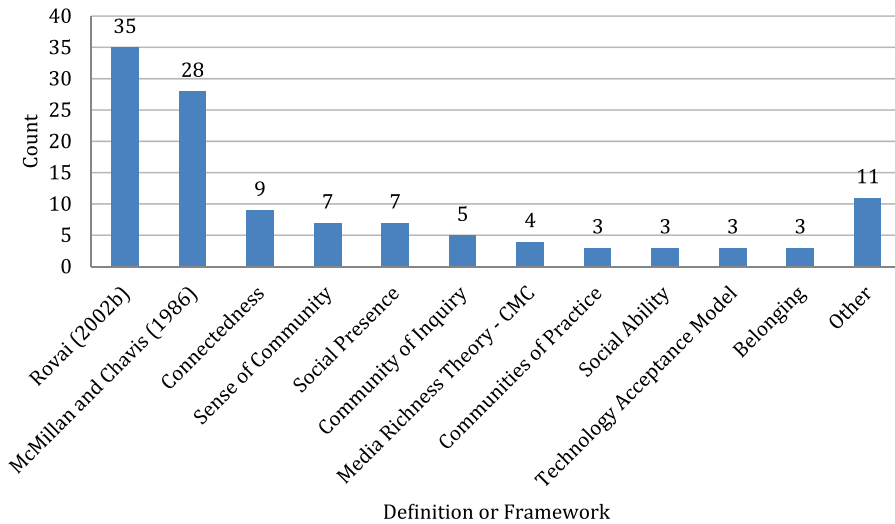


Figure 3. Most frequently cited definitions or frameworks ($n = 118$) (articles may cite more than one).

and to the group and a shared faith that members' needs will be met through their commitment to be together" (p. 9). Based on the same four elements (classroom spirit, trust, interaction, and commonality of expectations and goals), McMillan (1996) rearranged and renamed the definition, "I view Sense of Community as a *spirit* of belonging together, a feeling that there is an authority structure that can be *trusted*, an awareness that *trade* and mutual benefit come from being together, and a spirit that comes from shared experiences that are preserved as *art*" (p. 315).

Interested in community, and influenced to some degree by McMillan and Chavis' work, Rovai (2002b) defined *classroom community* in online learning environments as:

A feeling that members have of belonging, a feeling that members matter to one another and to the group, that they have duties and obligations to each other and to the school, and that they possess shared expectations that members' educational needs will be met through their commitment to shared learning goals. One can, therefore, constitutively define classroom community as consisting of two components: feelings of connectedness among community members and commonality of learning expectations and goals. (p. 322)

Rovai et al. (2004) later further developed what they called the classroom community framework and relabeled the two components "social community" and "learning community".

We were interested not only in how researchers defined connectedness and community but also how they operationalized that definition so that they could measure and study it. A review of the methodologies used to investigate connectedness and sense of community in online higher education showed that quantitative studies using surveys were the most frequently used by researchers (57.6%), followed by mixed methods (13.6%) and case study (12.1%) in the selected studies (see Table 3). Combining those studies that contain a survey component in the research design ($n = 55$), 63.7% of them used Rovai's (2002a) Classroom Community Scale (CCS). Rovai developed the CCS in the early 2000s when online learning was just starting to grow in popularity. Regarding the CCS, Rovai (2002a) explained:

Table 3. Articles distributed by research methodologies ($n = 66$).

Research methodology	Count	Percentage
Survey	38	57.6
Mixed methods	9	13.6
Case study	8	12.1
Multiple methods	5	7.6
Other	6	9.1

This test instrument generates an overall classroom community score as well as two subscales: connectedness and learning. Connectedness represents the feelings of the community of students regarding their connectedness, cohesion, spirit, trust, and interdependence. Learning represents the feelings of community members regarding interaction with each other as they pursue the construction of understanding and the degree to which members share values and beliefs concerning the extent to which their educational goals and expectations are being satisfied. (pp. 206–207)

As stated by Randolph and Crawford (2013), Rovai's (2002a) CSS has probably been the most frequently used scale for measuring sense of community in online courses. Other surveys that were used to measure connectedness or community are described in Table 4.

Research question 3: What are the overarching strategies/recommendations that have been found to foster connectedness and sense of community in online higher education?

In addition to measuring if a sense of connectedness or community exists, researchers and practitioners have been interested in how one can develop and foster these in online courses and programs. As shown in Figure 4, the strategies and/or recommendations most frequently cited were related to course/instructional strategies (30.4%). We grouped those broad sets of recommendations into four subcategories: group activities, membership and belonging, communication, and classroom processes. Group activities referred to those strategies such as social activities, extracurricular opportunities, orientation events, live synchronous sessions, and meetings in person. The second group of recommendations, membership and belonging, are those studies where authors emphasize cohort structure and promote a sense of identity with students' institutions. Regarding communication, researchers have recommended strategies such as promoting personal introductions, frequent interactions, formal and informal discussions, online etiquette (politeness, respect), positive environment, and immediate

Table 4. Community and connectedness instruments.

Instrument	Authors	Subscales	Number of items
Classroom Community Scale	Rovai (2002)	Connectedness and Learning	20
Online Students Connectedness Survey	Bolliger & Inan (2012)	Community, Comfort, Facilitation, and Interaction and collaboration	25
The Community of Inquiry (Col) Questionnaire	Arbaugh et al. (2008)	Teaching presence, Social presence, and Cognitive presence	34
Doctoral Student Connectedness Scale	Terrell et al. (2009)	Faculty-to-student connectedness and Student-to-student connectedness	18
Integrated Measure of Classroom Sense of Community	Cho et al. (2014)	Shared goals and responsibility, Relationship with instructor, Shared student engagement, and Peer valuation	22

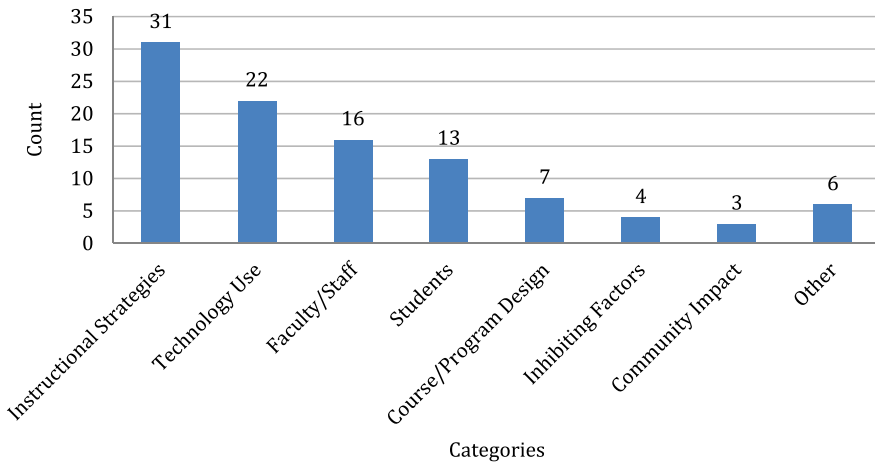


Figure 4. Strategies to promote connectedness and sense of community in online higher education ($n = 102$) (articles may cite more than one).

feedback. The fourth group of recommendations, classroom processes, are those activities that focus on promoting active learning, academic support, peer review and mentoring, assigned discussion roles, and required participation.

The second most frequent set of recommendations to foster connectedness and sense of community in online higher education is related to the effective use of technologies (21.6%). Authors studied a wide range of information and communication technologies such as Web 2.0, multimedia, discussion forums, chat tools, instant messaging, e-portfolios, email, audio feedback, online portals, e-learning systems, and course notification and communication tools. The third and fourth groups of studies focused on faculty/staff (15.7%) and students (12.7%) respectively as key personnel to foster connectedness and sense of community. Time, buy-in, training and preparation, perspective, presence or availability, facilitation, and instructor communication style are the most relevant aspects studied in the faculty/staff group. In the students' group, the most cited factors to consider are different needs, different communication and engagement preferences, cultural differences, gender differences, student interactions, student communication style, motivation, and satisfaction.

Research question 4: What are the most prominent gaps in the reviewed studies and what implications do they have for future research related to online connectedness and sense of community?

We were specifically interested in identifying gaps in the literature related to connectedness and community in online higher education. We grouped the gaps into categories (Figure 5). The most cited gaps we identified were those calling for the need to investigate how to foster connectedness and sense of community in different types of online programs (23.7%), such as different subject areas, massive open online courses, and cohort models. Different learning activities to foster community (14%) and the study of other technology roles (14%) were the other two most cited categories. Among learning activities, authors recommended research on online discussion, role-based discussions, duration of discussions, synchronous sessions, in-

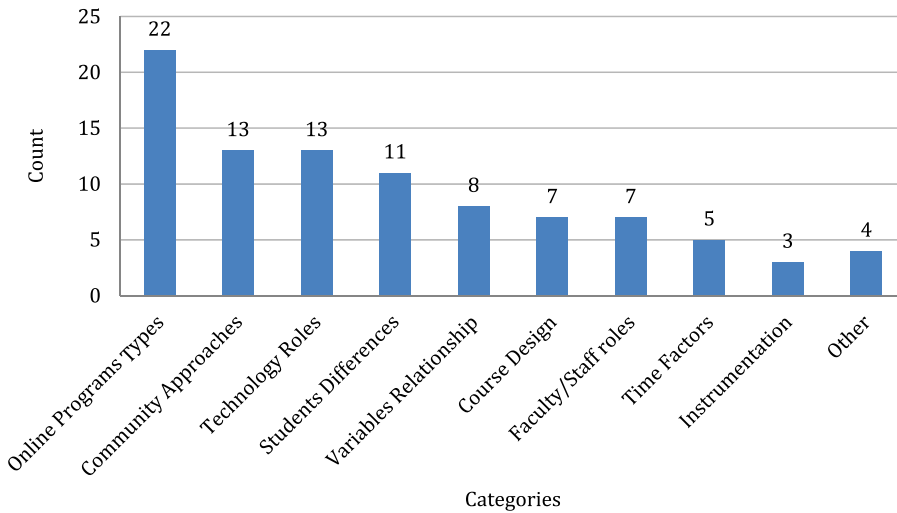


Figure 5. Most relevant gaps in need for further research ($n = 93$) (articles may cite more than one).

person meetings, group activities, optimal levels of interaction, the establishment of mentoring relationships, and web pedagogy. In the technology role category, authors discussed Web 2.0, virtual worlds, virtual field trips, multimedia, interaction of technology and pedagogy, online portals, and learning management systems.

Other gaps and future research discussed were students' differences such as age, gender, or culture (11.9%); faculty/staff roles (7.5%); and the study of the relationship among variables (8.6%) such as classroom community, satisfaction, cognitive learning, self-regulated learning, levels of community, motivation, and the impact on practice. Finally, course design (7.5%) was another category where authors recommended additional research on how design for different types of learners and online pedagogy foster community or connectedness in online higher education.

Discussion

The results of this inquiry align with previous reviews carried out on community and connectedness. Foremost are the issues with defining these concepts. Of the 66 articles we reviewed, 12% did not include a formal definition of community or connectedness. Among those articles that did provide a definition, there was no universally accepted definition of community or connectedness. However, we did find some similar elements in these different definitions. Most of these varying definitions in some degree focused on the following:

- a sense of belonging within the online learning environment
- the development of meaningful relationships with one's instructors and classmates
- the intellectual growth of the class members based on their similar goals and interests.

These elements are also presented in the main instruments such as Rovai's (2002a) CCS and its subscales (i.e., connectedness and learning) and Bolliger and Inan's (2012) Online Student Connectedness Survey and its subscales (i.e., community, comfort, facilitation, and interaction and collaboration.)

Results showed a variety of factors to foster community and connectedness in online higher education. The importance of designing activities is the most cited area, where multiple authors recommend that instructors and designers should purposefully create meaningful activities that support and facilitate a sense of community and connectedness in their online courses (Baranik et al., 2017; Cameron et al., 2009; LaBarbera, 2013; Rovai, 2001; Shackelford & Maxwell, 2012). Once a course is being taught, an instructor could also summarize or take part in discussion threads, use personal introductions, and provide timely teacher feedback (Lampert & Bartolo, 2012) as well as maintain frequent interactions via email with students (LaBarbera, 2013). Looking specifically at what interactive activities would most likely result in a sense of community, Shackelford and Maxwell (2012) found introductions, collaborative group projects, the sharing of personal experiences, entire class discussions, and exchanging resources.

The literature also suggests that the intentional use of appropriate and varied technologies plays an important role in fostering community (Armstrong et al., 2018; Liu et al., 2007). For instance, instead of simply and solely relying on text-based communication, some studies have found using audio files to share content and participate in multimodal discussion forums (Bolliger & Armier, 2013) as well as providing students timely detailed instructor feedback (Rockinson-Szapkiw, 2012) can all help develop a sense of community and connectedness. Finally, research suggests that Web 2.0 technologies (e.g., Google Docs, wikis, blogs) and social networking (e.g., Twitter) can also help connect students and thus develop a sense of connectedness (Abdelmalak, 2015; Rockinson-Szapkiw et al., 2014).

Areas that need further research include how program types, technology, and course design foster a sense of community and connectedness among online students and instructors. For instance, researchers discussed the need to study connectedness or sense of community across different programs and countries (Rockinson-Szapkiw et al., 2014), as well as different contexts (Yang et al., 2015); others highlighted the need to better understand how different collaborative strategies might improve a sense of community and connectedness (Trespacios & Uribe-Florez, 2020; Jiang, 2017). Further research is also needed to better understand how rich media tools (Rockinson-Szapkiw, 2012) and social network sites (Kocdar et al., 2018) can improve a sense of community and connectedness.

Conclusions

This scoping review of sense of community and connectedness in online higher education was conducted to explore the extent, range, and nature of research, how researchers defined and operationalized these concepts, what strategies and/or recommendations have been found to foster them, and the most prominent gaps and implications they have for future research. Our literature search and review showed that a great deal of research related to community in online learning, and related concepts, has been conducted, especially in the field of education. Additionally, Rovai's (2001, 2002a) framework and scale, which have been widely used to

understand community in online learning in higher education, should continue to be used for research on these topics.

Based on the findings from the selected studies, research has focused on areas such as course design, technology tools, faculty, staff, and students. A number of opportunities for additional research exist given the gaps identified and researchers' recommendations. Further investigation is necessary into the use of programs, approaches, and tools, as well as how roles (i.e., faculty, staff, and students) impact community and connectedness. It is important to emphasize that these studies span approximately 20 years, and as Malinen (2015) pointed out, technology has changed during this period of time and "research has viewed online communities at very different stages of development." (p. 236). Thus, we recommend that to understand these differences, researchers should continue to investigate these areas that help improve the sense of community and connectedness in online higher education.

A limitation of this scoping review is that the sample of articles is limited to the search and selection strategies described in the Methods section. Thus, it is possible that relevant studies were missed. Future research could expand the search to include additional databases or other levels such as high schools that also adopt online education.

Disclosure statement

No potential conflict of interest was declared by the authors.

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Lida Uribe-Flórez is an associate professor and the chair of the Department of Educational Technology at Boise State University. Her research interest includes online education (eMentoring, advising, and sense of community), teacher education (including teacher candidates and in-service teachers), and the use of tools to support learning in mathematics classrooms.

Ross Perkins is an associate professor in the Department of Educational Technology at Boise State University. His primary areas of interest and research have to do with instructional design decision-making and the diffusion of innovation as it relates to educational technology.

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