Journal of Educational Technology & Online Learning
Volume 6 | Issue 3 | 2023
http://dergipark.org.tr/jetol

Examining sense of community in the pandemic: A case of an online course

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Suggested citation: Doguer, G.N., & Oner, D. (2023). Examining sense of community in the pandemic: A case of an online course. *Journal of Educational Technology & Online Learning, 6(3),* 602-624.

Highlights

- The development of a strong sense of community is a crucial element in online course design.
- The case study participants were able to build a sense of community in an online course offered during the COVID-19 pandemic.
- Strategically designed and implemented course elements can positively impact community-building processes.
- It is critical to contextualize the strategies discussed in the study when designing an online course.

Article Info: Research Article

Keywords: *Case study, online course design, sense of community*

Abstract

This instrumental case study aimed to understand the development of a sense of community in a fully online course that was offered during the COVID-19 pandemic era. The study further aimed to examine how the particular course elements supported community-building processes. The data were collected through a survey of the sense of community index and semi-structured interviews conducted at the middle and end of the semester. Our findings showed that the four community elements –reinforcement, influence, membership, and shared emotional connection– were all present in this course, although to varying degrees. They also indicated that the adapted course elements for the online modality supported the community-building processes. The implications of the findings for the design of more effective online courses were discussed.

1. Introduction

In today's world, many people benefit from online learning opportunities; however, students enrolled in online courses also show a high tendency to drop out (Allen & Seaman, 2013). One of the main reasons for withdrawal is feeling disconnected and isolated (Ali & Smith, 2015; Lin & Gao, 2020). Researchers believe the solution to this challenge lies in fostering a sense of community within online courses (Dawson, 2006; Garrison et al., 2000; Lin & Gao, 2020; Rovai, 2002a; Slagter van Tryon & Bishop, 2006). Furthermore, establishing a sense of community in an online course serves to increase students' engagement and participation (Rovai & Weighting, 2005), decrease their anxiety (Slagter van Tryon & Bishop, 2009), increase their motivation, and overall enhance students' online learning experience (Ritter et al., 2010).

While the term "sense of community" is defined by several researchers, McMillan and Chavis (1986) provide a definition in terms of four community elements, namely, reinforcement, influence, membership, and shared emotional connection, which is applicable across a wide spectrum of settings (Wright, 2014). They further assert that "these four community elements work dynamically together to build a community and maintain a sense of community" (McMillan & Chavis, 1986, p. 15). This definition implies an understanding that the dynamics among these elements are setting-specific and thus need to be examined within a particular context (Burroughs & Eby, 1998; Hill, 1996; McMillan & Chavis, 1986).

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This manuscript is based on the first author's master thesis, completed under the supervision of the second author.

Doi: http://doi.org/10.31681/jetol.1232789
Received 11 Jan 2023; Revised 4 Jul 2023; Accepted 6 Jul 2023
ISSN: 2618-6586.

Researchers have investigated online learning communities in different settings and suggested a set of community-building processes (Berry, 2019; Pilcher, 2016; Wang et al., 2017). These involved strategies to build an online learning community as well as suggestions for online course design. However, the implications of these strategies and the role of course design elements were not always clear (Oncu & Cakir, 2011; Phirangee & Malec, 2017). There is a need for detailed explanations of essential strategies for building an online learning community and how those strategies can be applied in designing online course elements. This gap in the literature requires an in-depth investigation of the sense of community and community-building processes that take place in online courses. This will allow us to better understand the useful strategies for building a community and their possible implications for effective online course design. Thus, this case study aimed to understand the development of a sense of community in a fully online course offered during a COVID-19 semester and examine how the designed course elements supported the community-building processes.

2. Background

McMillan and Chavis (1986) defined the term "*sense of community"* as "a feeling that members have of belonging, a feeling that members matter to one another and the group, and a shared faith that members' needs will be met through their commitment to being together" (p. 9). They explained that a community should have four elements to build and maintain a sense of community: reinforcement, influence, membership, and shared emotional connection (Table 1). *Reinforcement* is based on the individual's needs. If individual needs are fulfilled by the community, being a member is perceived as rewarding. In a strong community, members' needs are mutually met. *Influence* is also a bidirectional term, both referring to the feeling of the influence of the community and feeling influential on the community. Here, trust is the key to creating a sphere of influence: people need to trust before letting someone influence them and try to influence them positively. *Membership* is the feeling of being part of a community. Boundaries and a common symbol system bring into the open who belongs or not. As members feel accepted and safe, their emotional safety increases their willingness to make personal investments in the community that strengthen the membership. *Shared emotional connection* refers to the emotional closeness in a community, emphasizing that people have a genuine interest in building relationships. Members feel emotionally connected as they experience some quality informal interactions where they can build fruitful relationships. These community elements work together as community-building processes and help to build and maintain a sense of community.

Table 1.

The four community elements (McMillan & Chavis, 1986)

Community Element	Explanation
Reinforcement	If someone's needs are fulfilled, the community is perceived as rewarding. Integration among individuals' needs is rewarding for each member.
Influence	It is a bidirectional term: members' feeling that the community has an influence on them, and feeling influential on the community. A positive sphere of influence first requires trust to be built.
Membership	It is about who belongs to the community, and members' feeling of being part of a community.
Shared emotional connection	People have a genuine interest in building relationships. Experiencing quality informal interactions is related to members' shared emotional connection.

Researchers examined several community-building processes to support a sense of community (Berry, 2019; Pilcher, 2016; Wang et al., 2017). Their findings contributed to the literature by providing various

strategies to build online learning communities and suggestions for online course design. Based on a synthesis of the literature, in this paper, those strategies are grouped into four major categories: (a) promoting task-driven interactions; (b) promoting socio-emotional interactions; (c) supporting each other's learning process; and (d) the presence of authority. These categories can be considered online learning community-building processes that can be incorporated into online course design. Below, we explain these processes and list specific strategies to support them, based on the literature (Table 2).

Task-driven interactions are directly linked to the types of interactions that support the learning goals of the community (Rovai, 2002b). They can be promoted with asynchronous discussion forums (Berry, 2019; Galikyan & Admiraal, 2019; Lin & Gao, 2020; Ouyang & Scharber, 2017; Parks-Stamm et al., 2017), synchronous discussions (Lin & Gao, 2020; Wang et al., 2018), group projects (Wenger & Snyder, 2000), and teacher feedback (Pilcher, 2016; Lowenthal & Dunlap, 2018). These strategies help increase students' willingness to participate since they can benefit from community knowledge for success (Galikyan & Admiraal, 2019).

Socio-emotional interactions refer to the out-of-course-content interactions that facilitate bonding among community members and creating friendships (Rovai, 2002b). These kinds of interactions increase the feeling of connectedness and trust (Berry, 2019) and can be promoted by using personal profiles (Lui et al., 2007), asynchronous off-topic forums (Lin & Gao, 2020; Liu et al., 2007; Pilcher, 2016; Swaggerty & Broemmel, 2017), introductory videos (Martin & Wang, 2018), using Twitter (Lowenthal & Dunlap, 2018), and forming WhatsApp groups (Udenze & Ugoala, 2019).

Supporting each other's learning process: When students perceive support from their peers, they are more likely to state that their educational needs are fulfilled (Rovai et al., 2008). Furthermore, as they benefit from others' knowledge and experiences, they become closer to each other and are willing to contribute to group success (Lave & Wenger, 1991). Researchers suggest including peer learning strategies such as peer feedback (Pilcher, 2016; Trespalacios & Uribe-Florez, 2020), peer critique (Liu et al., 2007; Trespalacios & Uribe-Florez, 2020), peer review (Lowenthal & Dunlap, 2018; Swaggerty & Broemmel, 2017; Trespalacios & Uribe-Florez, 2020), and peer tutoring (Okita et al., 2013) to enable students to support each other's learning processes.

The *presence of authority* is related to learners' perception of the instructor's right to control the progress of the course, which increases the feeling of acceptance, safety, and trust in the community (McMillan & Chavis, 1986; Rovai, 2002a). It can be provided with instructor modeling (Brown, 2001; Gratchev & Espinosa, 2023; Shackelford & Maxwell, 2012), clear instructions (Maddix, 2013; Sheridan & Kelly, 2010), crucial interventions when needed (Shea et al., 2006), and timely instructor response (Sheridan & Kelly, 2010).

Table 2.

Online learning community-building strategies and course design implications

Online Learning Community Building Strategies	**Explanation**	**Course Design Implications**
Promoting task-driven interactions	Directly linked with the learning goals of the community (Rovai, 2002b)	Asynchronous discussion forums (Berry, 2019; Galikyan & Admiraal, 2019; Lin & Gao, 2020; Ouyang & Scharber, 2017; Parks-Stamm, et al., 2017) Synchronous discussions (Lin & Gao, 2020; Wang et al., 2018) Group projects (Wenger & Snyder, 2000) Teacher feedback (Pilcher, 2016; Lowenthal & Dunlap, 2018)
Promoting socio-emotional interactions	Out-of-learning-content interactions (Rovai, 2002b)	Asynchronous discussion forums (Berry, 2019; Galikyan & Admiraal, 2019; Lin & Gao, 2020; Ouyang & Scharber, 2017; Parks-Stamm, et al., 2017) Synchronous discussions (Lin & Gao, 2020; Wang et al., 2018) Group projects (Wenger & Snyder, 2000) Teacher feedback (Pilcher, 2016; Lowenthal & Dunlap, 2018)
Supporting each other's learning process	Benefit from others' knowledge and experiences (Lave & Wenger, 1991)	Peer feedback (Pilcher, 2016; Trespalacios & Uribe-Florez, 2020) Peer critiques (Liu et al., 2007; Trespalacios & Uribe-Florez, 2020) Peer reviews (Lowenthal & Dunlap, 2018; Swaggerty & Broemmel, 2017; Trespalacios & Uribe-Florez, 2020) Peer tutoring (Okita et al., 2013; Trespalacios & Uribe-Florez, 2020)
The presence of authority	The learners' perception of the instructor's right to control the progress of the course	Instructor modeling (Brown,2001; Gratchev & Espinosa, 2023; Shackelford & Maxwell, 2012) Clear instructions (Sheridan & Kelly, 2010; Maddix, 2013) Crucial interventions when needed (Shea, Li, & Pickett, 2006) Timely response (Sheridan & Kelly, 2010)

2.1 Research Purpose and Questions

This case study aims to understand the development of a sense of community in a fully online course offered during a COVID-19 semester and examine how the designed course elements supported the community-building processes with the following questions:

Research Question (RQ)1: How did the students develop a sense of community in a fully online course over a COVID-19 semester?

RQ2: How did the designed course elements support the community-building processes?

3. Method

3.1. *Research Design*

A sense of community is a complex phenomenon that needs a detailed explanation of the dynamics within the community elements to be understood. Thus, the study is designed as a qualitative case study "because we need a complex, detailed understanding of the issue" (Creswell & Poth, 2013, p. 48). The study also aimed to examine how the designed course elements supported the online learning community-building processes in this specific course. Yin (2018) suggests employing the case study design when researchers attempt to explain how or why a complex phenomenon occurs within a particular context.

3.2. *The Case: A Fully Online Graduate-Level Course for a New Cohort*

Since the intent of this study was to obtain an understanding of a particular phenomenon within the contextualized details of the case, we employed an *instrumental case* study design (Stake, 1995). Instrumental case studies allow researchers to gain an in-depth understanding of a topic while choosing a particular case to best understand that topic (Creswell & Poth, 2013).

In case studies, researchers must clearly define their cases and boundaries (Johnson & Christensen, 2008). The case investigated in this study was a master's-level research methods course offered in the first online semester following the emergency remote teaching (ERT) period (Spring 2020) in the COVID-19 pandemic era. This allowed the course instructor sufficient time to deliberately design a course for the online modality, in contrast to the ERT period. This single case was bounded by time (13 weeks) in a specific semester (Fall 2020, which runs between October 2020 and January 2021). The case was selected based on critical sampling, given that the case represented "the central phenomenon in dramatic terms" (Creswell & Poth, 2013, p. 208). In the context of this case, the central phenomenon we were interested in was the sense of community built by a new cohort of graduate students, who were just starting a new program of study. Therefore, it was essential to support these students in establishing a sense of community from a distance.

The class met every week for three three-hour live sessions that took place via Zoom Meetings. Moodle was used as the learning management system of the course, where course materials, announcements, and assignments were published. The second author was the instructor of the course. She has been teaching the course in a face-to-face setting for more than ten years. The first author attended the live class sessions as an observer participant. She occasionally shared information or experience with students and assisted the instructor with some course activities.

Seven female students enrolled in the course participated in the study. While their ages ranged between 24 and 35, their academic backgrounds were mostly similar. All of them, except two, graduated from teacher education departments, such as mathematics, science, or foreign language education. They all took some introductory research methods courses as part of their undergraduate studies. Moreover, the occupations of the participants were similar; all of them were prospective teachers or employed as K-12 teachers. All, except one, were of Turkish nationality, and they were all capable of clearly communicating in English, which is the medium of instruction at the university. All, except one, were located in Istanbul. They all experienced fully online formal education for the first time in their lives with the COVID-19 pandemic.

Course Elements

The instructor had originally designed the course for a face-to-face modality. However, the course was going to be offered fully online for the first time to a new cohort of graduate students. For this online version, the authors reviewed each course element in light of the community-building processes and strategies. Most of the course design elements already available were easily transferred to the online version. Still, some new course elements, such as WhatsApp and Slack groups and Padlet-based tasks, were added to the course, considering the community-building processes and strategies derived from the

literature. As Lin and Gao (2020) suggested, synchronous and asynchronous course elements were combined to overcome the challenges of each modality and use their advantages to increase the quality and quantity of interactions to support students' sense of community.

Table 3 presents the major course elements that correspond to the four community-building processes and strategies. Detailed explanations of each element are presented below.

Table 3.

The alignment of course elements and online learning community-building processes and strategies.

Major Course Elements	Corresponding Community-Building Process and Strategy
Course clarity	Presence of Authority
Teacher approach	Presence of Authority
Slack	Supporting Group Members' Learning Process
WhatsApp group	Promoting Socioemotional Interactions
Weekly summaries and Q&A	Promoting Task-driven Interactions
Experts of the week	Promoting Task-driven Interactions
Icebreakers	Promoting Socioemotional Interactions
Padlet posts	Promoting Task-driven Interactions
Constructive peer feedback	Supporting Group Members' Learning Process

Course clarity

To develop community norms (Slagter van Tyron & Bishop, 2012), people need to feel safe; thus, strategies to avoid ambiguity and increase clarity in online classrooms should be applied by the authorities. One of the most important tools used to ensure course clarity was the course syllabus, which indicated what is taught, what is required to be successful in the course, and the expectations from students to prevent misunderstandings (Altman & Cashin, 1992) so that students could feel comfortable participating in the community (Vesely et al., 2007). The course syllabus had the following sections: course description, attendance and participation policy, course expectations and requirements, weekly assignments, final project, plagiarism policy, course text, and grading. A course schedule presenting the dates of live sessions, the agenda of those sessions, readings and tasks to complete before the live sessions, and information about in-class activities were also provided. In addition, relevant course materials, such as assignment templates and rubrics, were shared with students to decrease ambiguity and increase their feeling of security (Maddix, 2013; Sheridan & Kelly, 2010). The behaviors expected from the students during any communication and interaction, such as Zoom meetings, discussion forums, chats, group projects, and peer feedback, are clearly explained in a document called "Course Expectations."

Teacher approach

During the trust-building process in online courses, teachers' guidance plays an important role (Shackelford & Maxwell, 2012), and strategies such as timely feedback (Sheridan & Kelly, 2010) contribute to the presence of authority. To support a sense of community, the course instructor has been adopting a certain approach in the course. She used live sessions every week to ensure that students felt connected to the course and had the chance to learn collaboratively in a trusting atmosphere. She clarified the purpose and expectations of each course activity to prevent any ambiguity that may appear, which can decrease students' feelings of security. Students constantly received written or verbal constructive feedback for their assignments from the instructor, as Sheridan and Kelly (2010) and Maddix (2013) suggested. She also encouraged students to contact her whenever they needed any guidance; students were able to demand an

office hour or ask their questions in live sessions, via Slack, or email. At the beginning of each live session, she devoted a few minutes to chit-chatting to increase social interactions with students.

Slack

Opportunities should be provided to students where they can share information (Pilcher, 2016) and benefit from peers' knowledge (Liu et al., 2007), which facilitates community-building processes. Slack is an instant messaging program that supports collaborative work. Slack was used to help students work on tasks together or share course resources. The communication on Slack was informative and formal since Gratchev and Espinosa (2023) suggested using formal social platforms where instructors can actively participate since this may also promote student participation. Different channels for different purposes were created on Slack, such as introductions, class announcements, educational journals, research designs, tips for the literature review, and random posts. For each channel, a clear explanation of the aim of the channel was shared with the students.

WhatsApp group

Researchers suggest that supporting informal communication between students with different channels promotes students' socio-emotional interactions (Anderson, 2004; Pilcher, 2016; Swaggerty & Broemmel, 2017). At the beginning of the semester, students were asked to create an informal WhatsApp group for the course. The first author joined the group. The instructor, on the other hand, was not present in this group to ensure its informal character that enables socio-emotional connections among students. Students used the WhatsApp group very frequently for different purposes, such as discussing assignments, sharing additional sources, and even having off-topic daily conversations. The communication was more informal than the one in Slack, but most of it was still very course-related, which helped promote task-driven interactions (Galikyan & Admiraal, 2019; Wenger & Snyder, 2000).

Weekly summaries

Task-driven interactions are key for online learning communities, and course elements such as asynchronous discussions promote those interactions (Berry, 2019; Galikyan & Admiraal, 2019). Each week, before the live sessions, students were required to post a one-page summary of each assigned chapter of the week and at least two questions in an asynchronous discussion forum. The questions could be on parts of the readings that are not clear, sections that require further explanation, or implication questions. After posting questions, each student was expected to answer at least two questions posted by other classmates as an information-sharing peer assessment (Liu et al., 2007). This allowed students to support each other's learning processes.

Experts of the week

Working as a group gives a great opportunity to promote task-driven interactions between students (Wenger & Snyder, 2000). Each week, a group of students was given the role of content experts, which required them to work together before class. These students were expected to read the assigned chapter(s) more carefully and do further research on the topic. During the live sessions, they acted as moderators of the class discussions (Wang et al., 2018) to help promote task-driven interactions. Moderators were expected to share

related resources with the class, prepare a short presentation addressing the significant points of the chapter(s), and prepare responses to the questions posted by their classmates.

Icebreakers

Introductory activities promote students' willingness to introduce themselves and get to know their peers, which are crucial to building up socio-emotional interactions (Swaggerty & Broemmel, 2017). At the beginning of the first live session, each student was paired with another student, and they interviewed each other in Zoom breakout rooms. This is considered an icebreaker activity and also aims to introduce oneself to the community. Students were provided with sample interview questions such as: "Where are you from?" "What are your hobbies?" and "What are your expectations from the program?" After 10 minutes, the class merged into the main Zoom meeting, and each student introduced their peer to the class.

Padlet-based tasks

Online courses should include activities allowing students to work together (Pilcher, 2016) that promote task-driven interactions among students. During this course, five Padlet-based activities were implemented. Three of them were live session exercises, such as writing research purpose statements or hypotheses. Two of them were asynchronous: students were expected to share a post about their previous research experiences or identify the common mistakes in their research proposal drafts.

Peer feedback

Peer reviews and assessments were suggested for students to support each other's learning processes, which are beneficial to building a learning community (Liu et al., 2007; Lowenthal & Dunlap, 2018; Swaggerty & Broemmel, 2017; Okita et al., 2013; Trespalacios & Uribe-Florez, 2020). Students were expected to write a research proposal as the final assignment of this course. Before submitting the final version of their proposals, students submitted sections of their proposals in three assignments: (a) an initial research topic and problem, (b) an introduction and literature review section, and (c) a method section. Students presented these assignments in class, receiving extensive feedback from the instructor and their peers. Each student was to review two peers' assignments and provide constructive feedback. Students were expected to significantly improve their work based on this feedback before submitting their final assignment.

3.3. *Data Sources*

As Yin (2009) suggested, this case study took advantage of using multiple sources of data: the Sense of Community Index-2 (SCI-2) (senseofcommunity.com) results as quantitative data and mid-semester and end-of-the-semester interviews as qualitative data.

The SCI-2 includes 24 items with four sub-scores corresponding to McMillan and Chavis' (1986) four community elements. The coefficient alpha of the scale has been reported as .94 and found to be a valid measurement across various contexts (Chavis et al., 2008). The students were asked to fill out the SCI-2, which was sent as a Google form, at the end of the semester.

To obtain an in-depth understanding of students' sense of community and how the course elements supported the community-building processes, two semi-structured interviews were conducted with each student at the middle and end of the semester. Each interview was approximately a 30-minute-long Zoom call with each student. The interview questions are prepared according to the sense of community indicators suggested by McMillan and Chavis (1986). Some examples of interview questions are:

What were your expectations and goals from this lesson? To what extent do you think they were welcomed?

Do you think you had similar expectations and goals as the other students? Why?

How would you evaluate your opportunities to communicate with other students and instructors? Do you think the necessary tools are provided?

How do communication and interaction with other students and the instructor affect your learning?

3.4. *Data Analysis*

The first step in analyzing the data involved scoring the SCI-2 results. The Likert-scale responses of the SCI-2 were converted to numerical data and scored as: not at all = 0, somewhat = 1, mostly = 2, completely = 3. Then, for each community element, the sum of related questions was calculated: questions 1 to 6 for reinforcement, questions 7 to 12 for membership, questions 13 to 18 for influence, and questions 19 to 24 for shared emotional connection. The maximum possible score for each community element is 18, whereas the minimum is 0. After determining each sub-score per participant, the mean and standard deviation of each sub-score are calculated. The results gathered from the quantitative data are used to organize the qualitative data.

Secondly, the audio records of the interviews were transcribed using pseudonyms to protect the participants' identities. Then, the transcriptions were imported into a MAXQDA project. The researchers read over the transcripts to get a general sense of the data. Following this step, the researchers identified units of data in students' responses that are "potentially meaningful segments" (Merriam, 1998). Content analysis is employed to answer the research questions. However, as Merriam (2015) suggested, the researchers also allowed and expected the emergence of new codes, themes, or descriptions inductively. For RQ1, the content analysis began deductively with McMillan and Chavis' four community elements that initially guided the coding of data. Their explanations of four community elements have been used to figure out the sense of community indicators and their existence in the data. In addition, two new themes emerged, as shown in Table 4: the sense of community perceptions and factors affecting the sense of community. For RQ2, the four categories of online learning community-building strategies deductively guided the coding. Also, inductively analyzing the data, the researchers identified some new descriptions for these strategies, which are indicated in italics in Table 5.

Table 4.

Codebook for research question 1.

Theme 1: The Four Community Elements (McMillan & Chavis, 1986)	
Categories	**Descriptions**
Reinforcement	meeting of needs/fulfillment having similar needs, priorities, goals having "rewards" for being a member integration, benefits of being a part
Influence	influence of a member on the community influence of the community on a member trustfulness, trusting-environment feeling valuable, mannered, appreciated (individual differences), respected, meaningful feeling control (power) over what the community does
Membership	The feeling of "us", knowing the dynamic (common symbol system), boundaries (logistical and group settings and communication), and sense of belonging trusting, feeling emotional safety, feeling secure, enhanced confidence willingness to sacrifice, personal investment
Shared emotional connection	becoming closer, a spark of friendship expressing some aspect of personality, self-disclosure

Theme 2: Sense of Community Perceptions (emerging category)	
Categories	**Descriptions**
Understandings of sense of community	How students define the sense of community, being a community, and sense of belonging
Face-to-face modality	Student's perception of "physical," "normal," and "online"
Understanding from relationships	Students' understanding of being a classmate, expected level of friendliness (intimacy), safety, respect, collaboration, helpfulness Friendship, teacher-student relation, peer relation

Theme 3: Factors Affecting Sense of Community (emerging category)	
Categories	**Descriptions**
The nature of the course	Importance of the course, English as a second language, having other common courses, being a cohort
Extraneous variables	Pandemic conditions, perceived general workload, out-of-class responsibilities

Table 5.

Codebook for the research question 2.

Categories	**Descriptions**
Promoting task-driven interactions	supporting course-related communication providing opportunities for collaborative learning *providing different ways for course-related participation*
Promoting socioemotional interactions	supporting informal communication, chances to get to know each other *provided opportunities for building friendship, emotional connection*
Supporting group members' learning process	peer learning opportunities, cooperation, knowledge building *enhancing each other's success*
Presence of authority	The role of the instructor, the position of the teacher, teacher-student relation *specific attitude/behavior/actions of the instructor that students recognize positively or negatively* *dynamics of absence/presence of the teacher, the distance between teacher-students*
Course design elements	Each course element is purposefully designed; course activities, online platforms and materials used, and the teaching approach

3.5. *Researchers' Positions*

The first author was a second-year master's student at the time of the study. She took the course from the same instructor in a face-to-face format the previous year and completed it. Before the semester started, she worked with the instructor on forming new communication platforms (Slack and WhatsApp groups) and setting up Moodle pages for some course activities. During the semester, she attended all the live sessions. Her role mostly took the form of "observer as participant" (Glesne, 1999). She also interacted with the students outside the class through Slack and WhatsApp groups, sharing her experiences as a previous year's student and the resources she found useful while taking the course. Her semi-informal role allowed her to develop rapport with the students, which enabled the researchers to better understand the central phenomenon of the study: a sense of community built in the class.

The second author, an expert in educational technology and research methods, was the instructor of the course. She interacted with the students synchronously and asynchronously constantly, provided feedback on student assignments, and graded their work. She was particularly invested in making the course

meaningful and effective for students who were just starting the program but had to participate online due to the COVID-19 pandemic.

3.6. *Trustworthiness*

The authors used several strategies to ensure the *trustworthiness* (Lincoln & Guba, 1985) of the present study.

Prolonged engagement is one of the credibility strategies that refers to "the investment of sufficient time" (Lincoln & Guba, 1985, p. 301) in the research context. Both authors spent the 13-week semester with the students in close interaction in the roles described above, allowing them to develop an in-depth understanding of the central phenomenon of the study.

Triangulation strategies are suggested to increase credibility and dependability (Creswell & Poth, 2013), which typically refer to the use of multiple data collection methods (Denzin, 2009). In addition, Baskale (2016) indicated that using both qualitative and quantitative methods in the same study provides complementary findings and strengthens research results. In this study, different data collection methods were employed: qualitative data using individual interviews collected at the middle and end of the semester, and quantitative data gathered using the SCI-2. The data from both of the three datasets was used to examine the research questions.

Transferability, an alternative term for external validity for naturalistic inquiry (Lincoln & Guba, 1986), refers to the extent to which the findings of a qualitative study are applicable in other contexts or settings. It relies on a detailed description of the case (Sharts-Hopko, 2002): the sampling process, the important characteristics of the participants, and the context in which the study took place. In this study, we described the case clearly so that other researchers could judge the similarities with their studies and evaluate the extent to which the findings apply to their contexts.

3.7. *Findings*

3.7.1 The Case

The case was a fully online research methods course offered in the first semester of a master's program in an education department. The instructor's main focus in the design of this course has been maximizing active student participation. Therefore, she used several strategies to make sure that students worked on a major assignment, that is, a complete research proposal, based on feedback provided throughout the semester. In the semester the data for this research was collected (Fall 2020), the course was offered fully online for the first time due to the COVID-19 global pandemic. Given that the course was offered mostly during lockdown periods, students could meet with their peers neither in nor out of the class during the study.

Seven female students (names are pseudonyms) were taking the course. Ece was 24 years old and graduated from the computer education and educational technology undergraduate program. She was working as an ICT instructor in Istanbul. Selin and Zeynep (the only two participants who were acquainted with each other before the course) were 25 years old and both graduated from the mathematics education undergraduate program. During the semester, they were working as K-12 teachers in Istanbul. Ceren (29 years old) graduated from the Western Languages and Literature undergraduate program and was working as a K-12 teacher in Istanbul. Elif (24 years old) graduated from the foreign language education undergraduate program. She was living in Istanbul during the semester and was not occupied. Melisa (a 35-year-old American) received her bachelor's degree in English education and Middle East studies in the US. She was working as an English instructor in Istanbul. Gizem (32 years old) was living

in another city during the course. She was a K-12 teacher who graduated from a primary school teaching program.

3.7.2 RQ1: How did the students develop a sense of community in a fully online course over a COVID-19 semester?

There was evidence in the qualitative data that each participant experienced a sense of community in the online course. That is, we were able to identify each community element —reinforcement, influence, membership, and shared emotional connection. While the strength of these elements varied, participants referred to more community elements at the end of the semester, suggesting a stronger sense of community by the end of the course. Figure 1a illustrates the distribution of the four community element codes identified for each participant in the middle and end-of-the-semester interviews. Figure 1b shows the distribution of the total codes at the middle and end of the semester.

Fig. 1a. Code distribution of the community elements among the participants

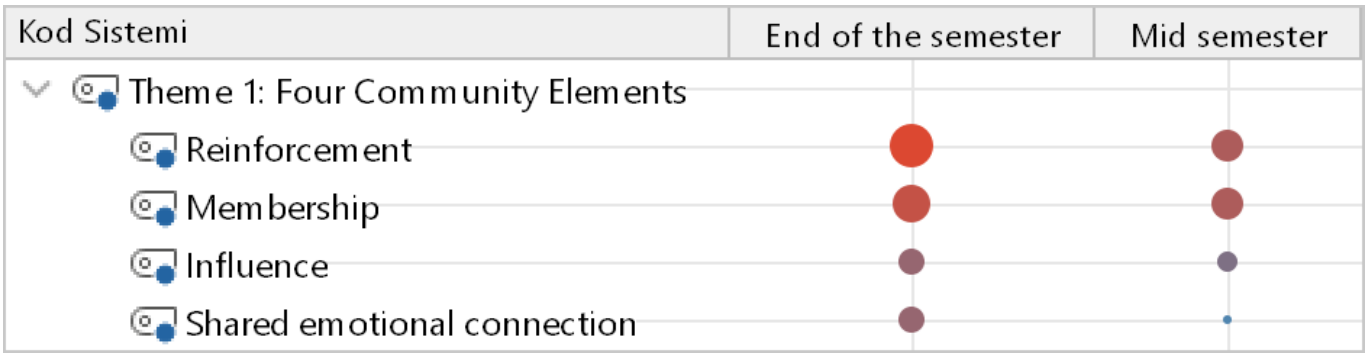

Fig. 1b. Total code distribution of the community elements in the middle and end-of-the-semester interviews

The qualitative findings were largely aligned with the quantitative data obtained from the SoC-2 Index results. The mean and standard deviations of the total sub-scores for each factor of the instrument are given in Table 6. Below, we discuss the qualitative findings in the same order as Table 6. In addition to students' understanding of a sense of community, some factors such as class size, pandemic conditions, and the perceived importance of the course were found to be affecting the community elements that emerged in the qualitative data. Those factors are also discussed in relation to each community element below.

Table 6.

Sense of community index-2 results.

	Mean	**Standard Deviation**
Reinforcement	12,67	1,41
Influence	12,33	2,12
Membership	11,83	3,54
Shared emotional connection	11,17	2,12

3.7.2.1 Reinforcement(s) to be a community

The interview data showed that being successful in the course was each student's main goal, and the perceived importance of the course functioned as a major reinforcement of being part of a community. For instance, Gizem said: *"If being successful was not everyone's goal, perhaps no one would do the homework. But everyone completed the homework well and delivered it on time."* (Gizem, end of the semester). Some students perceived their learning in this course as a foundational step in acquiring research skills for their further academic achievement. This motivated them to maintain their membership in the community, and, in turn, learning became a reward for being a member of this community. Being a cohort supported students' awareness of sharing similar goals and needs. The course setting was encouraging to integrate the individuals' needs and satisfy them as a community, which seemed to increase their sense of community (McMillan & Chavis, 1986; Rovai, 2001). For example, Elif said:

> It was one of those courses where I felt like part of a community. It could take us a little further […] Then maybe my homework is getting better. I'm learning one more thing. I'm learning better. It's a "we've got each other's back" thing […] It caught my attention at those times, and I knew that I was not alone, even though we couldn't meet face-to-face, I knew [Zeynep], but I didn't know anyone other than her. But now I feel like we are a community, a group. (Selin, end of the semester)

3.7.2.2 Influence

Students seemed to have a chance to feel both influential and safe in the course. Elif explained it: *"We definitely had a trusting environment in class. After all, we are all there to learn, but there are some things that we all know or misunderstand. We want to learn more or correct what we know is wrong."* (Elif, end of the semester). With the help of the positive sphere of influence, they sounded comfortable relying on others (i.e., expecting help from others), confident in their ability to influence others, and felt valuable since others appreciated their influence. Students positively influenced each other's learning, which increased their sense of community, because they trusted the intention of the other students to support each other's learning (McMillan, 1996; Synder, 2009). For instance, Melisa said:

> Like it [participating in the course] was important for not only our learning process but also, for the class as a whole, you know, relying on us doing our weekly assignments, answering the questions, and making the presentation when it was our turn […] It's really motivating to have someone or to have your classmates kind of, um, depending on you. (Melisa, end of the semester)

3.7.2.3 Membership

A small class size seemed to give each student enough chance to participate, and as time passed, students gradually interacted more with the whole class. This helped to create a sense of belonging that increased students' sense of community (Brown, 2001; Rovai, 2000; McMillan & 1996). Selin said:

> It was a course with seven students in the class. And in constant communication with those seven people, we tried to do something with them throughout the whole term, whether we had a group or not. I belonged there among those people in the course. It gives me this feeling. (Selin, end of the semester)

Students developed a common understanding of attitudes and behaviors while spending time together, which increased their emotional safety. For example, the use of the native language (Turkish) was also accepted in the course whenever students had difficulty expressing themselves in English, and they indicated that it helped them feel safe while participating. Gizem stated:

> We speak English all the time, but knowing that I can speak Turkish when I am stuck at some point is also good for me; it makes me feel sincere because I understand that no one will judge. (Gizem, mid-semester)

As their emotional safety increased, they also began to make a personal investment that manifested itself as a sense of responsibility to participate and contribute. For example, Elif said:

> I think we have a responsibility to each other here. We learn from each other as much as we learn from the teacher. That's why I try to answer questions as much as possible and participate in class to keep that environment active. (Elif, mid-semester)

3.7.2.4 Shared Emotional Connection

Based on the survey results, the shared emotional connection category had the smallest mean score among the four sense of community elements. We saw some evidence in the qualitative data suggesting some emotional connection among the participants. For example, Ceren said:

> There were already familiar faces, almost people we know well, and a sincere atmosphere was established too. Frankly, it has created a sense of belonging, you know, a sense of belonging even though it is online […] I feel that sincerity for myself. Although I do not see them face-to-face now, I feel as if I have seen them face-to-face, as if I have known them for many years. It seems to me that this has happened. (Ceren, end of the semester)

Meanwhile, some students did not seem to be fully satisfied with the level of this element in class. Thus, we tried to better understand the reasons for the relatively lower level of emotional connection expressed by the students. We realized that some students had some biases toward online environments in general for building relationships, and the lack of face-to-face meetings sometimes made them unhappy. For example, Zeynep stated:

> We always say that we can't meet because it's online; it would be much different if we were at school. We started to establish a connection, even from a distance, but of course, if it was face-to-face, it would be in a different, more interactive environment. (Zeynep, mid-semester)

Despite our efforts, some students still found the informal time spent together insufficient in the online class environment. However, they were also feeling accountable for that. They expressed that their high workloads and responsibilities outside the class and the pandemic conditions were negatively affecting the amount of informal interaction in class. For instance, Elif said: *"There wasn't much chit-chatting, I wish there was. But I guess no one has time to say "let's get together and hang around," so I find it [not having a very high emotional connection] natural."* (Elif, end of the semester).

3.7.3 RQ2. How did the designed course elements support community-building processes?

The qualitative data showed that most of the course elements had a positive impact on the community-building processes in this course. The most supportive course elements, as evident from the data, and their corresponding community-building processes are shown in Table 7.

3.7.3.1 Promoting Task-Driven Interactions

The data suggested that the weekly summaries and Q&A helped the students become familiar with their peers while keeping them on task (Berry, 2019; Galikyan & Admiraal, 2019), thus promoting task-driven interactions. For example, Ceren said: "*The question-and-answer part was good. For example, a person I*

didn't know at first answered my question. Then, I said, "Let's see her question and try to answer it." It was nice to have this question-and-answer platform." (Ceren, end of the semester).

In addition, students seemed motivated to participate in synchronous discussions (Wang et al., 2018) since they felt prepared and confident with the help of this course element. For example, Zeynep said:

> Hmm, I guess what motivates my participation is having read the chapters before coming to the class. It increases my self-confidence because I read and understand that chapter. Sometimes we do research according to the questions and come to the class. Sharing is nice, everyone can share [resource] links in the chat and, extra resources. This motivates me. (Zeynep, mid-semester)

Additionally, Padlet-based activities seemed to support peer learning opportunities (Wenger & Snyder, 2000; Pilcher, 2016). Students found it effective to learn together. Gizem said:

> We shared [our work] on Padlet from time to time. [Once] we wrote hypotheses for our research proposals there and saw each other's postings. We corrected [our mistakes] together, which was useful. (Gizem, end of the semester)

3.7.3.2 Promoting Socio-Emotional Interactions

Icebreaker activities are considered the first step toward social connection. These enable them to introduce themselves (Swaggert & Broemmel, 2017) and quickly orient themselves within the community (Martin & Wang, 2018). In our case, a student remembered the icebreaker activity even at the end of the semester, saying:

> I remember the activity in the first lesson, you know, the icebreaker. We didn't know each other at that time. First, we met one of the classmates and then introduced her to the whole class. This [first small group and then large group meeting activity] affected our next conversations. (Zeynep, end of the semester)

Another course element that seemed to promote socio-emotional interactions appeared to be the "expert of the week" assignment. As this required students to work in groups, it gave them a chance to interact with a classmate outside the class and also have some off-topic conversations (Rovai, 2002b). One student highlighted the socio-emotional aspect of this assignment: "*It was in this course that I had the greatest chance of meeting with my peers [outside of class time]. Of course, while we came together through the presentation [referring to the expert of the week assignment], we were able to chat with each other and get to know each other. It was nice.*" (Ceren, end of the semester).

Additionally, the WhatsApp group seemed to provide a chance to talk about topics not necessarily related to the course and provided opportunities for informal interactions (Lowenthal & Dunlap, 2018; Udenze & Ugoala, 2019), as Selin stated here: *"For example, on WhatsApp, you can talk about different things apart from the course material, so I may have felt a sense of belonging there.*" (Selin, end of the semester).

3.7.3.3 Supporting Each Other's Learning Process

Especially the two course elements seemed to support the students' learning process in this course. Students expressed that they benefited from Slack, which allowed them to share useful resources and ask questions whenever they had one (Pilcher, 2016). For example, Gizem said:

> On Slack, for example, everyone shared their opinions. You know, some software and some methods were suggested, for instance, how to write references. So, the suggestions in Slack were useful for me. It was useful for me to see these stages while writing the thesis. I can say that such posts on Slack have been beneficial." (Gizem, mid-semester)

Another useful course element was the peer feedback required for each major course assignment. With the help of these assignments, students said that not only did they learn from the feedback they received but also from providing feedback to others (Lowenthal & Dunlap, 2018; Okita et al., 2013; Swaggerty & Broemmel, 2017). This mutual situation seemed to make them feel safe. For instance, Elif said: "*Giving feedback on our assignments and presenting it again later on in the course, makes me feel like making mistakes here is okay. We make mistakes together, we correct them together, and we are all here to learn*" (Elif, end of the semester).

3.7.3.4 Presence of the Authority

The data also suggested that course materials' clarity and receiving clear instructions reduced the ambiguity of the unknown and increased students' confidence (Sheridan & Kelly, 2010; Maddix, 2013). For example, Elif said:

> Because when the directions are clear, we know what to do and how to do it. You were the reason for this trusting environment in the first place. Because we were a group that didn't know each other, I was a little nervous at first, to be honest. It's not a lie; your attitude at first made me feel comfortable. As I learned what to do with instructions, I gained confidence in myself. (Elif, end of the semester)

In this course, students were able to receive timely, frequent, and personalized feedback, as suggested by the researchers (Maddix, 2013; Lowenthal & Dunlap, 2018; Pilcher, 2016). They were also provided the opportunity to lead a class discussion as the expert of the week. Timely support, whenever needed, and sharing authority in a safe environment seemed to make students feel both empowered and secure. For example, Selin said:

> When I'm presenting, I'm an expert in that week, but I'm also a student and a participant, and the instructor is involved in the smallest thing [when a need arises]. I think it was very effective for [developing] a sense of belonging. (Selin, end of the semester)

Table 7.

Community-building processes and most supportive course elements.

Community-Building Process	Most Supportive Course Elements Evident in Data
Promoting task-driven interactions	Weekly chapter summaries and Q&A Live discussions Padlet-based activities
Supporting each other's learning	Peer feedback opportunities Slack channels WhatsApp group
Presence of the authority	Clear course instructions Timely support whenever needed
Promoting socio-emotional interactions	Ice-breaker activity Group work in experts of the week assignment WhatsApp group Zoom breakout rooms

Discussion and Conclusions

The findings of the present study showed that the students were able to build and maintain a sense of community in an online course offered during the COVID-19 pandemic. This is important because these students, who find themselves starting a new graduate program of study amid a pandemic, may have experienced feelings of isolation as they tried to adjust to the new normal in their educational lives.

The four sense of community elements seemed to be all established in the course, although to varying degrees. Qualitative data revealed more indicators of community elements toward the end of the semester, suggesting a stronger sense of community by the end of the course. Based on the survey results, the highest sense of community score was reinforcement, and the qualitative data also showed the highest number of indicators of this sense of community element. Being successful in the course was a common goal, and learning the material well was students' common need that functioned as reinforcement. The course setting satisfied members' learning needs, which increased their sense of community. Influence was the second-highest community element in the survey results. The interview findings supported Synder's (2009) claim that building trust was key to enabling students to build a positive sphere of influence. As a result, they seemed to feel both valuable, empowered, and safe, which increased their sense of community. In addition, students indicated that small class size increased their sense of belonging, an attribute of membership, the third sense of community element. This result is consistent with Brown's (2001) and Rovai's (2000) argument that a higher sense of community is correlated with small-group work. Students were not fully satisfied with the last element, shared emotional connection. While supporting students to form close friendships was not the main goal of the present course, several pieces of evidence were still found in the interview data related to the notion of "the spark of friendship," which McMillan (1996) associated with the shared emotional connection. Our data suggested that this could be affected by students' negative perceptions of the online modality to build closer informal relationships. Perceptions appear to be important in building a sense of community, as a "sense of community is not necessarily rooted in actual experience but in perception" (Pretty et al., 1996, p. 366).

According to the mid-semester and end-of-semester interviews, the designed course elements seemed to positively affect the community-building processes. The analysis showed that the course elements played a role in the online learning community-building strategies, as shown in Table 3. The role of task-driven interactions in online learning community-building processes has been pointed out by several researchers (Lui et al., 2007; Rovai, 2002; Scardamalia & Bereiter, 1994). Meanwhile, a large number of studies suggest including course design elements to promote those interactions directly related to the learning goals (Berry, 2019; Galikyan & Admiraal, 2019; Pilcher, 2016; Wang et al., 2018; Wenger & Snyder, 2000). Consistent with the literature, the findings corroborated these suggestions. We saw that the course elements promoting task-driven interactions, such as live discussions and Padlet-based activities, supported the community-building processes. As Serembus and Murphy (2020) emphasized, the small class size also worked well in terms of creating an effective learning community. Secondly, course elements promoting socio-emotional interactions, such as icebreakers and the use of social platforms such as a WhatsApp group, were included in the study. Aligned with the suggestions in the literature (Swaggert & Broemmel, 2017; Martin & Wang, 2018; Lowenthal & Dunlap, 2018; Udenze & Ugoala, 2019), the findings supported their positive impact on the community-building processes. More specifically, we saw that students felt more comfortable in an informal WhatsApp group, and this supported their social-emotional interactions (Abidin, Mathrani, & Hunter, 2021). Thirdly, peer feedback opportunities and Slack were included in the course design, aiming to give students opportunities to support each other's learning since a large body of research highlighted their impact on online learning communities (Lowenthal & Dunlap, 2018; Okita et al., 2013; Swaggerty & Broemmel, 2017). Our results are also consistent with the claim that there is a positive impact of collaborative learning among students on their sense of community (Chatterjee & Correia, 2020). Finally, the two course design elements,

course materials clarity, and teacher approach, directly addressed the presence of authority that is crucial to building online learning communities (Garrison et al., 2000; Shackelford & Maxwell, 2012; Vesely et al., 2007). The findings have supported the argument that the clarity of course materials reduces ambiguity in class and facilitates community-building processes (Sheridan & Kelly, 2010; Maddix, 2013). Similarly, the results showing the positive impact of having timely (Pilcher, 2016), frequent (Maddix, 2013), and personalized (Lowenthal & Dunlap, 2018) feedback from the instructor aligned with the findings in the literature that the teacher approach has a large impact on students' community-building processes (Shackelford & Maxwell, 2013; Vesely et al., 2007; Ouyang & Scharber, 2017). As Trespalacios and Uribe-Florez (2020) mentioned, the warm tone of the instructor welcomed students into the community while helping them to feel more confident.

In light of the findings of the present study, it is possible to discuss the practical implications of the study for instructors, instructional designers, and leaders in higher education. An important consideration is related to contextualizing the strategies discussed in this study while designing an online course. The findings showed that the course elements, designed considering the four categories of online learning community-building strategies, were effective in enhancing a sense of community. However, it's important to note that every element included in this course cannot be applied effectively in every type of online learning setting since the community-building processes are considered to be case-specific (Burroughs & Eby, 1998; Hill, 1996). Thus, the first consideration while designing an online course is to focus on the community-building strategies from a broader perspective instead of focusing on a specific course design element itself. In other words, a course element should be included after determining its possible role in the community-building processes for that specific online learning setting. For example, the use of live discussions to promote task-driven interaction would not work well in the case of students living in different time zones. It may inhibit synchronous collaboration possibilities; thus, the course design needs to include another course element to promote those community-building processes.

Secondly, the findings showed that the lack of informal time, which is not typically considered in online course design, could negatively affect some students' sense of community. Gratchev and Espinosa (2023) mentioned that the lack of direct interaction before and after classes decreases the informal conversations between students, and thus, they are in a challenging position to connect with peers and build a sense of community. Some students may need explicit informal time as part of their online courses and value such opportunities to promote their socioemotional interactions. As Berry (2019) suggested, more course elements allowing informal, personal, and social interactions need to be implemented in the course design. These would involve an *online study lounge* integrated into an LMS where students can run live streams, record them, and then asynchronously discuss them in the chat. It may keep conversations continuous and facilitate interactions even if the students are located in different time zones. In this study lounge, some moderated sessions can also be organized with students to share ideas or stories.

While this study has achieved its primary objective, it is important to acknowledge its limitations. Firstly, this study did not focus on the role of the pandemic in students' perceptions of their sense of community. The COVID-19 period has been a difficult time for many students. In addition, this study investigated a fully online course that included both synchronous and asynchronous parts. The findings of this study could be more applicable in contexts where students have no chance to meet face-to-face. To gain a more comprehensive understanding of the sense of community, it would be worthwhile to investigate online courses with various delivery formats. Further investigations in a variety of disciplines, degree programs, and subjects could shed more light on understanding effective course design principles to build a sense of community in different course contexts.

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