THE INFLUENCE OF COURSE COMMUNITY AND PERSONAL COMMUNITY

SUPPORT ON LEARNER ENGAGEMENT IN ONLINE COURSES

by

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ABSTRACT

Borup, Graham, West, Archambault, and Spring (2020) theorized that a student's level of engagement in an online course is influenced by course community support and personal community support, with both factors helping a student to achieve a level of engagement that is not possible independently. In other words, an individual student's ability to engage in an online course can be explained by the kinds of community a student finds within a course and their social support from friends, family, and community as they take the class. The purpose of this study is to understand to what extent course community support and personal community support influence learner engagement. Students who have recently completed an online course were surveyed on their level of engagement in the course, experience of the course community of inquiry, and their level of personal social support. The survey responses were used in a stepwise multiple regression analysis to create a model that explains to what extent course community and personal community explain variations in learner engagement. The results are significant in that they help course designers, instructors, and university support staff understand the interaction between course community, personal community, and learner engagement. That understanding could be used to design both online course content and intervention strategies to maximize learner engagement.

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CHAPTER ONE: INTRODUCTION

Research suggests that learner engagement is a necessary prerequisite for learner satisfaction, perceived learning, and achievement in online coursework (Casimiro, 2015; Gray & DiLoreto, 2016; Martin & Bolliger, 2018; Price & Tovar, 2014). Learner engagement, as defined by Dixson (2015) is "about students putting time, energy, thought, effort, and... feelings into their learning" (p.146). This study explored factors that influence learner engagement, focusing on to what extent course community and personal community influence engagement in an online learning experience. This connection between a sense of community and learner engagement was proposed by Borup, Graham, West, Archambault, and Spring (2020) in their Academic Communities of Engagement framework. The ultimate goal of this study was to understand to what extent community impacts engagement. With that understanding, practitioners can better support learner engagement and ultimately improve student learning outcomes in online coursework.

Statement of the Problem

Learner engagement is a complex construct impacted by a variety of factors both within an online course and outside the online learning experience (Hew, 2016; Jaggars & Xu, 2013; O'Shea, Stone, & Delahunty, 2015; Pawan, Paulus, Yalcin, & Chang, 2003; Picciano, 2002). For example, researchers have found that pre-existing learner qualities such as self-efficacy and self-regulation can impact engagement (Kim, Park, Cozart, & Lee, 2015; Strang, 2017). Factors related to an instructor's involvement in a course can

also impact engagement, including time spent by an instructor in building course content, the modality of an instructor's feedback, and the speed of communications (Ice et al., 2007; Jaggars & Xu, 2016; Ma et al., 2015). Additional factors related to engagement include course design strategies such as cooperative learning and facilitated discussions (O'Shea et al., 2015; Tayebinik & Puteh, 2013). The findings within engagement research can leave an instructor or instructional designer confused on how to create and support learner engagement and which practices are most closely aligned with increased learner engagement.

A variety of engagement frameworks have been proposed to explain the complex factors that influence learner engagement. Borup, West, Graham, and Davies (2014), in an early K-12 focused framework, proposed that engagement is influenced in part by the engagement of a student's teacher, parent(s), and peers. For Borup et al. (2014), in this initial theory, the overlap of engagement by outside parties had the greatest influence on learner engagement. Bigatel and Edel-Malizia (2018) attempted to summarize the factors that impact engagement in higher education by outlining 30 research-supported indicators that impact engagement, sorted into factors that are behavioral, cognitive, and social. Coates (2007) proposed that learner engagement can be considered in terms of social engagement and academic engagement, with different learners displaying different profiles of engagement depending on subject area.

Each of these frameworks, while adding to our understanding of factors that influence engagement, also complicated engagement research. Existing frameworks identify so many factors that a practitioner may conclude that absolutely any factor can increase engagement in an online course. There is a need within engagement research to

simplify the findings. The goal of any framework should be to identify factors that influence engagement but do so in a parsimonious way that clarifies the construct of engagement rather than obscuring it (Whetten, 1989).

In a later engagement framework updated to apply to all learners (not just K-12 students), Borup et al. (2020) attempted to create that parsimonious framework for learner engagement. The researchers proposed that learner engagement is impacted by personal community support and course community support, with each factor being interchangeable. In other words, a sense of community within a course and within a person's life has a significant impact on the learner's ability to engage in learning. In this framework, course community referred to the time-bound support that a student receives in an online class through relationships that are built directly in the context of that course. Relationships with other students and with a professor are all part of the course community. Personal community, in contrast, was not time bound. It was the relationships with friends and family that a student had before a course begins and that will continue after a course is over. For Borup et al. (2020), every student has an independent level of engagement that is possible without any outside sense of community. What a student can do independently, however, is influenced by the support of those around them, a similar concept to Vygotsky's (1978) Zone of Proximal Development. In this case, Borup et al. (2020) proposed that a student's level of engagement was positively influenced by a sense of course community and personal community. If Borup et al. (2020) were correct, then course community and personal community, alone or in combination, are critical in creating and sustaining student engagement in online coursework. Understanding that connection will help to simplify

the multitude of findings within engagement research and provide a clear focus for instructors who seek to improve student engagement. Improve a learner's connection to course community or personal community and student engagement will improve.

Theoretical Framework

This study was grounded in one theory and two frameworks that provide conceptual clarity to the study's design. First, Vygotsky's Zone of Proximal Development theory provided the groundwork for an understanding of how learning is impacted by the support of others. Vygotsky (1978) proposed that each learner has a level of achievement that is possible independently and another level of achievement that is possible with outside support such as with the help of a teacher or with instructional scaffolding built into the design of the learning experience. He defined the Zone of Proximal Development (ZPD) as "the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978, p. 86). In other words, learning happens when a student is challenged to attempt work that is beyond their independent level of skill but that is possible with outside support. That outside support in an online course takes the form of course community and personal community. A learner can get content support from an instructor and other students within the course community or the learner can get tutoring support from their friends and family within the personal community. They can also get emotional and behavioral support from the same sources. That sense of support is what helps the student to move into Vygotsky's Zone of Proximal Development and into optimal learner engagement.

Building from Vygotsky's Zone of Proximal Development, Borup et al. (2020) proposed in the Academic Communities of Engagement framework that each student has a level of engagement that they are able to achieve independently. This level of engagement varies depending on the individual learner's motivation, background, and characteristics. The level of independent engagement can vary for an individual from course to course or even from activity to activity due to a learner's motivation, interest in a particular topic, or connection to a particular instructional strategy (Borup et al., 2020). For Borup et al. (2020), that level of independent engagement can be influenced by outside support from a course community and a personal community.

Borup et al. (2020) recognized that learning is influenced by outside support (Vygotsky, 1978), as illustrated in Figure 1.1. In Figure 1.1, the black inner triangle is the level of engagement that a student can achieve independently. The light gray triangle indicates engagement that can be achieved through the influence of course community support, and the dark gray outer triangle indicates engagement that can be achieved through the influence of personal community support. The outside perimeter of the triangle, represented by a dotted line, is the level of engagement that is necessary for academic success. As illustrated, the student's level of independent engagement is not sufficient for him or her to achieve academic success. Only through the addition of personal community or course community can the student reach the required level of engagement for academic success. Borup et al. (2020) indicated that each individual will have different needs from their various communities. In a particular course, a student may rely completely on their personal community in order to reach the engagement level necessary for academic success. Another student may rely completely on the course

community to reach the engagement level necessary for academic success. And for

another, it may be the combination of both forms of community that is necessary for

academic success.
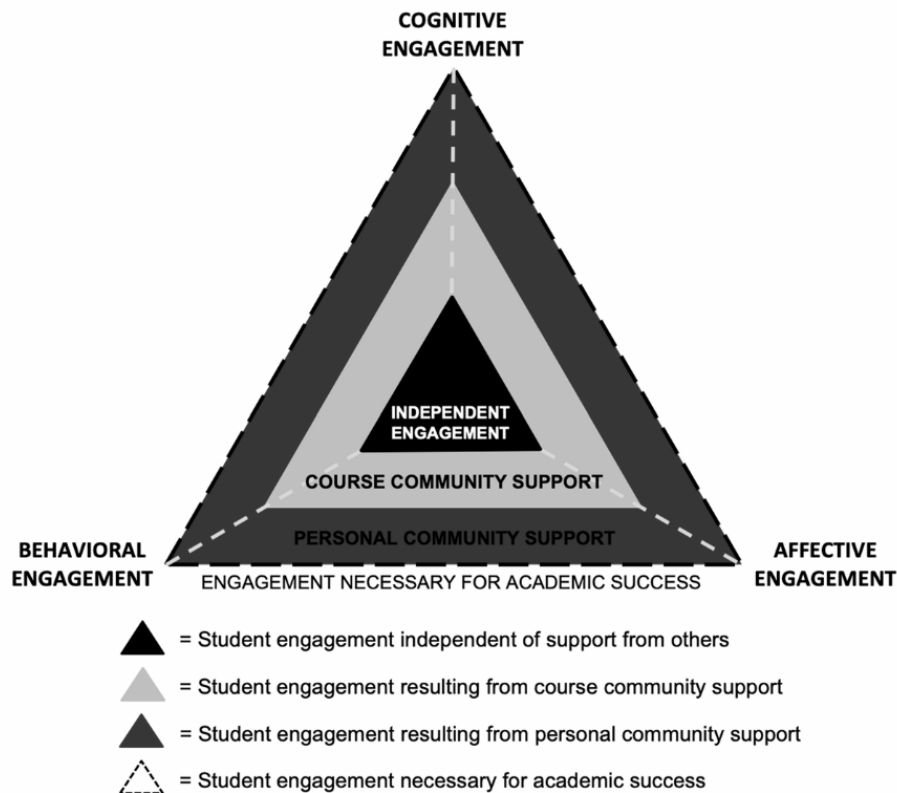
Figure 1.1.   **Independent engagement supported by the course community and personal community.**
Reproduced from "Academic Communities of Engagement: an expansive lens for examining support structures in blended and online learning," by J. Borup, C. Graham, R. West, L. Archambault, & K. Spring, 2020, *Educational Technology Research & Development,* p. 4. Copyright 2020 by the Association for Educational Communications & Technology.

       Both the personal community and the course community provide support for the

learner to achieve optimal engagement (Borup et al., 2020). Figure 1.2 demonstrates how

course community and personal community support can impact all three types of learner

engagement: cognitive, behavioral, and affective. Cognitive engagement refers to a

learner's engagement with the content of a class. Both the course community and the

personal community can support cognitive engagement in the form of instruction or tutoring. A fellow student could act as a peer tutor but a student could also be tutored by a friend or family member. Affective engagement refers to a learner's emotional connection to a course. Both the course community and the personal community can influence affective engagement. A professor could encourage a student when they are frustrated by an assignment or a spouse could provide a student with a new perspective when frustrated by an assignment. Behavioral engagement refers to a learner's actions in a course that lead to success such as posting in a discussion or submitting assignments. Again, both the course community and personal community can provide that support. A learner's sibling could provide technical support in how to create an assignment or a fellow student could create a video demonstrating how to complete a tricky exercise.
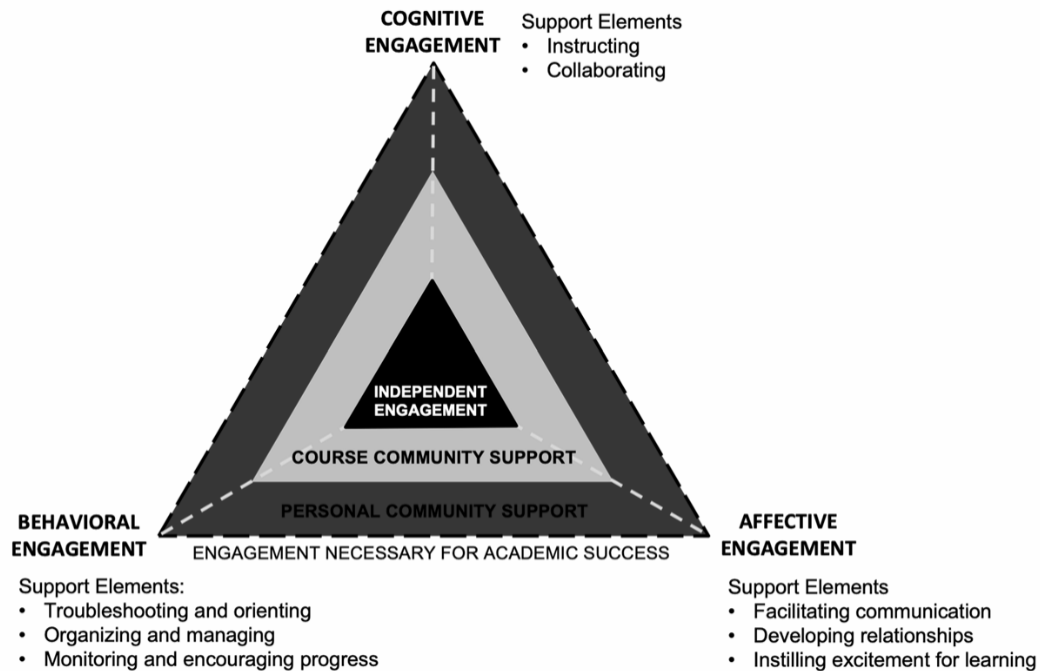
Figure 1.2.   Engagement Supports in the ACE framework.
Reproduced from "Academic Communities of Engagement: an expansive lens for examining support structures in blended and online learning," by J. Borup, C. Graham, R. West, L. Archambault, & K. Spring, 2020, Educational Technology Research & Development, p. 12. Copyright 2020 by the Association for Educational Communications & Technology.

Borup et al.'s (2020) elaboration on each of these types of engagement support helped to illustrate why personal community support and course community support may be interchangeable in creating learner engagement. Peer tutoring may be just as effective as tutoring from a family member. The key is that the student has the support they need to move from independent engagement, which falls short of the engagement necessary for academic success, to optimal engagement through the support of a community, whether that support is from a personal network or from within a course.

The final framework that informs this study's design is the Community of Inquiry framework (CoI) proposed by Garrison, Anderson, and Archer (2000). Borup et al. (2020) argued that the CoI framework was too narrow, accounting only for interactions

that happened within a course and ignoring how outside interactions may impact learning. The authors explain, "We need better theoretical frameworks that explain the role and interaction of important supplemental relationships and personal communities (e.g. families and friends) that support students' engagement in online and blended learning" (Borup et al., 2020, p. 2). Borup et al. (2020) proposed the Academic Communities of Engagement framework as a way to look at community in a broader sense, with influences from inside a course and from outside impacting engagement. However, the two frameworks can work together, with the CoI framework providing a clear vision for what creates an educational experience within an online course (outlined as course community in the ACE framework) and the ACE framework providing the broader context for how community inside and outside the classroom can impact engagement.

Garrison et al. (2000), in the CoI framework, proposed that educational online learning experiences are created through the interaction of teaching presence, cognitive presence, and social presence. Teaching presence refers to instructional interactions in a course from the professor and other students as well as course design, cognitive presence refers to a learner's interaction with content, and social presence refers to a learner's perception that other students are "real" and engaged in the course community. These three factors, when combined, create a Community of Inquiry within an online course and, according to Garrison et al. (2000), will support student learning.

In this dissertation, course community was understood as a function of a Community of Inquiry, including its underlying constructs of teaching presence, social presence, and cognitive presence (Garrison et al., 2000). A course community is reliant

on all three presences existing in a course. Course community does not happen automatically just as not all online courses are true Communities of Inquiry. Only through the interaction of teaching presence, social presence, and cognitive presence is course community possible. This connection aligns with Borup et al.'s (2020) definition of course community: "The course community is organized and facilitated by those associated with the course or program who have knowledge of course content, expectations, and procedures" (p. 11). Though the Borup et al. (2020) definition focused on teaching presence and how a student learns about the expectations of the course, their identification of "building relationships" and "encouraging progress" as key elements of support (see Figure 1.2) demonstrated their recognition that a course community also involves cognitive presence and social presence (p. 12).

Use of the CoI to define course community also aligns with Rovai's (2002b) definition of course community that focuses on community as a spirit of connectedness, a feeling of trust, significant interactions, and shared learning. Cognitive presence leads to shared learning. Teaching presence leads to significant interactions and shared learning. Social presence leads to a spirit of connectedness, a feeling of trust, and significant interactions. Figure 1.3 illustrates how the elements of CoI can be identified within the ACE framework to provide a deeper understanding of the influence of community on learner engagement.

COGNITIVE ENGAGEMENT
Support Elements
- Instructing T
- Collaborating S

S=Element of Social Presence

C=Element of Cognitive Presence

T=Element of Teaching Presence

INDEPENDENT ENGAGEMENT

COURSE COMMUNITY SUPPORT

PERSONAL COMMUNITY SUPPORT

BEHAVIORAL ENGAGEMENT

ENGAGEMENT NECESSARY FOR ACADEMIC SUCCESS

AFFECTIVE ENGAGEMENT

Support Elements:
- Troubleshooting and orienting T
- Organizing and managing T
- Monitoring and encouraging progress T

Support Elements
- Facilitating communication C
- Developing relationships S
- Instilling excitement for learning C, T

Figure 1.3   Elements of the CoI framework within the ACE framework. Adapted from "Academic Communities of Engagement: an expansive lens for examining support structures in blended and online learning," by J. Borup, C. Graham, R. West, L. Archambault, & K. Spring, 2020, *Educational Technology Research & Development,* p. 12. Copyright 2020 by the Association for Educational Communications & Technology.

Each of these frameworks provided an important element to the design of this study. From Vygotsky (1978), we gained an understanding of the importance of outside support in order to reach deeper levels of learning. From Borup et al. (2020), we gained an understanding of the importance of outside support on learner engagement, especially in online courses. Finally, from Garrison et al. (2000), we gained a deeper understanding of what it means to have a course community built through the elements of a Community of Inquiry.

Purpose of Study

The purpose of this study was to understand to what extent course community and personal community influence learner engagement. Understanding this interaction will provide clear guidance to instructors, instructional designers, and university support staff who seek to increase learner engagement through building community.

Ultimately, understanding how community support impacts learner engagement will lead to higher engagement and better outcomes in online courses (Casimiro, 2015; Gray & DiLoreto, 2016; Martin & Bolliger, 2018; Price & Tovar, 2014). If course community is a good predictor of learner engagement, then instructors and instructional designers can focus on building course community at deeper levels in order to improve engagement and thus improve learner outcomes. If personal community is a good predictor of learner engagement, then instructors and university support staff can identify at-risk students early in a program by including a basic measure of personal community support within enrollment paperwork and course surveys. Those results could then lead to interventions focused on building a strong personal community. If both course community and personal community are good predictors of engagement, then instructors, instructional designers, and university support staff can proactively work together to impact those factors, increasing engagement and, ultimately, student learning outcomes.

Overview of Research Methods

This quantitative survey study focused on the extent to which course community and personal community influence learner engagement. Learners were surveyed using three existing surveys: the Online Student Engagement Scale (Dixson, 2015), the Community of Inquiry instrument (Arbaugh et al., 2008), and the Medical Outcomes

Social Support Survey (Sherbourne & Stewart, 1991). Results from the surveys were analyzed using multiple regression to explore to what extent course community support and personal community support account for variance in learner engagement. Learner demographics including parental level of education, gender, age, high school grades, and previous online learning experience were control variables within the multiple regression analysis as these factors have been shown to influence learner engagement outside of the course community itself (Curtis & Werth, 2015; Hampton & Pearce, 2016; Hu and Kuh, 2002; Kuh, 2009; Strang, 2017).

Research Question

The study focused on answering the following research question: To what extent did course community and personal community explain variations in learner engagement in online courses?

Context of the Study

The setting for this study was a small, for-profit art and design school located in the western U.S. with annual enrollments of 1800 students. Students were invited to participate in the study after completion of an online course in the Liberal Arts department. Liberal Arts was specifically chosen for the sample because students in all majors take courses within Liberal Arts, providing a more diverse sample within a specialized university. Courses at the participating university were provided on an 8-week term and students completed the survey within two weeks of completing the term. The sample size for the study was 74 undergraduates, with a response rate of 16%. The primary researcher on this study was not an instructor in any of the course sections,

reducing the potential for bias. Participants in the study were entered in a drawing for one of four $25 Amazon gift cards if they chose to provide an email address.

Data Collection and Analysis

Data was collected with an online survey. The online survey consisted of 73 questions from three existing surveys: the Online Student Engagement Scale (Dixson, 2015) as a measure of engagement, the Community of Inquiry instrument (Arbaugh et al., 2008) as a measure of course community, and the Medical Outcomes Social Support Survey (Sherbourne & Stewart, 1991) as a measure of personal community. The survey included additional questions focused on demographic information as control variables: high school grades, parental level of education, gender, age, and previous online learning experience. Results from the surveys were analyzed using multiple regression analysis to explore to what extent course community support and personal community support explain variations in learner engagement.

Scholarly Significance

In order to successfully design learning experiences in higher education, instructors, university support staff, and instructional designers need to understand how to support and encourage learner engagement as learner engagement has been found to be a necessary prerequisite to student achievement (Casimiro, 2015; Gray & DiLoreto, 2016; Martin & Bolliger, 2018). This study, by focusing on the influence of course community and personal community on learner engagement, sought to understand those factors that encourage learner engagement to better inform the communities that support that learning (Borup et al. 2020). The study utilized multiple regression modeling to see how much variance in learner engagement in higher education online courses can be

explained by course community support and personal community support. Multiple regression analysis allows researchers to explore how much variance in a dependent variable can be explained by variations in independent variables, including how independent variables interact to influence a dependent variable (Keith, 2019). In this case, learner engagement is the dependent variable with personal community and course community as independent variables that may influence variations in engagement.

If much of learner engagement can be explained by personal community and course community, it will simplify our understanding of how to engage learners and provide a clear path for designers and instructors who want to prioritize learner engagement in course design and learner interventions. If the two support communities are interchangeable, as proposed by Borup et al. (2020), then learner engagement can be encouraged by providing support in both areas: classroom community and personal community. Instructors and instructional designers could focus on strategies to create stronger classroom communities as a proven way to increase learner engagement. Additionally, instructors and university support staff could use measures of personal community support as a way to identify at-risk learners and provide additional support for those with limited personal community.

Assumptions

The design of this study relied on several key assumptions. First, that the surveys are valid measures of engagement, course community, and personal community within an online classroom. Second, the study assumed that there is a relationship between learner engagement, course community, and personal community with course community and personal community as independent variables that influence engagement. Multiple

regression analysis can typically only explain a portion of the variance in a dependent variable. In this case, the hypothesis was that course community and personal community, in combination or independently, could explain a statistically significant portion of the variance in learner engagement. Third, the study assumed, based on the body of evidence, that greater learner engagement leads to other desirable effects such as greater learner achievement and learner satisfaction (Casimiro, 2015; Gray & DiLoreto, 2016; Martin & Bolliger, 2018).

Limitations

Limitations of the study are directly related to the sample population and whether each survey is a valid measure of engagement and community with the identified population. Because the sample population is from an arts and design school, survey results should be interpreted with caution. They may not generalize to schools in other fields. With a relatively low response rate of 16% and a self-selecting population, it is possible that the sample used in this study varied significantly from the larger population. As this study took place during the CoVid-19 crisis and under social distancing measures, the results may be impacted by student isolation, especially from their personal community. As such, the results should be interpreted with caution. Personal community's impact during a quarantine may be more or less significant than during a normal semester.

Definition of Terms

Three terms are central to the ideas in this study: learner engagement, course community, and personal community.

This study used the Dixson (2015) definition of engagement.

- Engagement is "about students putting time, energy, thought, effort, and... feelings into their learning" (Dixson, 2015, p. 146).

This study used the definition for course community from Rovai (2002b) and the definition of personal community from Borup et al.'s (2020) description of the Academic Community of Engagement framework.

- A course community is defined by "feelings of connectedness...duties and obligations to each other and to the school and... a shared faith that members' educational needs will be met through their commitment to shared learning goals" (Rovai, 2002b, p. 199). Note that though Rovai's (2002b) definition guided this study, course community in the study was measured through the Community of Inquiry instrument. Details in chapters 2 and 3 provide a rationale for this connection between Rovai's definition and the Arbaugh et al. (2008) Community of Inquiry instrument.

- A personal community is "made up of family, friends, and others within students' social networks who can provide informal support" (Borup et al., 2020, p. 3).

Chapter Summary

This study sought to explain whether course community and personal community are integral to a learner's engagement in an online course. An understanding of the interaction between course community, personal community, and learner engagement will provide key direction for professors, instructional designers, and university support personnel who are looking to build learner engagement. Chapter two of this proposal provides an in-depth look at pertinent literature related to learner engagement and community.

CHAPTER TWO: REVIEW OF LITERATURE

Learner engagement refers to a learner's interest, motivation, and effort in learning a topic. Dixson (2015) said that engagement is "about students putting time, energy, thought, effort, and... feelings into their learning" (p. 146). While engagement is not often identified as a main goal of an online course, research indicates it has a key role in learner achievement and perceived learning. Engaged learners seem to have better outcomes in course content. (Casimiro, 2015; Gray & DiLoreto, 2016; Martin & Bolliger, 2018). Unfortunately, engagement is a complex construct that encompasses multiple inputs. This study sought to explore specifically how course community and personal community influence overall learner engagement, as proposed in Borup et al.'s (2020) framework, Academic Communities of Engagement. This literature review will explain the current research based on engagement and community, including why it matters, what it means to be engaged, relevant theories, and research findings around engagement, especially engagement as it relates to community.

Why Learner Engagement Matters

Research has generally shown that higher learner engagement also leads to stronger course outcomes (Casimiro, 2015; Gray & DiLoreto, 2016; Martin & Bolliger, 2018).

Gray and DiLoreto (2016) found evidence that stronger learner engagement leads to stronger learner satisfaction and stronger perceived learning. In this case, satisfaction is the perception that the course was a worthwhile experience and perceived learning is the

student's perception that they gained in knowledge or skills as a result of being part of the course. Their logic diagram, reproduced in Figure 2.1, illustrates the strong correlations they found between student engagement and perceived learning and satisfaction. In their study, student engagement had a statistically significant correlation with perceived student learning, $r(187)=0.891$, p<0.01. There was also a statistically significant correlation between student engagement and student satisfaction, $r(187)=0.951$, p<0.01.
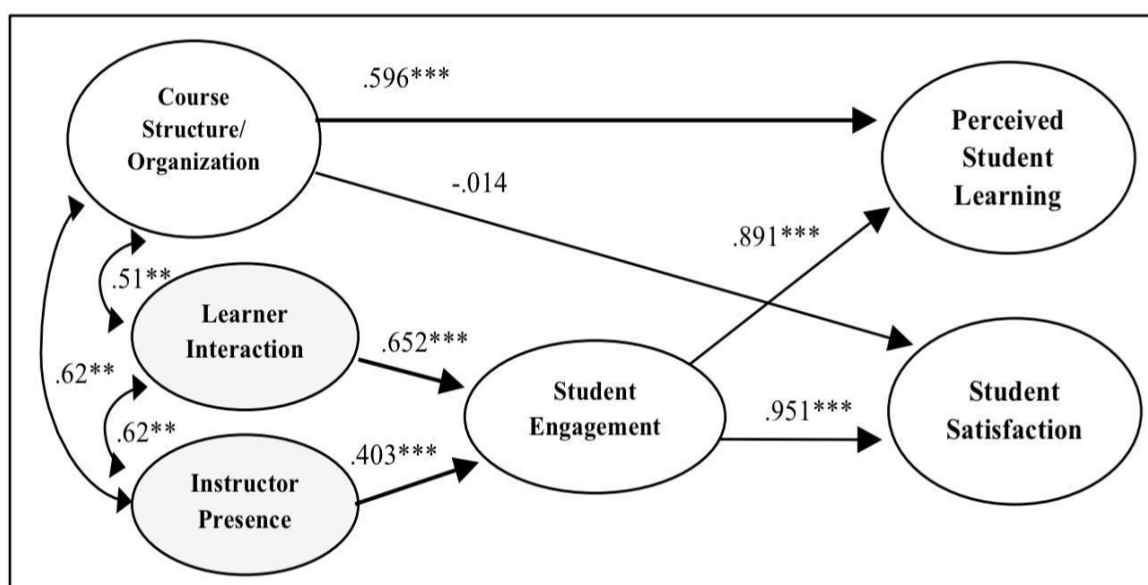
Figure 2.1.   Diagram of correlations between course factors, engagement, perceived student learning, and student satisfaction.
* significant at .05; ** significant at .01; *** significant at <.01 Reproduced from "The Effects of Student Engagement, Student Satisfaction, and Perceived Learning in Online Learning," by J. Gray and M. DiLoreto, 2016, NCPEA International Journal of Educational Leadership Preparation, 11, p. 107. CC BY-NC-ND.

Gray and DiLoreto's (2016) model provided support for engagement's connection to a positive learning experience for students. Students who have a positive learning experience are more likely to persist in their course and more likely to continue in their degree program (Roorda, Koomen, Spilt, & Oort, 2011). However, simply having a

positive experience is only the beginning of how engagement can impact an online learning experience.

Price and Tovar (2014) found that stronger learner engagement led to stronger institutional graduation rates. Engagement accounted for 20% of the variance in graduation rates even when controlling for university size and race of students. In particular, they found two specific markers of engagement as predictors of graduation rate: active or collaborative learning and support for learners. In other words, if students are engaged in active learning, learning in collaboration with others, or with institutional support systems, they were more likely to graduate. While this analysis focused on traditional coursework, it is reasonable to assume that engagement in similar online systems would lead to a similar impact on graduation rates. The finding that collaborative learning impacts engagement is particularly important as it provides support for the idea that course community influences learner engagement.

In addition to stronger perceived learning, stronger learner satisfaction, and higher graduation rates, learner engagement is also associated with stronger learner achievement. Tayebinik and Puteh (2013) found that online learners who engaged in course interactions, including student to teacher, student to student, and group discussions were more likely to earn a passing grade, with group discussion participation having the highest correlation. DeBoer et al. (2017) found that students who engaged in hand-on course activities in a MOOC had significantly higher exam scores. Hughes, Luo, Kwok, and Loyd (2008) found that students who demonstrated effortful engagement, as measured by teacher-report, displayed stronger growth in academic achievement over a three-year period with that level of engagement serving as a mediator for past

achievement. Reyes, Brackett, Rivers, White, and Salovey (2012) demonstrated that learner engagement impacts student grades, even mediating the impact of a negative classroom emotional climate. Wang (2017) discovered that within a blended classroom, behavioral engagement in problem-solving activities led to an increase in learner achievement. Though some of these findings are from traditional classrooms, the impact of engagement appears consistent across modalities. Engaged learners seem to achieve at a higher level.

Learner engagement's association with stronger learner satisfaction, stronger perceived learning, and higher achievement as measured through course grades and graduation rates indicate that engagement is a desirable goal of the online learning experience.

Learner Engagement Foundations

Researchers of learner engagement, unfortunately, have often failed to define engagement clearly and have used the term loosely, sometimes using it to refer to student interest, sometimes to student effort, and sometimes to student behaviors (Henrie, Halverson, & Graham, 2015). Without a clear understanding of the construct, it is impossible to measure engagement or consider how to create it.

<u>Definitions of Engagement</u>

Perhaps the most common definition of engagement is that engagement is about student behavior, with additional time spent in a course or on course-related activities indicating increased engagement. This is the definition proposed by Hu and Kuh (2002) and advanced through the large body of work associated with the National Survey of Student Engagement (NSSE). The NSSE measures engagement by asking undergraduates

to report their level of activity in four areas: active and collaborative learning, student-faculty interactions, enriching educational experiences, and a supportive campus environment (Kuh, 2009). In this conceptual model, an engaged student is a busy student who spends time in course and campus activities. While this activity-focused definition of engagement is easier to measure, it fails to account for the complexity of engagement. True engagement is much more than being busy.

Other researchers have attempted to create a definition of engagement that encompasses the complexity of the construct. Casimiro (2015) explained engagement as the interaction of four types of engagement: cognitive, relational, behavioral, and personal.

- Cognitive engagement refers to thinking about course content;

- Relational engagement refers to connecting to other course members;

- Behavioral engagement refers to completing course activities;

- Personal engagement refers to a person's individual commitment to their learning experience.

Though Casimiro proposed four distinct aspects of engagement, he also admitted that any single type of engagement greatly influences the others with additional behavioral engagement leading to increased cognitive engagement, additional personal engagement leading to additional behavioral engagement, etc. Thus, these factors trend together. If that is the case, then it is possible that Casimiro's complex definition adds unnecessary components to the definition of engagement.

Bigatel and Edel-Malizia (2018) proposed a similarly complex understanding of engagement in their Indicators of Engaged Learning Online (IELO) framework with each

indicator of engaged learning categorized as encouraging cognitive investment, socio-emotional engagement, behavioral engagement, or some combination of the three. Bigatel and Edel-Malizia's (2018) definition of engagement itself, however, veers towards a more time-focused definition in stating that "student engagement is broadly defined as the time and physical energy that students expend on activities in their academic experience" (p. 59). Their framework will be explored further in the theories section below.

Clark and Mayer (2016) also went beyond a time-focused definition to explain that engagement is the "the meaningful psychological interaction between the learner and the instructional environment that promotes the achievement of the learning goal" (p. 222). In this definition, an engaged learner is connected to a course psychologically, which implies a connection beyond mere activity. Additionally, the learner is only truly engaged if they find the work meaningful and their experiences help them to learn course content. Clark and Mayer's (2016) definition provides a strong overview of the complexity of engagement while preserving a simple, focused construct.

As Henrie, Bodily, Manwaring, and Graham (2015) explained, a strong definition of engagement is crucial to the ability to research the construct. In this case, engagement varies from a simple measure of student activities to a complex measure of the meaning students find in their work. This dissertation study used the Dixson (2015) definition of engagement; engagement is "about students putting time, energy, thought, effort, and...feelings into their learning" (p.146). This definition accounts for learner activities within a course as well as learner motivations and emotion connected to their learning.

Theories of Engagement

Several different researchers have proposed frameworks to explain and conceptualize learner engagement. These theories seek to explain the complex factors that combine to encourage learner engagement.

<u>Engagement Theory</u>

Miliszewska and Horwood (2006) proposed Engagement Theory as a conceptual framework for creating meaningful online learning experiences. In their theory, student engagement is a function of three aspects of course design:

- Collaborative work

- Project-based assignments

- Non-academic focus (primarily a focus on real-world applications of content)

They suggested that the core principles for any course should be *relate*, in which students connect to each other; *create*, in which students create meaningful artifacts of their learning; and *donate*, in which students use their course artifacts to make a difference to the larger community. Though Miliszewska and Horwood's framework may be helpful in course design, it does a poor job of explaining the complex network of factors that impact student engagement since it only focuses on course design.

<u>Adolescent Engagement Theory</u>

Borup, West, Graham, and Davies (2014) proposed a more complex framework for engagement in their Adolescent Engagement Theory. In their theory, focused on K-12 online learners, adolescent engagement is created through an overlap of peer engagement, teacher engagement, and parental engagement, as illustrated in Figure 2.2.

- Peer engagement is how connected other peers are to the work of an online course.

- Teacher engagement is how connected the instructor is to the work of an online course including participation in announcements and discussions as well as grading and feedback.

- Parental engagement is how connected a learner's parent is to monitoring course completion and assignment quality as well as communications with the teacher.
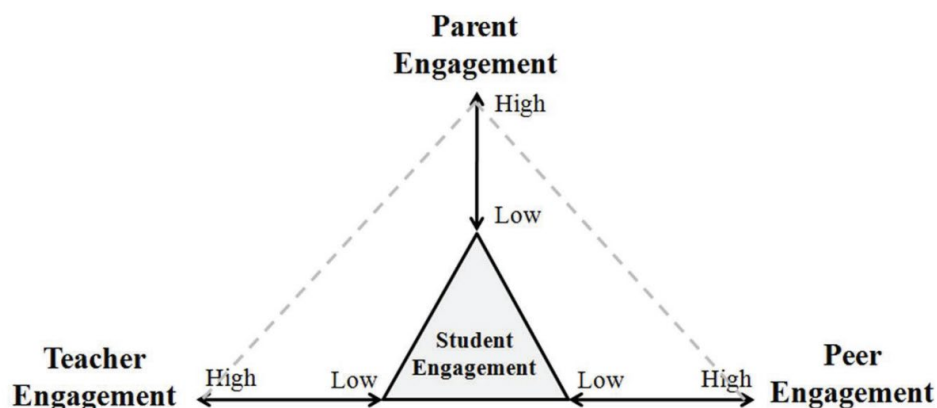
Figure 2.2.   Student engagement visualized as an overlap of parent engagement, teacher engagement, and peer engagement.
Reproduced from "The Adolescent Community of Engagement: A Framework for Research on Adolescent Online Learning," by J. Borup, R. West, C. Graham, & R. Davies, 2014, *Journal of Technology and Teacher Education, 22*, p. 111. Copyright 2014 by the Society for Information Technology and Teacher Education.

The Borup, West, et al.(2014) model is admirable in the way that it portrays engagement as a function of multiple inputs that are outside the student's control. However, it fails to account for the student's individual motivation for learning or any course design factors that impact engagement. In addition, if the model were applied to undergraduates, parental engagement may be less of a factor in engagement, potentially being replaced by community engagement or familial engagement as factors in learner engagement. These shortcomings were addressed by their later Academic Communities of Engagement

(ACE) framework, discussed below (Borup et al., 2020). The later ACE framework is the one applied in this dissertation study.

<u>Indicators of Engaged Learning Online</u>

As mentioned above, Bigatel and Edel-Malizia (2018) also proposed a framework for engagement in online course content, the Indicators of Engaged Learning Online (IELO). The framework brings together 30 indicators of engaged learning that are put into 3 categories: instructional approach, teaching, and learning, with each indicator categorized as impacting socio-emotional, behavioral, or cognitive engagement. The complete framework can be viewed in table 2.1.

Table 2.1.   **Indicators of Engaged Learning Online**

Category	Sub-Category	Indicators
Instructional Approach	Vision of Learning	Responsible for learning (S, B) Strategic (C) Energized by learning (S, B) Collaborative (S)
	Technology	Interconnectivity (S, B) Access to challenging tasks (C) Enables learning by doing (S) Media use (C, S, B)
Teaching	Instructor role	Facilitator (S, B) Guide (S, B) Co-learner/co-investigator (C, S)
	Tasks	Authentic (S, B) Challenging (C) Multidisciplinary (C)
	Grouping	Heterogenous (S) Equitable (C, S) Flexible (S)
	Instructional Model	Interactive (S) Generative (C)
Learning	Assessment	Performance-based (S, B) Generative (C, S) Seamless and ongoing (C) Equitable (S)
	Learning Context	Collaborative (S, B) Knowledge-building (C) Empathetic (S, B)
	Student Role	Explorer (S, B) Cognitive Apprentice (C, S) Teacher (S, B) Producer (S, B)

Note C= encourages cognitive investment; S= encourages socio-emotional engagement; B= encourages behavioral engagement

Adapted from "Using the 'Indicators of Engaged Learning Online' Framework to Evaluate Online Course Quality" by P. Bigatel and S. Edel-Malizia, 2018, *TechTrends, 62*, p. 60. CC BY-NC.

Bigatel and Edel-Malizia's (2018) framework provided a more complex conception of what factors within course design encourage student engagement. However, the framework to this point has only been applied in measuring course quality (Bigatel & Edel-Malizia, 2018). As such, it is more of a measure of course design than a complete conceptual model that accounts for complex factors impacting student engagement.

<u>Levels of Engagement</u>

Schlecty (2002) proposed that there is a continuum of student engagement within a course, ranging from outright rebellion to authentic engagement:

- *Rebellion* is a student who refuses to participate in course content. In online learning, this would be a student who does not login and does not complete course assignments, responding with aggression when their behavior is questioned.

- *Retreatism* is a student who "attends" class but does not complete assignments or cause any trouble. In online learning, this would be a student who logs in but does not participate.

- *Passive compliance* is a student who finds no meaning in course content but who completes course activities with as little effort as possible. In online learning, this would be a student who turns in assignments and discussions but with minimal quality or associated meaning.

- *Ritual compliance* is a student who finds little meaning in course content but who is motivated by grades or other extrinsic factors to do well on assignments. In online learning, this would be a student who fully participates in the class with quality work but without passion, enthusiasm, or meaning.

- *Authentic engagement* is a student who participates in all course activities and finds meaning and value in that work. In online learning, this would be a student who excels in the course and also finds meaning in what they are learning.

Schlecty's framework provided a way to think about student engagement that moves beyond measuring behaviors. After all, the behavior of a student who is ritually compliant vs. authentically engaged is essentially the same. The difference, as emphasized in Clark and Mayer's (2016) definition of engagement, is whether or not the student finds meaning in the course content.

Quadrant of Engagement Styles

Coates (2007) provided a framework that also outlined different types of learner engagement styles: passive, intense, independent, or collaborative. Each engagement style can be placed on a quadrant in terms of the level of academic and social engagement, as seen in Figure 2.3.
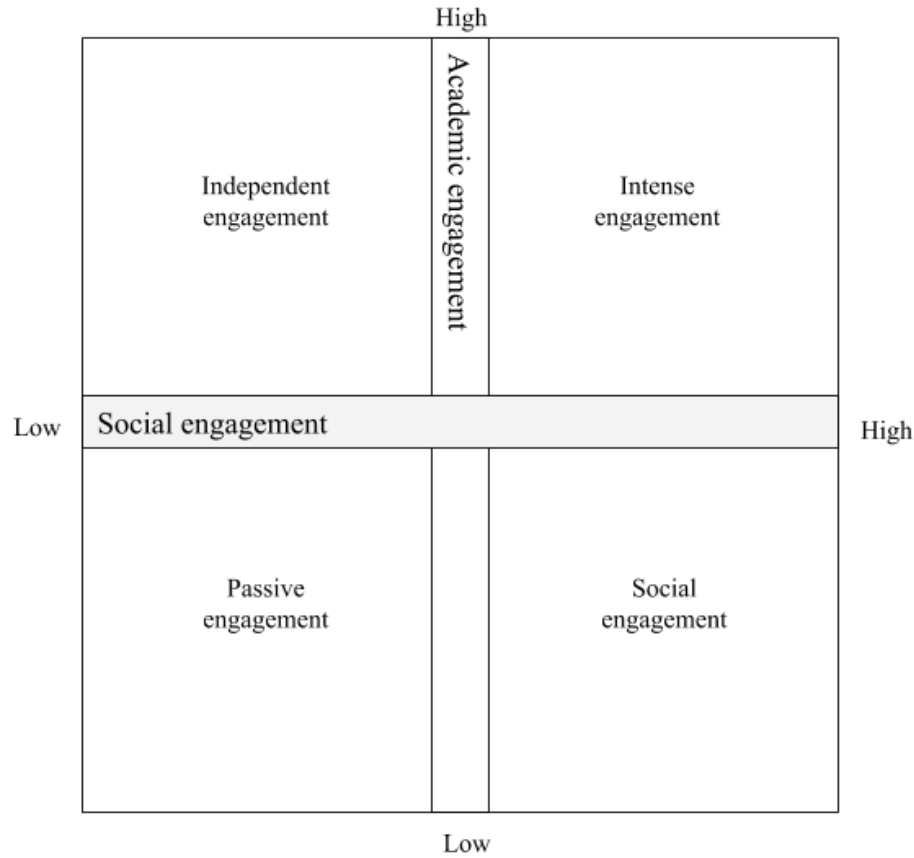
Figure 2.3.   Quadrant of engagement styles.
Adapted from "A Model of Online and General Campus-Based Student
Engagement" by H. Coates, 2007, Assessment and Evaluation in Higher Education,
32(2), p.133. Copyright 2007 by Taylor & Francis.

Academic engagement focuses on activities that are related to the study of content:

reading, writing, taking tests, completing assessments, etc. Social engagement focuses on

activities that connect students to others: class discussions, study groups, professor

interactions, collaborative projects, etc. Based on survey data, Coates (2007) found four

distinct patterns of engagement in student responses:

- *Intense engagement*: Learners who have high levels of academic engagement and

  social engagement.

- *Passive engagement*: Learners who have low-levels of academic engagement and

  social engagement.

- *Collaborative engagement*: Learners who have high levels of social engagement but low levels of academic engagement.

- *Independent engagement*: Learners who have high levels of academic engagement but low levels of social engagement.

Coates (2007) emphasized that these engagement styles are not fixed traits. A particular learner may adopt different engagement styles in different courses or even in different units of the same course. He suggested that coursework must incorporate both academic and social engagement opportunities to engage all learners. He even suggested that perhaps students of an Independent or Collaborative engagement style could be allowed to opt-out of certain activities so that they can focus more attention on activities that match their engagement style needs. Coates' framework provides an opportunity to consider how certain instructional strategies might be engaging for one group but disengaging for another.

The Engagement Framework

In another attempt to conceptualize factors that impact engagement, Pittaway (2012) proposed the engagement framework. This model proposed that engagement is impacted by personal, academic, professional, intellectual, and social engagement, grounded in and deeply impacted by the educational environment, as visualized in Figure 2.4.
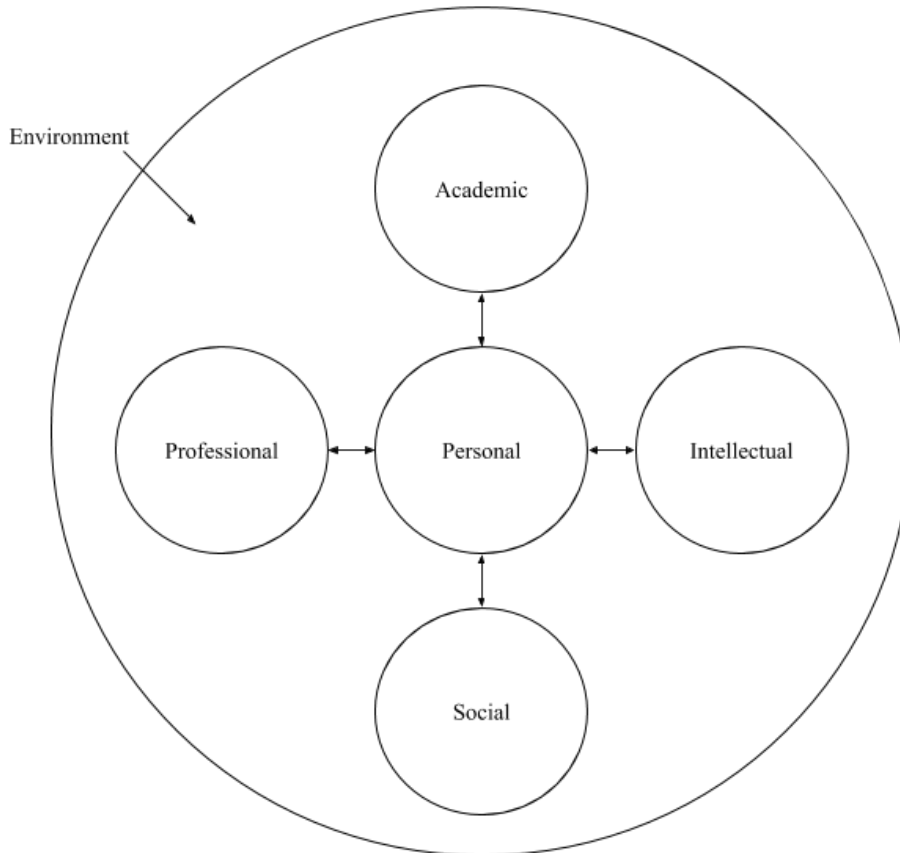
Figure 2.4.   Pittaway's Engagement Framework that illustrates how all elements of engagement must be considered within the educational context and in relation to each other.
Adapted from "Student and Staff Engagement: Developing an Engagement Framework in a Faculty of Education" by S. Pittaway, 2012, *Australian Journal of Teacher Education*, 37, p. 40. Copyright 2012 by Edith Cowan University.

- *Personal engagement* refers to a student's personal motivation to engage in academic activity.

- *Academic engagement* refers to the academic skills that a student possesses

- *Intellectual engagement* refers to a student's beliefs and values around education and other philosophies.

- *Social engagement* refers to a student's connections to varying viewpoints within their classroom.

- *Professional engagement* refers to a student's connections to their chosen profession.

Pittaway's (2012) framework brings an important distinction to the field of engagement theory, a recognition that engagement is deeply grounded in context. A learner's educational environment, from technology affordances to university demographics to delivery mechanisms, will all have a deep impact on the potential for student engagement.

Academic Communities of Engagement Theory

In 2020, Borup et al. created an updated theory of engagement that is meant to apply to a broader population beyond K-12 and to mitigate the shortfalls of the existing Adolescent Community of Engagement theory (Borup et al., 2014). The Academic Communities of Engagement theory (ACE) attempts to explain how community support structures influence learner engagement at all levels of online learning, including K-12 and higher education. Borup et al. (2020) suggest that course community support and personal community support can both influence learner engagement, as illustrated in Figure 2.5.

COGNITIVE ENGAGEMENT

INDEPENDENT ENGAGEMENT

COURSE COMMUNITY SUPPORT

PERSONAL COMMUNITY SUPPORT

BEHAVIORAL ENGAGEMENT   ENGAGEMENT NECESSARY FOR ACADEMIC SUCCESS   **AFFECTIVE ENGAGEMENT**

= Student engagement independent of support from others

= Student engagement resulting from course community support

= Student engagement resulting from personal community support

= Student engagement necessary for academic success

Figure 2.5.   Independent engagement supported by the course community and personal community.
Reproduced from "Academic Communities of Engagement: an expansive lens for examining support structures in blended and online learning," by J. Borup, C. Graham, R. West, L. Archambault, & K. Spring, 2020, Educational Technology Research & Development, p. 4. Copyright 2020 by the Association for Educational Communications & Technology.

Borup et al. (2020) proposed that each learner has an independent level of

engagement, the level of engagement that would exist for a learner with no outside

support. For some learners with high levels of independent engagement, further support is

not needed in order to find academic success. However, for many learners, course

community support and personal community support, as seen in Figure 2.5, will be

necessary in order for the learner to find academic success, represented as a dotted line in

Figure 2.5.

Course community support refers to the interactions that a learner has within a course. This is time-bound support that only exists for the duration of an online learning experience. It includes interactions with other students, feedback from an instructor, and the design of the online course itself (Borup et al., 2020).

Personal community support, in contrast, is not time-bound by the online learning experience. It is support that existed before the online course began and will continue after the course is complete. Personal community support includes support from friends, family, and community members. For adolescents, that support could come from parents or siblings. For adults, that support could come from a spouse, friends, or even children. Borup et al. (2020) do indicate that members of a course could also be a part of a learner's personal community if a relationship has developed between those members outside of class and over time. For instance, a professor and student could begin with a relationship inside class that later becomes a mentor relationship that lasts over time, a part of the student's personal community.

Borup et al. (2020) explained that both course community support and personal community support can work together to support a learner. The researchers also suggested that each type of support is interchangeable. The negative impact of a course with a weak course community could be mitigated for a learner with strong personal community support. Conversely, the negative impact of weak personal community support for a particular learner could be mitigated by a strong course community.

Each of these theories adds to our understanding of the myriad of factors that could influence engagement. Borup et al.'s (2020) theory specifically connects

community to engagement, a connection that this study sought to explore, both course community (within a class) and personal community (outside the boundaries of a class).

Community Foundations

Similar to learner engagement, course community is a complex construct that encompasses a variety of factors. Definitions of community typically involve a sense of connection, shared purpose, safety, and group identity, though definitions vary significantly between studies (McMillan & Chavis, 1986). The term has been used to refer to both physical communities and to relational communities. Physical communities have a shared physical space such as a neighborhood or a workplace while relational communities have a sense of shared identity regardless of physical location (Gusfield, 1975). A neighborhood is a physical community while a Facebook group could be a relational community. The two terms are not exclusive as a physical community can develop a strong sense of relational community and a relational community could grow into a physical gathering (McMillan & Chavis, 1986). In the case of a face to face classroom, students are sharing a physical space that leads to their sense of community. In the case of an online classroom, students do not share a physical space but can have a shared identity and commitment to each other (Rovai, 2002b). Thus, online classrooms can have a relational sense of community.

It is important, in considering the construct of community not to conflate course community with social presence from the CoI framework. Social presence is the sense that other people in a course are real while course community is a larger perception of belonging to a community of learners in a shared pursuit (Garrison, Anderson, & Archer, 2000; Rovai, 2002b). The Community of Inquiry framework, which includes social

presence as a factor, has evolved as one of the most significant frameworks within online education research in an attempt to explain elements of a "worthwhile educational experience" and how that experience is sustained in the online environment (Garrison, Anderson, & Archer, 2000, p.88). While Garrison et al. (2000) may not have originally intended for the Community of Inquiry framework to define what community could be in an online course, it is certainly true that, if there is a strong Community of Inquiry within an online learning experience, then there is also a strong sense of relational community within a group of learners. The next section will explore that connection, focusing on the definition of community and how the Community of Inquiry framework can be used to explore a sense of course community.

<u>Definition of Community</u>

McMillan and Chavis (1986) defined community as "a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to be together" (p. 9). Their definition has guided current researchers in exploring the meaning of true community. In early works, communities were often defined by physical space. However, in the world of virtual communities, community can exist apart from physical location. Instead of considering where people are, researchers now define community based on what people are doing together (Rovai, 2002a). This focus grew from Gusfield's (1975) emphasis on relational communities.

Borup et al. (2020) use a more general definition of course community in their ACE framework. They state that course community is "made up of peers, teachers, and administrators, provided with a course or program for formal support roles" (Borup et al.,

2020, p. 3). This definition focuses on the roles of the people involved within that community. In this definition, if there are peers, teachers, and administrators in a course, then there is course community. However, it is insufficient to say that a course community has developed simply because people are in a course together. It is possible for the members of an online course to never develop a sense of community, especially in a poorly designed online course or one that requires no collaboration or communication (Lowenthal & Snelson, 2017). Instead, this study relied on a more complex definition that is grounded in Rovai's (2002b) definition of classroom community and measured by Garrison et al's (2000) Community of Inquiry framework.

Rovai's definition of community, grown out of the McMillan and Chavis definition and focused on classroom community, is one that has informed several studies (Rovai, 2002b; Trespalacios & Perkins, 2016). He states that "members of strong classroom communities have feelings of connectedness...duties and obligations to each other and to the school and...a shared faith that members' educational needs will be met through their commitment to shared learning goals" (Rovai, 2002b, p. 199). Rather than simply defining community based on the people who are involved as Borup et al. (2020) do, the Rovai definition focuses on the quality of the community. It is not a community unless members have that feeling of connectedness through obligations and shared faith as well as learning. Rovai's definition makes a sense of community into something that is measurable. One can explore to what extent classroom members feel connected, obligated to each other, and have a shared faith as a measure of how a classroom community has developed.

Classroom Community and Community of Inquiry

        Rovai's (2002b) definition of course community can be connected back to Garrison et. al's (2000) Community of Inquiry framework to develop an understanding of how an online Community of Inquiry functions as a classroom community. Remember that Rovai defines community as members who have "duties and obligations to each other and to the school and they possess a shared faith that members' educational needs will be met through their commitment" (p. 198). Rovai's definition of community encompasses all three presences in the CoI framework. First, social presence serves as a prerequisite for developing a sense of "connectedness" or community (Lowenthal & Snelson, 2017). If there is no perception that other members of the community are real and engaged, then the community cannot develop. Second, teaching presence creates a "shared faith that members' education needs will be met" by providing the instructional direction and design of the course. Finally, cognitive presence helps to develop a shared focus on learning that is unique to the classroom community, distinct from community in a more general sense. Garrison et al. (2000) define cognitive presence as "the extent to which the participants in any particular configuration of a community of inquiry are able to construct meaning through sustained communication" (p.89). It is that "sustained communication" and meaning construction that builds members' sense of duty and obligation to each other as well as their "shared faith that...educational needs will be met" (Rovai, 2002b, p. 198). Thus, the Community of Inquiry framework can be used to explore the perception of community as well as the factors that contribute to that sense of course community within an online learning experience.

Instructional Strategies Associated with Community

Researchers have reported a large variety of activities that could increase community within online classrooms from collaborative activities such as discussions, voicethreads, and peer review to more individual activities that also seem to increase community such as written assignments and readings (Trespalacios & Perkins, 2016; Richardson & Swan, 2003).

Strong instructor presence seems to be a good predictor of a course's sense of community (Kerhwald, 2008). In separate studies, both Young and Bruce (2011) and Conrad (2005) reported that the strongest factor in a sense of community is the instructor, who needs to be organized, clearly present, active, and clear in expectations. Bliss and Lawrence (2009) found that the more involved an instructor was within discussions, the stronger the student's perception of learning. Somehow the inclusion of a strong instructor voice within the course helped students to feel more connected to the course community overall.

Interactions with classmates, both in quantity and quality, also seems to be a strong predictor of a sense of classroom community (Young & Bruce, 2011). Activities like ice-breaker discussions, collaborative projects, and peer review all seem to impact the growth of the community (Aragon, 2003; Trespalacios & Perkins, 2016). In fact, it may be that the combination of these strategies is most powerful as multiple communication channels leads to higher engagement and a stronger sense of community (Dixson, 2015).

A final element that seems to lead to a stronger sense of community is time. In asynchronous online learning, a gap between a question and its answer may not meet

learner's needs (McInnerney & Roberts, 2004; Nicholson & Bond, 2003). The faster a

student receives an answer to a question, the more connected they will feel to the students

in the course. Conrad (2005) pointed out that repeated interactions across time can also

lead to an increased sense of community. She stressed that a cohort model of instruction

has significant benefit to a sense of community since students are in multiple courses

together and develop deep relationships. Nicholson and Bond (2003) added that

discussion quality and reflection improved over time, leading to a deeper sense of

community. The length of time students spend together and how much time passes

between interactions both seem to impact the strength of the community.

Measuring Engagement and Community

As complex research constructs, both learner engagement and sense of

community have been measured in a variety of ways by researchers. Both qualitative and

quantitative means can be used to explore the constructs and their impact on learning.

Ways to Measure Engagement

Because the definition of engagement varies so much from researcher to

researcher, the ways that engagement is measured vary significantly based on the

definition and the specific aspect of engagement the researcher is interested in:

behavioral, cognitive, or emotional (Henrie, Halverson, et al., 2015).

Behavioral engagement is often measured through self-report surveys and, less

commonly, through direct observation. For instance, one of the most popular such

surveys is used in the National Survey of Student Engagement (NSSE) which asks

learners to report on their behaviors as a way to measure engagement (Hu & Kuh, 2002;

Robinson & Hullinger, 2008). Learners report their participation in behaviors that

indicate engagement: discussions, assignments, interactions with an instructor, etc.

Unfortunately, these self-report measures such as NSSE can be unreliable, with learners

tending to over-report time spent on activities they do not enjoy and on activities that

they perceive as socially desirable (Henrie, Halverson, et al., 2015).

An alternate way to measure behavioral engagement in online learning is direct

observation from data in a Learning Management System (LMS). In this way, researchers

can explore learner's actual activities in a system and infer engagement based on those

activities (Henrie, Bodily, et al., 2015; Hung, Hsu, & Rice, 2012; Ma, Han, Yang, &

Cheng, 2014). The benefit of this type of analysis is that it provides a more accurate

assessment of learner behaviors and it does not interrupt the very behavior that it is trying

to measure, engagement in class activities (Henrie, Halverson, et al., 2015). Sometimes

this type of research can be time-consuming, however, as many LMS systems do not

report user analytics in a form that is easily translated into a concrete record of a user's

journey through an online course (Henrie, Bodily, et al., 2015). For instance, an LMS

may report the time spent on a page within a course but does not account for whether the

learner was active within that page or if the page was simply open while the learner

looked at other browser tabs. Even more unclear, some LMS report the time a student

accessed a particular page but provide no indication of what page came before or after

that page in their learning progression.

Cognitive and emotional engagement can be measured through surveys as well as

through qualitative methods. For survey research, rather than asking a learner to report

time on various behaviors, these types of surveys ask learners to report on their cognitive

and emotional experience within a course (Henrie, Halverson, et al., 2015) such as in

Dixson's (2015) Online Student Engagement Survey used in this study. The survey asks students to respond to a variety of statements using a Likert scale from 1- not at all characteristic of me to 5- very characteristic of me. Statements on the survey such as "Engaging in conversations online" and "Really desiring to learn the material" measure cognitive and emotional aspects of engagement in addition to behavioral engagement such as "Making sure to study on a regular basis" (Dixson, 2015, p. 158).

Researchers also use qualitative measures to assess cognitive and emotional engagement by analyzing discussion board posts and interviewing class participants to identify themes in their engagement (Henrie, Halverson, et al., 2015).

In future engagement research, investigators must be careful to define what type of engagement they are looking for and then align their measures accordingly. Unfortunately, there is a pattern in engagement research of defining engagement in terms of emotional or cognitive elements but then measuring it through behavioral means alone (Henrie, Bodily, et al., 2015). This dissertation study focused on overcoming that pitfall by incorporating a survey that measures all aspects of engagement: behavioral, emotional, and cognitive.

Ways to Measure Community

In 2002, Rovai (2002b) set about creating a measure of classroom community through a survey approach focused on two subscales. The first is connectedness, which measures a student's sense of connection to other students in the course. The second is learning, which measures a student's sense of learning within the course. It is important to note that, though this study used the Rovai definition of classroom community, it is not using the Classroom Community scale developed by Rovai (2002b). The researcher opted

to use the Community of Inquiry instrument detailed below as a measure of community instead of the Classroom Community scale for three reasons. First, the Classroom Community scale is a much simpler measure that only accounts for a learner's perception of community through their sense of connectedness and learning. It does not account for the factors within the course that lead to that perception. Second, using the Community of Inquiry instrument allowed analysis of which of the factors within the CoI framework are most associated with learner engagement (cognitive presence, social presence, or teaching presence). Using the Classroom Community scale as a measure of community would not have allowed this granular level of analysis into the elements of course community that impact learner engagement. Finally, if a learner is experiencing a strong Community of Inquiry within an online learning experience, they are also experiencing a strong sense of course community, based on Rovai's definition that course members experience "duties and obligations to each other and to the school and they possess a shared faith that members' educational needs will be met through their commitment" (p. 198). The Community of Inquiry model, when fully implemented, would lead to that sense of duty, shared faith, and commitment, as argued above.

Arbaugh et al. (2008) created an instrument based on the Community of Inquiry framework, intended to measure cognitive presence, social presence, and teaching presence within an online course experience. The survey includes 34 questions on a Likert scale from strongly disagree to strongly agree. There are 13 questions focused on teaching presence, 9 questions focused on social presence, and 12 questions focused on cognitive presence. The complete survey can be found in Appendix B. Arbaugh et al. (2008) demonstrated that the survey has strong reliability and validity. Factor analysis

also supported the use of each subscale, teaching presence, social presence, and cognitive presence, as their own construct. The Community of Inquiry Instrument has since been used in a wide variety of studies as a measure of how closely an online course aligns to the ideals found within the Community of Inquiry framework (Archibald, 2010; Kovanovic et al., 2018; Olpak, Yagci, & Basarmak, 2016).

Community Building Strategies That Align with Engagement

Learners who connect with other learners during an online course tend to be more engaged (O'Shea, Stone, & Delahunty, 2015; Price & Tovar, 2014; Zhu, 2006; Zydney, deNoyelles, & Seo, 2012). That connection and sense of community can happen through discussion board practices or collaborative learning but the key is that a learner feels connected to a classroom community in order to encourage engagement.

Discussion boards are one of the most common ways to increase student connections to each other and, thus, to increase student engagement. Within discussions, adding in structure to student and instructor interactions seems to lead to increased engagement and decreased learner ambivalence to the online discussion experience (Jaggars & Xu, 2013). Pawan, Paulus, Yalcin, and Chang (2003) demonstrated that, without scaffolding or instructor intervention, student discussions tend to become "serial monologues" in which students make an initial post and rarely interact deeply with other student's ideas. Without that deeper level of conversation, discussions are less likely to foster engagement. The researchers further suggested that incorporating student roles within discussions such as connector or summarizer can help to deepen conversations (Pawan et al., 2003). Similarly Zydney, et al. (2012) found that incorporating structured protocols into discussions helped to encourage cognitive engagement and student

ownership of the discussion process. Zhu (2006) explained that students who had more points of contact with other learners in a discussion were more likely to engage in content and to remember material. Zhu went so far as to suggest that "it is unrealistic to simply plunge students into an online discussion and expect that learning occurs naturally without much facilitation or consideration of the learning task, outcome, and environment" (p. 476). Each of these findings remind us that "interaction is not enough" (Garrison & Cleveland-Innes, 2005, p. 133) and that discussions that encourage engagement must go beyond surface-level content, incorporating more structure and a clear purpose.

Modeling also seems to be critical to success within discussions and increased engagement. When professors post at a deeper level, modeling what it means to build connections between ideas, students tend to engage at a deeper level too (Pawan et al., 2003). Borup, West, et al. (2014) went so far as to call out instructor engagement as a primary factor in student engagement. In other words, without instructor involvement in discussions, student engagement is impossible. Instructor engagement within discussions and the larger course is a topic covered below in the section on instructor practices and teaching presence.

Discussion boards are not the only way to increase a sense of community within a course. Collaborative learning has also been shown to have an impact on community and learner engagement. In this case, collaborative learning refers to tasks that learners undertake in a small group (Price & Tovar, 2014). As discussed earlier, Price and Tovar (2014) found that one of the elements of the NSSE that correlated with overall engagement and with higher graduation rates was collaborative learning with other

students. Though their analysis focused on face to face learning, the value of

collaborative learning is still true in an online environment. Even within a MOOC with

high numbers of enrollments, peer interactions were rated as one of the most important

factors encouraging student engagement (Hew, 2016). Students who engage in

collaborative learning groups report higher engagement and higher satisfaction with

course content (Kupczynski, Mundy, Goswami, and Meling, 2012). Sharp and Whaley

(2018) demonstrated that incorporating wikis into instruction where learners can

collaborate on writing and share ideas was viewed overwhelmingly positively by

participants, leading to deeper engagement with course content.

For online learners, connections with other students through cooperative learning

may be even more powerful than in a face to face classroom because those connections

are less common, requiring more careful structure (O'Shea et al., 2015). O'Shea et al.

(2015) explained the distinction between online and face to face cooperative learning in

emphasizing that online educators must "remain cognisant that engagement for online

learners may be more difficult and require additional or different approaches to forging

connections between learners" (p. 55). When those connections develop, the result is

increased student engagement and persistence within online coursework (Ivankova &

Stick, 2005). Hung, Flom, Manu, and Mahmoud (2015) similarly concluded that

connection to an online learning community impacted not only cognitive engagement but

also emotional engagement within the course.

Course Design Elements That Align with Engagement

Course design is a critical part of teaching presence within the Community of

Inquiry framework. Though a course's "teacher" is not always the one designing the

course, a course's layout, structure, and activities seem to play a crucial role in student engagement (DeBoer, Haney, Atiq, Smith, & Cox, 2017; Dietrich & Balli, 2014; Henrie, Bodily, et al., 2015; O'Shea et al., 2015).

The first element in engagement based on course design is that a course should be specifically designed for the online environment (O'Shea et al., 2015). While this finding appears self-evident, in the early days of online learning there was a tendency to take materials for traditional courses such as Powerpoints and readings and to put them online in order to launch a new course with few modifications to account for the affordances of the online environment. These early online course formats still persist in some systems and, without careful design for the online environment, they tend to result in decreased student engagement (O'Shea et al., 2015).

Implementation of the Quality Matters rubric (QM) into the design process is a common way for institutions to try to improve course quality and learner engagement (Adair & Shattuck, 2015). The QM rubric is a set of 43 standards grouped into eight categories that can be used to design and revise online content (Legon, 2015). However, as explained by Legon (2015), there are so many elements within the QM rubric that it is sometimes difficult for researchers to determine which elements or groups of elements most impact achievement, engagement, or other desirable traits.

Even so, for some researchers the QM rubric has proven to be a valuable input for increasing student engagement, but only when combined with other engagement factors. Swan, Day, Bogle, and Matthews (2014) incorporated the QM rubric and the Community of Inquiry (CoI) survey to track how changes in course design directed by QM impacted elements of CoI. They found that revision to match QM guidelines led to increased

learner achievement but decreased CoI scores, indicating a weaker learning experience in terms of community. Further course revisions focused on community building and collaboration were able to increase CoI while maintaining QM alignment and improved outcomes, though the findings were inconsistent. This research indicates the complexity of course design related to engagement. Revising a course to improve one specific quality can lead to unintended consequences in other areas. Swan et al. (2014) suggested that further research is needed to isolate how design factors can impact elements of CoI.

Acknowledging the complex relationship between course design and engagement, there do appear to be strategies in course design that can lead to increased engagement. The QM rubric's standards that focus on clear, aligned instruction and strong course resources impact engagement. Henrie, Halverson, et al. (2015) found that clear instruction that is relevant to course learning outcome increases student engagement. Hew (2016) found that in a MOOC, even in the absence of significant learner to learner interactions, a strong set of course resources that students can use to deepen independent learning was valuable for student engagement. These findings make sense from a practical perspective. A clear course with plenty of resources would be a prerequisite for an engaging learning experience.

Another course design strategy that appears to encourage engagement is elements of choice for learners. Dietrich and Balli (2014) found that fifth graders had increased engagement when they were allowed to use technology but that the effects were only significant and lasting when they were using technology and *also* had a choice in how to accomplish their learning tasks. The element of choice appeared crucial for sustaining learner engagement. Similarly, Kahu (2014), working with adult learners, found that

interest-based, self-directed learning was key for encouraging engagement. In this case, the opportunity to engage with topics that interested them led to increased behavioral engagement, with additional time spent in the course and on learning activities. In interviews with Kahu, learners also reported that interest-based activities led to greater enjoyment of course content, indicating increased engagement.

Courses that are designed to focus on real-world applications also increase engagement. Herrington et al. (2003) found that providing problem-centric learning experiences increased learner engagement. In this case, the researchers were providing real-world problems and asking learners to propose solutions as part of the course design. Hew (2016) demonstrated a similar impact for problem-centric learning even within a MOOC with learners ranking problem-centered activities as the most engaging of the course. He additionally emphasized that learners are engaged by active learning, getting away from the computer to enact solutions. DeBoer et al. (2017) also found that hands-on experiences with sufficient course resources led to increased learner engagement. This sort of problem-focused design echoes trends in today's project-based learning methods (Larmer, Mergendoller, & Boss, 2015).

A final course design element that impacts engagement is not focused on a specific strategy but on an instructional modality. Researchers have found that learners are engaged by blended course structures, where learners spend some time in an online experience and some in a traditional classroom (McLaughlin et al., 2013; Schullery, Reck, & Schullery, 2011). Learner engagement within these experiences is impacted by learner preferences and time spent in each modality (Schullery et al., 2011). More

research is needed to determine if blended learning on its own increases engagement or if other variables are impacting findings.

Instructor Practices Associated with Engagement

Though findings around course design and engagement are relatively complex with multiple mitigating factors, findings around instructor practices and engagement are relatively straight-forward. Student engagement appears to be positively impacted by an involved instructor (Berry, 2017; Cho & Cho, 2014; Jaggars & Xu, 2013; Martin & Bolliger, 2018; Richardson et al., 2016). This is one of the most consistent findings within engagement research.

Several researchers have attempted to conceptualize what instructor practices lead to increased engagement and what roles online instructors must play in an online classroom through the development of theories of online instruction (Bloomberg & Grantham, 2018; Borup, 2016; Borup, Graham, & Drysdale, 2014; Richardson et al., 2015). Borup, Graham, and Drysdale (2014) built on the Adolescent Engagement Theory to focus on the nature of teacher engagement. They proposed that teacher engagement is an overlap of teaching presence and social presence from the Community of Inquiry framework and that teacher engagement in an online course is a prerequisite for student engagement. Their identified roles for instructors are:

- *Designing and organizing*: where the instructor organizes online course content and due dates
- *Facilitating discourse*: where the instructor guides, models, and encourages conversations around course content

- *Instructing*: where the instructor tutors students on course content, a primary role even if the course content was not written by the instructor

- *Nurturing*: where the instructor provides social-emotional support to students

- *Motivating*: where the online instructor encourages students to complete assignments and make progress toward learning outcomes

- *Monitoring*: where the online instructor keeps track of student completion of assignments and progress towards course learning outcomes

Borup, Graham, and Drysdale (2014) found strong support for all six of these instructor roles in interviews with online instructors, lending support to the validity of teacher engagement as an important factor in student engagement. However, they found that some behaviors overlapped with motivating being very closely connected to monitoring, motivating overlapping with nurturing, etc. These overlaps speak to the complexity of the online instructor's role.

Richardson et al. (2016) used a similar approach to instructor engagement, creating a list of instructor roles that play a part in developing instructor presence (distinct from teaching presence in the CoI model) within an online course. Their list focused on roles that instructors play within discussions and feedback mechanisms:

- *Advocating*: The instructor encourages students to find success in course content

- *Facilitating*: The instructor asks questions to encourage students to engage with course content at a deeper level

- *Sense making*: The instructor clarifies student misconceptions about content

- *Organizing*: The instructor provides due dates and a clear progression through the course materials

- *Maintaining*: The instructor helps learners to troubleshoot course navigation and finding the materials they need

Through analysis of instructor posts in an online course via announcements, discussions, and feedback mechanisms, Richardson et al. (2016) found each of these roles as prominent in creating instructor presence and thus increasing engagement. They emphasized that the roles seem to be important to instructor presence even if the instructor did not write their own course content. However, they also suggest that course design may be a mediating factor in instructor presence.

Bloomberg and Grantham (2018) demonstrated that instructor presence can be conceptualized in terms of three best practices. First, that instructors must be active in an online course in helping students to learn the systems and feel comfortable in the space. Second, that instructors must provide high quality feedback. Finally, the instructors must engage with students through multiple modes of communication: email, course discussions, face to face, synchronous methods, etc. It is the combination of modes of communication that lead to a sense that the instructor cares about the student's success and increased learner engagement.

Borup, West, et al. (2014), Richardson et al. (2016), and Bloomberg and Grantham (2018) each suggested that instructor presence is an important factor in building learner engagement. Their theoretical approaches can be helpful in considering how an instructor might encourage engagement through taking on specific roles. Outside of theoretical frameworks, there are also significant research findings around the importance of several key strategies for learner engagement: interactions within a course,

instructor qualities conveyed through interactions, instructor time spent on course facilitation, modalities of communication, and feedback.

Jaggars and Xu (2013) found that the level of interaction within a course as defined by student-student interactions and student-instructor interactions accounted for 23% of the variance in student grades. Students who had a high-level of interactions in courses tended to earn higher grades. Although Jaggars and Xu's early models also incorporated elements such as course organization, alignment of learning objectives, and use of technology, these elements were found to be insignificant in comparison with levels of interaction for explaining student achievement. Further qualitative investigation by the researchers found that students were sometimes indifferent to student-student interactions. Instead, it was student-instructor interaction that made the biggest difference in their engagement. Those instructors with strong instructor interactions posted often in announcements, were involved in discussions, and provided meaningful feedback within the LMS. However, these instructors also exhibited a high level of interactions outside the LMS with students reporting that they responded to emails quickly and were available to meet face to face or through synchronous tools. That availability outside the LMS led students to feel that their instructors cared about them and led to increased learner engagement in the course.

Jaggars and Xu's (2013) findings are not at all isolated in pointing out the impact of instructor interactions on engagement. Martin, Wang, and Sadaf (2018) found that, of a list of 12 common facilitation strategies, timely responses to questions and timely feedback on assignments led to the strongest increases in learner engagement. Cho and Cho (2014) demonstrated that when instructors built in scaffolding for greater

interactions within a course, learner engagement increased. This was especially the case when instructor interactions focused on building a mastery approach to the course, emphasizing learning course content rather than just earning a grade. Williams and Lahman (2011) found that when professors focused on questioning and moderation within their interactions, students demonstrated higher levels of critical thinking and engagement in course content. Martin and Bolliger (2018) found that learners valued learner-instructor interactions above learner-learner interactions and learner-content interactions with proactive communication between the student and instructor leading to increased learner engagement. Richardson et al. (2016) explained that these interactions between instructors and students do not have to be lengthy or complex to result in increased engagement. Strategies such as using a student's name and sending simple due date reminders led to increased quality in relationships and stronger engagement.

Though increased learner-instructor interactions seem to lead to increased engagement, it is possible that this increase is due, in part, to the quality of the relationship that builds through those interactions. Roorda et al. (2011), in a meta-analysis, found that teacher relationships in a face to face classroom accounted for medium to large effects on engagement and that the effects moved in both directions. Positive relationships led to increased engagement and negative relationships led to decreased engagement. It is reasonable to assume that the quality of a relationship within an online classroom leads to a similar impact, regardless of the number of interactions. This finding also lends additional support to Borup et al.'s (2020) assertion that the course community, through relationships, impacts engagement.

The tone and nature of interactions between students and instructors also impacts engagement. Hew (2016) found that instructors who are accessible and build passion for their subject encourage learner engagement. Jaggars and Xu (2013) emphasized that interactions that convey a sense of caring for the students have a greater impact on engagement. Berry (2017) found that instructors must emphasize a warm and welcoming tone in communications in order for those communications to be successful. Finally, Orcutt and Dringus (2017) found that an instructor's active interest in teaching and passion for their subject can influence a learner's curiosity for a subject. These findings suggest, once again, that "interaction is not enough" (Garrison & Cleveland-Innes, 2005, p. 133). The quality of an interaction does matter in encouraging engagement.

Beyond simple interactions between an instructor and a learner, there are also instructor facilitation strategies that encourage engagement. Ma et al. (2015) found a correlation between instructor time spent in a course before the course begins and overall learner engagement. This implies that instructor time spent in organizing course content and preparing for student arrival has an inherent impact on engagement within online coursework. Orcutt and Dringus (2017) similarly discovered that time spent in the early weeks of a course on helping students navigate the course and building connections to each other led to increased community and engagement. In both cases, additional instructor time within a course led to pay-off in student engagement.

Beyond time spent in a course, the modality of instructor communications seems to impact learner engagement. Dringus, Snyder, and Terrell (2010) found that audio presentations within a discussion forum led to increased student participation and satisfaction within a course. Similarly, Berry (2017) demonstrated that synchronous

check-in sessions with an instructor led to a stronger sense of community. Ice et al. (2007) found that using audio feedback on assignments led to increased student engagement with that feedback and increased application of suggestions for revision. Video feedback had a similar impact with students receiving video feedback reporting a clearer understanding of strengths and weaknesses of the work as well as a sense of personal support and connection (Borup, West, & Thomas, 2015). All of these findings support using multiple modalities of communication including audio and video interactions in order to increase learner engagement, as suggested by Richardson et al. (2016). It is possible that incorporating multiple modalities leads to an increased sense of social presence for the instructor and a stronger relationship between the learner and the instructor, impacting teaching presence as well.

Engagement research suggests that feedback on learner work is also a crucial instructor strategy for building engagement. As explained above, audio and video feedback on student work both encourage learner engagement (Borup et al., 2015; Ice et al., 2007). However, timely feedback in general also increases learner engagement (Jaggers & Xu, 2016; Martin et al., 2018).

These findings around instructor engagement suggest that, even when an instructor has no part in the writing of an online course, their involvement in the course through announcements, discussions, and feedback are crucial to learner engagement with higher number of interactions and interactions in multiple modalities leading to stronger learner engagement. This finding holds true for both fully online courses and hybrid modalities (Shea, Joaquin, & Gorzycki, 2015).

Learner Qualities Associated with Engagement

As explained above, there is also a subset of engagement research that focuses on the qualities of learners themselves that seems to impact engagement. This can be a frustrating finding within the research because it implies that elements of student engagement are outside the influence of instructional designers or instructors. Instead, that learner engagement is a function of inherent qualities of the learners themselves.

There are certain demographic elements that correlate with learner engagement. First, learners who have stronger academic preparation are more likely to be engaged in their online courses (Hu & Kuh, 2002). This makes logical sense. If a student has stronger preparation for a course, they are more likely to be able to access course content and persist in it. Second, learners whose parents have a higher level of education are more likely to be engaged in their online courses (Hu & Kuh, 2002). This finding provides support for Borup, West, et al.'s (2014) assertion that parental engagement is a prerequisite for student engagement. Parents with a higher level of education are more likely to support their children's educational endeavors and expect that they will find success. Third, gender seems to be a mitigating factor in online learning engagement. Both genders can be engaged in online content but males have a tendency to move to extremes, either completely engaged or completely disengaged in the experience (Hu & Kuh, 2002). Finally, there appear to be generational differences in engagement with each generation preferring a particular type of engagement strategy (Hampton & Pearce, 2016). Students 25-34 years of age preferred collaborative projects while Generation X and Baby Boomers (35+) reported the most engagement when coursework helped them to solve real-world problems. Younger students, in contrast, were most engaged by very

structured approaches and the opportunity to engage with others (Hampton & Pearce, 2016). Finally, the number of online courses a student is taking also appears to impact engagement with students taking a higher number of courses having lower engagement in collaborative learning or in faculty interactions (Dumford & Miller, 2018). All of these findings around demographics suggest that any research that seeks to explore engagement must control for the mitigating impact of academic preparation, parental education, gender, age, and number of online course enrollments on learner engagement.

There are additional inherent learner qualities that have an impact on engagement. Learners who believe that they will succeed in an online course have stronger engagement because they have stronger self-efficacy (Strang, 2017; Sun & Rueda, 2012). It appears that if a learner believes in their ability to succeed from the beginning, they are far more likely to engage in course content, which in turn leads to greater success. Similarly, learners who believe that they have the power to determine their own fate are more likely to experience engagement (Saeed & Zyngier, 2012). A learner's belief in self-determination is especially powerful when combined with intrinsic motivation, leading to deeper engagement at an authentic level as defined in Schlechty's Student Engagement Continuum (Saeed & Zyngier, 2012; Schlecty, 2002). Beyond simply believing that they can learn and being intrinsically motivated, learners who reflect on their own learning and have meta-cognitive skills are more engaged in online courses (Kahn, Everington, Kelm, Reid, & Watkins, 2017). Kahn et al. (2017) discovered that online learners rely on a variety of reflexive strategies to accomplish tasks with both ingrained habits and active reflection as critical mitigators of engagement. Finally, Curtis and Werth (2015) found that engaged learners are also self-motivated, requiring less

influence from family, community, or instructors in order to accomplish course activities. This finding may mean that self-motivated learners require less support from a personal community and have additional capacity for independent engagement (Borup et al., 2020).

It can be tempting to say that each of these learner qualities are factors that are outside of an instructor or course designer's control. If a particular group of participants has higher intrinsic motivation, self-efficacy, or self-determination, then they could perform well in spite of poor course design or instructor practices. It is also important to remember, however, that these elements are not ingrained in a learner's personality as a fixed trait. Intrinsic motivation, self-efficacy, self-determination, and motivation are all qualities that can be learned (Dweck, 2008). Instructors who care about engagement will not only consider course design and instructor practices that can encourage engagement but will also consider how to build engagement in their learners through activities that encourage learning these frames of mind. Researchers, too, should consider how instruction that encourages these meta-cognitive qualities can also increase engagement.

Researchers have also found that certain learner strategies can impact engagement. For instance, Richardson and Newby (2006) found that as learners gain more experience with online courses, they gain more strategies related to time management and self-directed learning. These strategies, in turn, lead to increased engagement. Kim, Park, Cozart, and Lee (2015) demonstrated that learners with higher grades were more likely to engage in effort regulation. This means that they are aware of their own motivation levels and choose to put forth effort even when their own personal motivation is lacking. All learners experience a lag in motivation partway through a

course. Those learners who find success are able to regulate their own effort during those lag times and find increased engagement (Kim et al., 2015). Finally, learners who use a wide variety of course resources are able to find increased engagement (Chen, Lambert, & Guidry, 2010; Nelson Laird & Kuh, 2005). It turns out that using course resources is not only wise in terms of academic achievement but also in terms of engagement.

Again, these learner-focused strategies may be frustrating for practitioners because they seem out of the control of instructional designers and professors. However, educating students about the importance of effort regulation, resource use, and time management can be powerful in increasing learner engagement in an online course.

Personal Community Support

Though research has shown that parental level of education impacts engagement and that parental support can be instrumental in K-12 online learning success, less research has explored how personal community support influences engagement for undergraduates in an online environment (Borup, Stevens, & Waters, 2016; Hu & Kuh, 2002).

Existing studies of face to face learners indicate that social support has a complex relationship with academic achievement and engagement. Hernandez, Oubrayrie-Roussel, and Prêteur (2016) found that social support can have a positive or negative impact on academic achievement for secondary students depending on a student's personal achievement goals. In other words, a strong social network without strong personal achievement goals may lead a student to achieve less in classes, not more. However, a strong social network in combination with academic achievement goals leads to greater achievement. Li, Han, Wang, Sun, and Cheng (2018) found that social support's impact

on achievement is mediated by self-esteem with greater social support leading to greater self-esteem and then to greater achievement.

Roksa and Kinsley (2019) found that family emotional support is correlated both with persistence in courses and with a GPA of 3.0 or higher for undergraduates from low income families. That emotional support has even more of an impact on low-income student's persistence than family financial support. Roksa and Kinsley (2019) concluded that their "findings have valuable implications for research on student success in higher education...reveal[ing] the importance of considering family support as an important contributor to academic success of low-income students" (p. 431). This dissertation study sought to explore that connection by specifically looking at how personal community (both friends and family) interacts with learner engagement in the online classroom.

This research study used the social support survey developed by Sherbourne and Stewart (1991). According to Google Scholar, this survey has been cited in 5,288 studies. Most of these studies are focused on the impact of social support on medical outcomes in conditions ranging from PTSD to alcoholism to diabetes (Adams, et al., 2019; Berry, Daniels, & Ladin, 2019; Peirce, Frone, Russell, & Cooper, 1996). However, with minor modifications to remove references to medical conditions, the survey should function as a strong measure of personal community support. Details on reliability and validity as well as modifications can be found in Chapter 3.

Conclusion

Clearly, engagement in online learning is a complex research construct. It is a function of multiple factors including learner qualities, community building, course design, and instructor practices. However, the payoff for focusing on learner engagement

is immense with increased learner satisfaction, perceived learning, and achievement the result. Garrison et al.'s (2000) Community of Inquiry framework provides a theoretical lens to use in evaluating not only the quality of an online community but also the potential of an online learning experience to produce learner engagement. It is not enough to focus on only one aspect of the CoI framework, though. Teaching presence alone, though it is influential, cannot produce learner engagement. It is through the interaction of teaching presence, cognitive presence, and social presence that learner engagement can be achieved. A complex research construct requires a multi-faceted approach. This research study sought to explore specifically how course community and personal community impacted overall learner engagement in online courses, as proposed in the Academic Communities of Engagement framework (Borup et al., 2020). Understanding this interaction will lead to a better understanding of factors that encourage learner engagement as well as practices that could be used to increase that engagement within online courses.

CHAPTER THREE: METHODOLOGY

The purpose of this study was to understand to what extent a learner's personal community and connection to a course community influenced that learner's engagement in an online course. Having an understanding of this connection will help professors, instructional designers, and university support staff to understand if and how community influences engagement and, thus, how to encourage learner engagement in online courses. This quantitative survey study focused on if and how course community and personal community influenced learner engagement. Learners were surveyed using three existing, validated surveys: the Online Student Engagement Scale (Dixson, 2015), the Community of Inquiry Instrument (Arbaugh et al., 2008), and the Medical Outcomes Social Support Survey (Sherbourne & Stewart, 1991). Results from the surveys were analyzed using multiple regression to explore to what extent course community support and personal community support can explain variations in learner engagement. Learner demographics including high school grades, parental level of education, gender, age, and previous online learning experience were control variables within the multiple regression analysis as these demographic factors have been shown to influence learner engagement (Curtis & Werth, 2015; Hampton & Pearce, 2016; Hu and Kuh, 2002; Kuh, 2009; Strang, 2017).

Research Question

The research question for this study focused on course community support, personal community support, and their influence on learner engagement:

To what extent did course community and personal community explain variations in learner engagement in online courses?

Study Design

This quantitative survey study focused on the connections between personal community, course community, and learner engagement in online courses through an online survey. It used a sample of undergraduates who had recently completed an online course within the Liberal Arts department in a small art and design school in the west. Courses in Liberal Arts include art history, mathematics, science, social sciences, history, or composition. Liberal Arts was chosen as the target sample because students in all majors within the university take Liberal Arts courses. This allowed for a more diverse sample within a specialized university. This sample allows us to draw inferences about how personal community and course community influence learner engagement in the larger population of undergraduate students who take online courses (Fowler, 2009).

According to Creswell (2014), a quantitative approach is appropriate for "testing theories by examining the relationship among variables" (p. 4). This study will use variables identified in the Borup et al. (2020) Academic Communities of Engagement framework: personal community, course community, and learner engagement. These are clearly defined variables that can be measured using established surveys (Borup et al., 2020). Each of the variables within the Borup et al. (2020) framework can be measured using a survey approach, which provided the ability to gather a wide variety of participant experiences in an economical design (Fowler, 2009).

Survey research is appropriate to the purpose of this study because it allows for an expedient design, gathering a large amount of data from the sample in a short amount of

time (Fowler, 2009). This efficiency is crucial for encouraging participation and gaining the large sample necessary for multiple regression analysis (Keith, 2019). Additionally, an expedient design allows for a fast administration of the survey before participant's experiences fade with time. The survey was administered online for the same reasons, allowing for expedient data collection and analysis (Sue & Ritter, 2012). Online data collection also provided for an inexpensive option and increased participant willingness because of the ease of administration (Sue & Ritter, 2012).

An exploratory model for this research is appropriate because, though researchers have theorized that course community, personal community, and learner engagement are connected, that connection has not yet been validated (Creswell, 2014; Borup et al., 2020). Details on how the data was explored in a flexible manner can be found under data analysis below.

The dependent variable was defined as learner engagement within an online course, as measured by the Online Student Engagement Scale (Dixson, 2015). Borup et al. (2020) defined engagement as "energy exerted toward productive involvement with course learning activities" (p. 4) and Dixson (2015) defined engagement as "about students putting time, energy, thought, effort, and... feelings into their learning" (p.146). Both definitions emphasize the importance of student energy expended in the pursuit of learning. The Online Student Engagement Scale measures that energy by asking participants to quantify how "characteristic" a set of statements is for them as they reflect on their experience in a course. Statements like "putting forth effort" and "helping fellow students," evaluated on a Likert scale, gauge how much energy the student put into the

learning experience and, thus, their overall engagement (Dixson, 2015). The complete engagement survey can be found in Appendix A.

The independent variables were defined as the level of course community support and personal community support experienced by a learner. The course community variable was measured using the Community of Inquiry Instrument. This instrument has three underlying factors: social presence, cognitive presence, and teaching presence. If initial analysis with all three factors combined were significant, the results would be split into three independent variables: level of cognitive presence, social presence, and teaching presence (Arbaugh et al., 2008). This flexibility of data analysis is appropriate to an exploratory model of survey research (Keith, 2019). This additional analysis could allow an exploration of which elements of the Community of Inquiry framework are most aligned with learner engagement. The Community of Inquiry Instrument is widely used to explore qualities of online learning communities and shows strong reliability and validity (Akyol & Garrison, 2011; Arbaugh et al., 2008; Shea & Bidjerano, 2010).

The level of personal community was measured by the Medical Outcomes Social Support Survey (Sherbourne & Stewart, 1991). This widely used and validated survey asks participants to evaluate how often they have support and interactions within their personal community (Moser et al., 2012). Personal community includes an individual's support system outside of a classroom including friends, family, and community members.

Multiple regression analysis was used to create a model demonstrating if and to what extent course community and personal community influenced learner engagement. By using multiple regression, a researcher can explore how much variance in learner

engagement can be explained by course community support and/or personal community support. Also, if personal community support and course community support were found to be interchangeable, then a high level of course community support should be able to explain learner engagement in a multiple regression model just as well as a high level of personal community support could explain learner engagement. Hypothetically, the two measures together could provide an even stronger predictor of learner engagement.

Participants/Sample

This study occurred at a small for-profit art and design school in the west. The university has a long history of providing online learning and delivers 70% of its instruction in an online modality. Majors at the university include art education, graphic design, fine arts, animation, game art, and other creative fields. Students were invited to participate in the study after completion of an online course in the liberal arts department. Courses within this department include art history, mathematics, science, social sciences, history, or composition. Students in all majors are required to take liberal arts courses, providing a broad sample within a specialized university. In an average fall term, approximately 510 students in 35 course sections take a liberal arts course online. According to Keith (2019), multiple regression "results will be more stable with larger samples and fewer predictors" (p. 100). Thus, every effort was made to have an adequate sample size, with more than 100 responses preferred (Keith, 2019). In order to increase participation, participants in the study were entered in a drawing for one of four $25 Amazon gift cards if they opted in to the drawing by providing an email address.

Course terms at the participating university were 8-weeks long. This study took place after the first term in the Fall semester of 2020, which occurred August 31, 2020 to

October 23, 2020. Instructors met with the researcher during the term to ensure that the instructors understood the study's goals and methods, though the instructors had no direct involvement in the study. Student participants were notified of the study in the eighth week of the term via an emailed video invitation to participate, with a link to the informed consent and survey in Qualtrics. There were two reminders sent, one in the final week of the course and one in the week after the course ended. Additional phone and text reminders were not necessary to ensure an adequate sample size. Note that the researcher on this study was not an instructor in any of the courses, reducing the potential for bias.

Data Collection, Instruments, and Procedures

Eligible participants, as defined above, completed a survey of 73 questions administered in Qualtrics. This survey was a compilation of three existing surveys: the Online Student Engagement Scale as a measure of learner engagement (Dixson, 2015), the Community of Inquiry Instrument as a measure of course community (Arbaugh et al., 2008), and the Medical Outcomes Social Support Survey as a measure of personal community (Sherbourne & Stewart, 1991). Additional questions were demographic questions focused on gender, age, high school grades, parental level of education, and previous experience in online courses, which are all control variables due to findings in the research that indicate that these demographic factors can influence learner engagement (Curtis & Werth, 2015; Hampton & Pearce, 2016; Hu and Kuh, 2002; Kuh, 2009; Strang, 2017).

The survey asked participants to focus on their recent online learning experience within a Liberal Arts course to help participants focus on a single course community rather than online learning in general. Students at the participating university took no

more than two online courses in any 8-week term. The survey asked them to focus on the course they recently took within Liberal Arts. Students typically take one Liberal Arts course and one studio art course within any given term so this specific focus encouraged participants to focus on just one online learning experience. Surveys were completed within two weeks of the end of that particular online course, providing participants with a recent experience and little time for memory to fade. By administering the survey in an online tool, the survey was easier to complete, more expedient for participants, and easier to analyze (Sue & Ritter, 2012).

The survey was a compilation of three existing surveys. The first is the Online Student Engagement Scale (Dixson, 2015). This is a measure of overall learner engagement specifically developed for online learners. There are 19 questions on a 5-point Likert scale from "not at all characteristic of me" to "very characteristic of me." A complete copy of the survey can be found in Appendix A. Dixson (2015) found that the Online Student Engagement Scale (OSE) demonstrated a strong correlation with student behaviors that indicate the application of learning within LMS activities, r=0.48, p<0.01. This finding indicates that the OSE is a valid measure of student engagement. Dixson (2015) also reported a Cronbach's alpha for the OSE of 0.86, demonstrating internal reliability. In this study's administration of the OSE, the internal reliability was even higher with a Cronbach's alpha of 0.92. In an earlier validation study, Dixson (2010) found strong reliability for the OSE (alpha=0.91) as well as four significant factors, identified using factor analysis: skills, emotion, participation, and performance. Each of these factors is an important element in learner engagement and aligns with this study's definition of engagement. Dixson's (2015) study also found a correlation between the

elements of the OSE and both teaching presence and social presence from the CoI framework. This collinearity was a factor that was tested for within this study's design, to ensure that there is not significant collinearity between learner engagement and elements of the CoI instrument. Collinearity was explored by calculating Pearson Correlations between each variable (Keith, 2019).

The second survey was the Community of Inquiry instrument (Arbaugh et al., 2008). This is a measure of course community grounded in the Community of Inquiry framework and validated in multiple studies (Arbaugh et al., 2008; Redstone, Stefaniak, & Luo, 2018). There are 34 questions on a 5-point Likert scale from "strongly agree" to "strongly disagree." A complete copy of the survey can be found in Appendix B. Arbaugh et al. (2008) demonstrated the validity of the Community of Inquiry instrument, reporting that the three factors of teaching presence, social presence, and cognitive presence accounted for 61.3% of the variance in responses to the survey. Cronbach's Alpha for the Community of Inquiry instrument was 0.94 for teaching presence, 0.92 for social presence, and 0.95 for cognitive presence, indicating internal reliability (Arbaugh et al., 2008). In this study's administration of the Community of Inquiry instrument, Cronbach's alpha was even higher at 0.98 for the entire CoI survey.

The final survey was the Medical Outcomes Social Support Survey. This is a measure of personal community support that has been used extensively in the medical community as a measure of social support (Adams, et al., 2019; Berry, Daniels, & Ladin, 2019; Peirce, Frone, Russell, & Cooper, 1996). There are 15 questions on a 5-point Likert scale from "not at all often" to "very often." A complete copy of the survey can be found in Appendix C. The first four questions were removed from the original Medical

Outcomes Social Support Survey because they pertain only to the participant's medical health, as indicated in Appendix C. However, the remaining 15 items demonstrate a strong relationship with personal community support as defined by Borup et al. (2020), focusing on how often participants connect with friends and family. Moser et al. (2012) reported an average Cronbach's alpha of 0.91 across multiple studies, indicating internal reliability of the survey. In this administration of the Medical Outcomes Social Support survey, Cronbach's alpha was 0.98. Moser et al. (2012) also found that participants who had children and were married consistently scored higher on the Medical Outcomes Social Support Survey, indicating strong validity for the survey.

The remaining 5 questions are demographic questions focused on gender, age, high school grades, parental level of education, and previous experience in online courses. Details on each survey can be found in Table 3.1.

Table 3.1.   **Survey Details**

Elements within the Research Question	Existing Survey	Variable Types and Description	# of survey questions
Learner Engagement	Dixson (2015) Online Student Engagement Scale Complete questionnaire in Appendix A.	Dependent variable Continuous 1-5 Likert scale from not at all characteristic of me to very characteristic of me	19
Course Community Support	Arbaugh et al. (2008) Community of Inquiry Instrument Complete questionnaire in Appendix B.	Independent variable Continuous 1-5 Likert scale from strongly disagree to strongly agree	34
Personal Community Support	Medical outcomes social support survey (Sherbourne & Stewart, 1991)--4 items omitted that specifically refer to medical needs Complete questionnaire in Appendix C.	Independent variable Continuous 1-5 Likert scale from not at all often to very often	15

Data Analysis

Survey results were used to construct a stepwise multiple regression analysis that attempted to explain variance in learner engagement based on course community support and personal community support while controlling for confounding variables. Each potential variable is outlined in Table 3.2. Variables were added to the stepwise regression model in a logical order based on correlations and existing research findings based on which variables had the most potential to impact learner engagement (Keith, 2019). Thus, the final multiple regression model does not include all potential variables.

Table 3.2.   Multiple Regression Variables

Variable within the Multiple Regression Analysis	Variable Types and Description	Possible Values
Learner Engagement	Dependent variable Continuous Average of responses on learner engagement scale from Dixson (2015)	1-5
Course Community Support	Independent variable Continuous Average of responses on Community of Inquiry Instrument (Arbaugh et al., 2008)	1-5
Personal Community Support	Independent variable Continuous Average of responses on Medical outcomes social support survey (Sherbourne & Stewart, 1991)	1-5
Age	Control variable Ordinal Dummy-coded in the analysis Categories combined to reduce small numbers in the 45+ category	18-25 26-35 36-45 45+
Gender	Control variable Categorical Dummy-coded in the analysis	Male Female Nonbinary
Maternal Level of Education	Control variable Ordinal Dummy-coded in the analysis Categories combined to reduce small numbers in the Less than HS and Masters or above categories	Less than HS HS diploma Some college College graduate Masters or above
Paternal Level of Education	Control variable Ordinal Dummy-coded in the analysis Categories combined to reduce small numbers in the Less than HS and Masters or above	Less than HS HS diploma Some college College graduate

	categories	Masters or above
Level of Online Course Experience	Control variable Ordinal Dummy-coded in the analysis	1 2-3 4 or more
High School Grades	Control variable Ordinal Dummy-coded in the analysis Categories combined to reduce small numbers in the Mostly D's and Mostly F's categories	Mostly A's Mostly B's Mostly C's Mostly D's Mostly F's

Based on findings in the initial multiple regression analysis, the measure of course community support could have been broken into three independent variables based on underlying factors within the Community of Inquiry instrument: social presence, cognitive presence, and teaching presence, to see if any of the elements of the Community of Inquiry framework had a greater impact on learner engagement (Garrison et al., 2000). This additional analysis is detailed in chapter four. The goal was to construct a clear multiple regression analysis that is meaningful while incorporating as few variables as necessary (Keith, 2019).

The results of the survey, including measures of each of the variables in Table 3.2, were combined into a multiple regression analysis. According to Keith (2019), multiple regression analysis allows a researcher to construct a formula indicating how a set of independent variables accounts for the variance in a dependent variable. In this case, multiple regression was used to explore how personal community support and course community support explain the variance in learner engagement within an online course. Multiple regression analysis is commonly used within educational research to demonstrate the impact of a set of variables on an outcome (Hatcher, 2013; Keith, 2019). Keith (2019) indicated that it is rare to find a multiple regression analysis within

educational research that accounts for more than 20% of the variance in a dependent variable. Keith (2019) asserted that this is because educational research involves so many confounding variables. However, he also explained that being able to explain 20% of the variance in an outcome is actually a fairly significant result in terms of practical implications. A 20% change could account for an additional year worth of growth for a learner.

Each of the surveys are directly aligned to a key element of the research question within the study, indicated in bold below: To what extent did **course community** and **personal community** explain variations in **learner engagement** in online courses? The research question can be broken down into three elements plus one interaction:

- course community

- personal community

- learner engagement

- interaction between these variables.

Details on individual elements of the research question, aligned data, and data analysis are in Table 3.3 below.

Table 3.3   Alignment of research question to data analysis.

Research Element	Data	Data Analysis
Course Community	Course Community: Community of Inquiry instrument (Arbaugh et al., 2008)	Mean responses on teaching presence, social presence, and cognitive presence questions combined were added to the multiple regression analysis as a measure of course community support.
Personal Community	Medical outcomes social support survey (Sherbourne & Stewart, 1991)	Mean responses were added to the multiple regression analysis as a measure of personal community support.
	Online Student Engagement Scale (Dixson, 2015)	Learner engagement was measured using the mean responses on the Online Student Engagement Scale and included in the multiple regression analysis.
Learner Engagement	Learner Engagement: Online Student Engagement Scale (Dixson, 2015)	Learner engagement was measured using the mean responses on the Online Student Engagement Scale and included in the multiple regression analysis.
Interaction of Variables	Community of Inquiry instrument (Arbaugh et al., 2008)	Results from all three surveys were used in the multiple regression analysis to assess the interaction of learner engagement, course community, and personal community.
	Medical outcomes social support survey (Sherbourne & Stewart, 1991)	
	Online Student Engagement Scale (Dixson, 2015)	

Ethical Research Considerations

Participation in this study was optional. The invitation to participate indicated that students would not receive preferable treatment for participating. Participants completed an informed consent form before completing the survey (Creswell, 2014).

Survey data did not contain any personally identifying information with one exception. Participants were given the option to provide an email address if they would like to be entered into a drawing for a gift card as a reward for participating. These email addresses were disassociated from the other data in the study before any analysis began. Standard data security measures were employed including password protecting results (Creswell, 2014). Additionally, findings from the study are reported accurately, even if the results were not statistically significant (Creswell, 2014). Every effort was made to use the multiple regression analysis results in a way that is consistent with the limitations of the method (Keith, 2019).

Limitations

Limitations of the study are directly related to the sample population and world events that were happening during the study. Because the sample population is from an arts and design school, survey results should be interpreted with caution. They may not generalize to schools in other fields. Also, because this study took place during the CoVid-19 crisis and under social distancing measures, the results may be impacted by student isolation, especially from their personal community. As such, the results should be interpreted with caution. Personal community's impact during a quarantine may be more or less significant than during a normal semester. Finally, the response rate was

relatively low at 16%. The lower response rate could mean that this sample is not a strong representation of the larger population.

Chapter Summary

This survey study has the potential to provide important findings to the field of engagement research, explaining the interaction between course community support and personal community support with learner engagement. The survey-based approach measured not only behavioral engagement but also a learner's levels of cognitive and emotional engagement in the learning experience, their connections to the course community, and their perceptions of personal community support. Through multiple regression analysis, the study demonstrates the variance in learner engagement that can be explained by course community and personal community while also controlling for confounding variables.

CHAPTER FOUR: RESULTS

Introduction

The purpose of this study was to explore to what extent classroom community and personal community can explain variations in learner engagement. Initial analysis focused on ensuring the normality of the data and calculating correlations between each of the variables: learner engagement, classroom community, and personal community as well as demographic data that was captured in the survey including age, gender, parental level of education, high school grades, and previous experience in online courses. Follow-up multiple regression analysis was completed to construct a model that could explain variations in learner engagement based on classroom community and personal community. In this chapter, the results of that quantitative analysis are explored.

Participant Recruitment and Follow-Up

Email invitations were sent to 461 students who had completed an online Liberal Arts course in Fall A of 2020 at the participating university. The courses were offered in an 8-week term from August to late October. An initial invitation to participate was sent in week seven of the eight-week online course. A reminder was sent in week eight and then four days after the close of the term. In total, the survey was open for 20 days. There were 74 survey respondents, representing a 16% response rate.

One additional email was sent after the survey closed to participants who wanted to be included in the drawing for an Amazon gift card. There were 69 participants who opted to participate in the gift card drawing by providing an email address. Of those, four

received a $25 Amazon gift card for their participation. Email addresses were removed from the data set completely after the gift card drawing, providing anonymity for responses.

Of the 74 survey responses, three participants did not complete the full survey, skipping one or more of the survey sections. Those three survey responses were deleted from the data. This left 71 valid responses for analysis, though some participants did leave sections of the demographics questions blank. This was particularly noticeable in the parental level of education questions.

Survey Reliability

To test for internal reliability, Cronbach's alpha was calculated for each of the surveys used: The Online Engagement Scale, the Community of Inquiry instrument, and the Medical Outcomes Social Support Survey. For the Online Engagement Scale, Cronbach's alpha was 0.92. For the Community of Inquiry instrument, Cronbach's alpha was 0.98. For the Medical Outcomes Social Support Survey, Cronbach's alpha was 0.98. All three surveys demonstrate strong internal reliability with values close to 1 (Hatcher, 2013).

Demographics

The section that follows focuses on the demographic data of the participants in the study. Because the survey was anonymous, only limited demographic data was collected, focusing only on those elements that research has shown to impact learner engagement-- age, gender, parental level of education, high school grades, and previous experiences in online courses (Curtis & Werth, 2015; Hampton & Pearce, 2016; Hu and Kuh, 2002; Kuh, 2009; Strang, 2017).

<u>Age</u>

Table 4.1 illustrates the distribution of participant ages in the survey. Some categories from the original survey were collapsed due to low numbers in the 45 and older bracket. Thirty six percent of the participants were 18-25 years old, 36% were 26-35 years old, and the 26% were above 36 years old. This distribution of ages is consistent with the demographics of the participating university. This distribution can be seen in Figure 4.1, a histogram of participant's ages.

Table 4.1　　Age Distribution

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-25	26	36.6	36.6	36.6
	26-35	26	36.6	36.6	73.2
	36 or older	19	26.8	26.8	100.0
	Total	71	100.0	100.0	
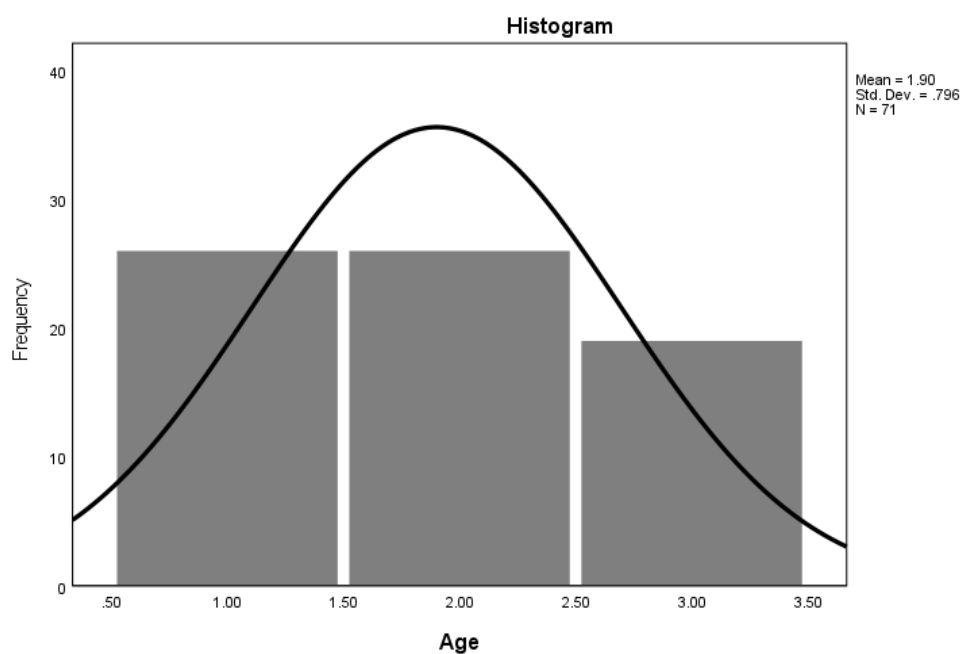
Figure 4.1.　　Participant Age Histogram

Figure 4.2 demonstrates the variability of the dependent variable, learner engagement, on the basis of age. The mean of each participant's engagement was re-coded based on the percentage distribution of engagement in the sample. Learners in the bottom 25% of engagement with a score of 0 to 1.67, were re-coded as low engagement, learners in the 26th to 50th percentile of engagement with a score of 1.68 to 2.21 were re-coded as low-mid engagement, learners in the 51st to 75th percentile of engagement with a score of 2.22 to 2.63 were re-coded as high-mid, and learners above the 75the percentile of engagement with a score above 2.64 were re-coded as high. This re-coded data was

only used to investigate variations in engagement within demographic data, not within

the multiple regression analysis. There do not appear to be any major variations in

engagement on the basis of age in this sample. However, participants in the 26-35 age

range were more likely to be in the low-mid range of engagement than participants in

other age brackets.
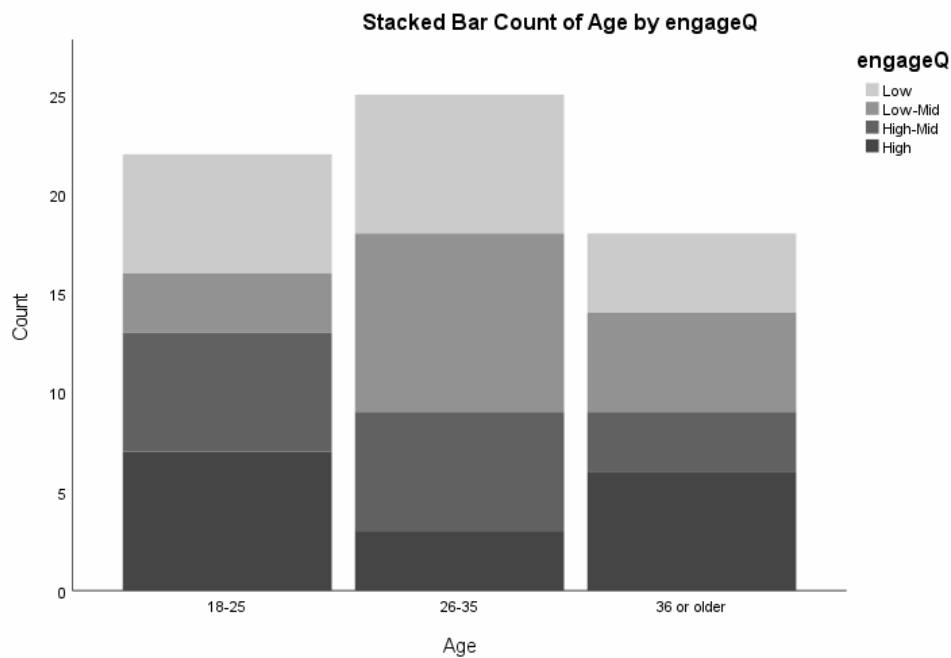
Figure 4.2.   Engagement by Age

<u>Gender</u>

Of the 71 valid responses on the survey, 16 were male and 53 were female with 2

respondents identifying as nonbinary, as shown in Table 4.2. Male participants are

somewhat underrepresented in the sample. The participating university's population has

37% male enrollment but males were only 22.5% of this sample.

Table 4.2.   Gender Distribution

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	16	22.5	22.5	22.5
	Female	53	74.6	74.6	97.2
	Nonbinary	2	2.8	2.8	100.0
	Total	71	100.0	100.0	

Figure 4.3 illustrates the distribution of engagement across gender, using the same data recoding methods explained above. Male participants were much less likely to be in the high-mid range of engagement. In contrast, female participants were very evenly distributed between the four levels of engagement, which was impacted by the re-code method used and the overwhelmingly female population in the responses. Since females made up the majority of the responses, then there would be an even number of females in each quartile of the engagement data.
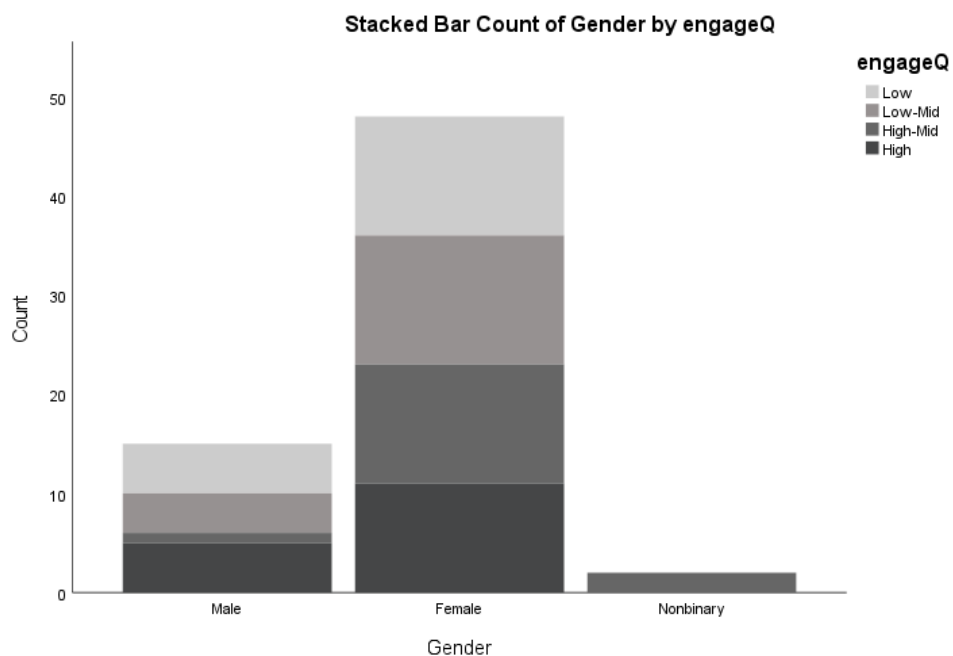
Figure 4.3.   Engagement by Gender

Parental Level of Education

Survey participants were asked to identify their father's highest level of education and their mother's highest level of education. Tables 4.3 and 4.4 provide details on the frequency of different levels of education for participant's father and mother individually. For these tables, categories were collapsed due to low numbers of participants with parental levels of education less than high school and at college graduate. Levels of education are fairly equally distributed for both mother and father with mothers being less likely to hold a graduate degree.

Table 4.3. **Distribution of Father's Level of Education**

FatherEd

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High School or Less	21	29.6	30.4	30.4
	Some College or College Graduate	31	43.7	44.9	75.4
	Graduate Degree	17	23.9	24.6	100.0
	Total	69	97.2	100.0	
Missing	System	2	2.8		
Total		71	100.0		

Table 4.4. **Distribution of Mother's Level of Education**

MotherEd

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High School or Less	27	38.0	38.6	38.6
	Some College or College Graduate	37	52.1	52.9	91.4
	Graduate Degree	6	8.5	8.6	100.0
	Total	70	98.6	100.0	
Missing	System	1	1.4		
Total		71	100.0		

In the data analysis for this study, the response for the father's level of education and the response for the mother's level of education were averaged to create a numerical score representing a combination of the mother and father's education with 0-1 indicating less than high school, 1-2 indicating high school, 2-3 indicating some college, 3-4 indicating college degree, and 4-5 indicating masters degree or above. Figure 4.4 contains the combined data with education levels of the father and mother averaged for each participant. Participants, on average, had parents with at least some college education.
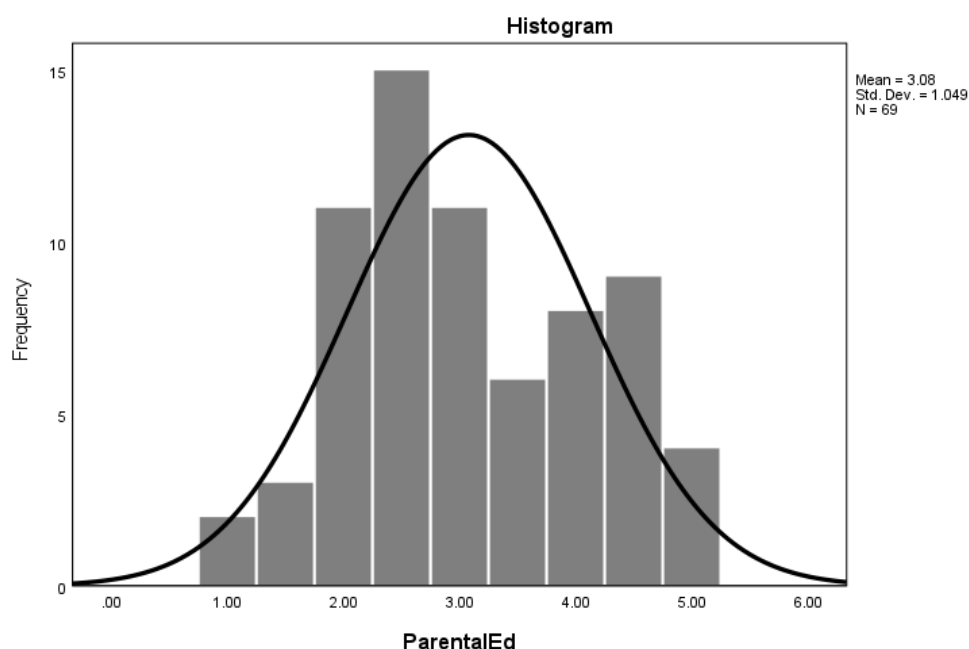
Figure 4.4.   Parental Level of Education Histogram

Figure 4.5 demonstrates participant's level of engagement aggregated by parental level of education (combined for father and mother). This figure used the same data recoding for level of engagement as described above. Note that, in this visualization, categories were not collapsed in order to preserve the normal distribution of data. Participants whose parents had at least some college were more likely to be highly engaged in their coursework.
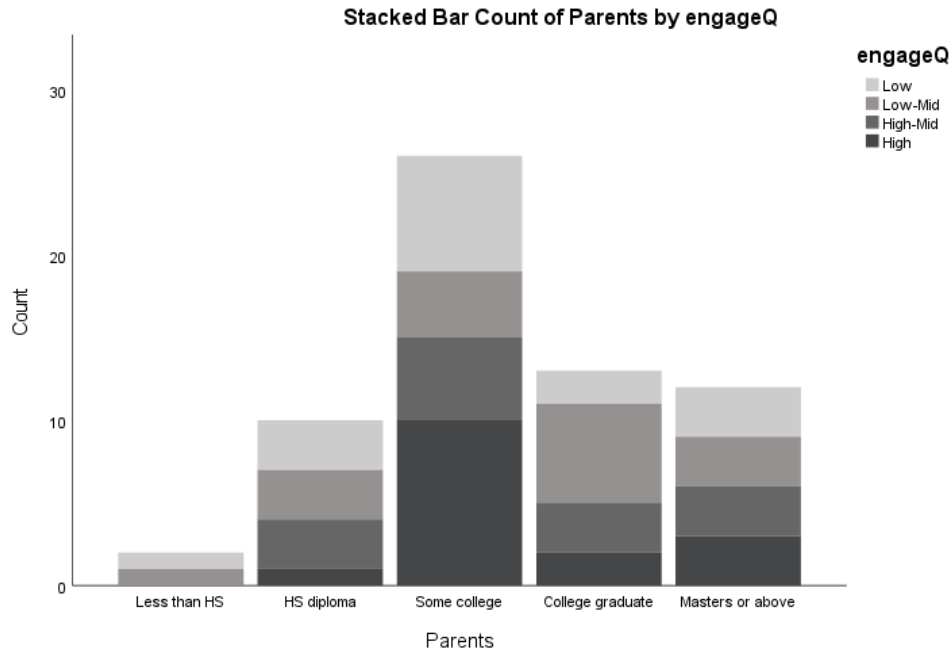
Figure 4.5. **Engagement by Parental Level of Education**

Online Courses Taken

Of the 71 participants in this study, 85.9% had taken 4 or more online courses. The participating university allows students to move between courses on campus and online as needed. Thus, the population as a whole is very experienced in taking online courses. Table 4.5 demonstrates this skew towards experienced online learners.

Table 4.5.   Experience with Online Courses Distribution

Online course experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 course	3	4.2	4.2	4.2
	2-3 courses	7	9.9	9.9	14.1
	4 or more courses	61	85.9	85.9	100.0
	Total	71	100.0	100.0	

High School Grades

Participant's high school grades were normally distributed with 38% reporting earning mostly A's, 39.4% reporting earning mostly B's, and 22.5% reporting earning mostly C's or D's. The C, D, and F categories were collapsed in this table due to low numbers in each category. The complete distribution can be seen in table 4.6 below.

Table 4.6.   High School Grades Distribution

High School Grades

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Mostly A's	27	38.0	38.0	38.0
	Mostly B's	28	39.4	39.4	77.5
	Mostly C's or D's	16	22.5	22.5	100.0
	Total	71	100.0	100.0	

An analysis of participant's engagement levels aggregated by high school grades did not reveal any significant patterns, with engagement relatively equally distributed on the basis of high school achievement.
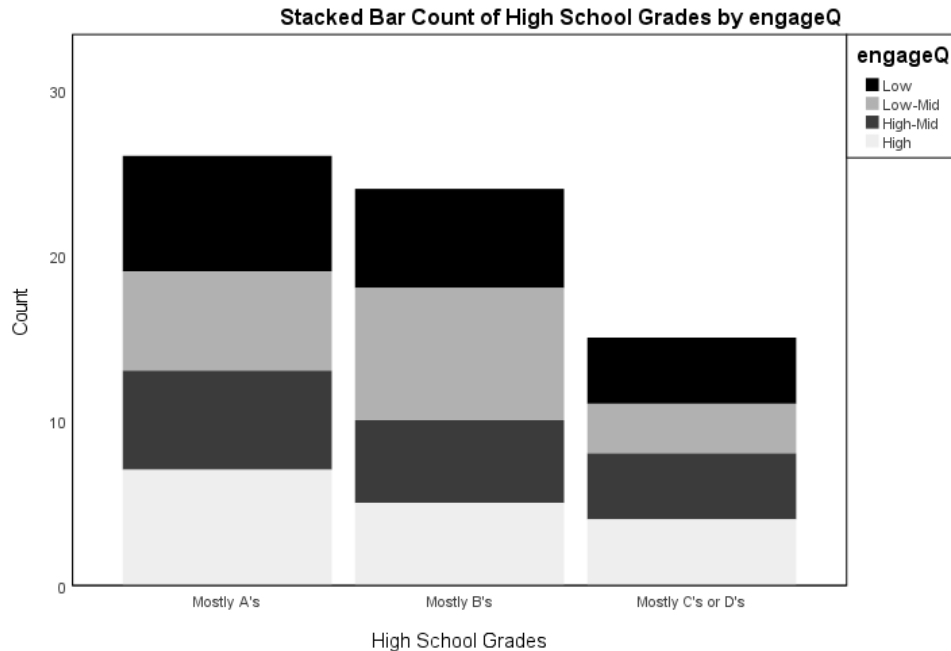
Figure 4.6.   Engagement by High School Grades

The next step in the initial data analysis was to calculate correlations between the control/demographic variables and the dependent variable, learner engagement. Data on the control variables was gathered as a way to ensure that variations in learner engagement were not due to factors outside of personal community or course community. Age, gender, parental level of education, and experience in online courses were chosen as control variables because previous research indicated that they may predict learner engagement (Curtis & Werth, 2015; Hampton & Pearce, 2016; Hu and Kuh, 2002; Kuh, 2009; Strang, 2017). In this case, as seen in Table 4.7, none of the correlations were statistically significant at the 0.05 level between the control variables and learner engagement. Note that gender is not included in this correlation analysis because it is a categorical variable. Instead, an ANOVA is included in Table 4.8. There is not a statistically significant connection between gender and learner engagement at the 0.05 level.

Table 4.7.   Correlations between Engagement and Control Variables

Correlations

		Learner engagement	Age	Online course experience	Parental level of education
Learner engagement	Pearson Correlation	1	-.026	-.053	.092
	Sig. (2-tailed)		.828	.660	.457
	N	70	70	70	68
Age	Pearson Correlation	-.026	1	.180	-.139
	Sig. (2-tailed)	.828		.134	.253
	N	70	71	71	69
Online course experience	Pearson Correlation	-.053	.180	1	.044
	Sig. (2-tailed)	.660	.134		.722
	N	70	71	71	69
Parental level of education	Pearson Correlation	.092	-.139	.044	1
	Sig. (2-tailed)	.457	.253	.722	
	N	68	69	69	69

Table 4.8.   **ANOVA between gender and learner engagement**

ANOVA Between Gender and Learner Engagement

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
Learner Engagement * Gender	70	98.6%	1	1.4%	71	100.0%

Mean of Learner Engagement by Gender

Gender	Mean	N	Std. Deviation
Male	2.1614	15	.88617
Female	2.1837	53	.65563
Nonbinary	2.5789	2	.00000
Total	2.1902	70	.69848

ANOVA

Learner Engagement

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.317	2	.158	.318	.728
Within Groups	33.347	67	.498		
Total	33.664	69			

Next, correlations were calculated between the control variables and each of the independent variables, course community and personal community. This is to test for collinearity among the variables, meaning that one or more of the independent variables has a high correlation to another independent variable. Collinearity is undesirable because collinear variables share some of the variance in the dependent variable, leading to an overestimate in the power of a model that includes collinearity. In multiple regression analysis, multicollinearity can lead to large standard errors and unclear interpretations (Keith, 2019). Table 4.9 contains the correlations between course community, personal

community, and the control variables. Course community showed a statistically

significant relationship with parental level of education, r(65)=0.28, p<0.05, but no other

variables were statistically significant at the 0.05 level.

Table 4.9.   Correlations between Course Community, Personal Community, and Control Variables

Correlations

		Course Community	Personal Community	Age	Online course experience	Parental level of education
Course Community	Pearson Correlation	1	.274[*]	.005	-.025	.281[*]
	Sig. (2-tailed)		.026	.966	.839	.023
	N	67	66	67	67	65
Personal Community	Pearson Correlation	.274[*]	1	-.158	-.014	-.080
	Sig. (2-tailed)	.026		.192	.908	.519
	N	66	70	70	70	68
Age	Pearson Correlation	.005	-.158	1	.180	-.139
	Sig. (2-tailed)	.966	.192		.134	.253
	N	67	70	71	71	69
Online course experience	Pearson Correlation	-.025	-.014	.180	1	.044
	Sig. (2-tailed)	.839	.908	.134		.722
	N	67	70	71	71	69
Parental level of education	Pearson Correlation	.281[*]	-.080	-.139	.044	1
	Sig. (2-tailed)	.023	.519	.253	.722	
	N	65	68	69	69	69

*. Correlation is significant at the 0.05 level (2-tailed).

Next, correlations were calculated between the dependent variable in the study, learner engagement, and the independent variables in the study: course community and personal community. Table 4.10 includes these correlations. The strongest correlation was between learner engagement and course community, $r(66)=0.61$, $p<0.01$. This was followed by a correlation between learner engagement and personal community, $r(69)= 0.37$, $p<0.01$. Both findings provide support for the impact of course community and

personal community on learner engagement in online courses and indicate that further

analysis using multiple regression is appropriate (Keith, 2019).

Table 4.10.   Correlations between Learner Engagement, Course Community, and Personal Community

Correlations

		Course Community	Personal Community	Learner Engagement
Course Community	Pearson Correlation	1	.274*	.610**
	Sig. (2-tailed)		.026	.000
	N	67	66	66
Personal Community	Pearson Correlation	.274*	1	.367**
	Sig. (2-tailed)	.026		.002
	N	66	70	69
Learner Engagement	Pearson Correlation	.610**	.367**	1
	Sig. (2-tailed)	.000	.002	
	N	66	69	70

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

As noted earlier, there is also a correlation between personal community and

course community, $r(66)=0.27$, $p<0.05$. The correlation is relatively small but warranted

an investigation into multicollinearity to validate the assumptions of multiple regression.

Table 4.13, which reports the larger multiple regression analysis, includes collinearity

statistics. Personal community and course community demonstrated a tolerance of 0.91,

indicating independence of the variables. They also demonstrated a VIF of 1.1, providing

additional support for their independence (Keith, 2019).

Because the Community of Inquiry instrument includes sub-scales of Teaching

Presence, Cognitive Presence, and Social Presence, additional correlations were

calculated between learner engagement and each of these underlying factors. Table 4.11

contains these correlations. There were statistically significant correlations between

learner engagement and each of the sub-factors of the CoI instrument at the 0.01 level

with cognitive presence demonstrating the highest correlation, $r(68)=0.67$, $p<0.01$,

followed by social presence, $r(69)=0.62$, $p<0.01$, and then teaching presence, $r(69)=0.45$,

$p<0.01$.

Table 4.11.   Correlations between Learner Engagement and Subfactors of the CoI Instrument

Correlations

		Learner Engagement	Cognitive Presence	Social Presence	Teaching Presence
Learner Engagement	Pearson Correlation	1	.626[**]	.622[**]	.449[**]
	Sig. (2-tailed)		.000	.000	.000
	N	70	68	69	69
Cognitive Presence	Pearson Correlation	.626[**]	1	.798[**]	.670[**]
	Sig. (2-tailed)	.000		.000	.000
	N	68	69	68	68
Social Presence	Pearson Correlation	.622[**]	.798[**]	1	.735[**]
	Sig. (2-tailed)	.000	.000		.000
	N	69	68	70	69
Teaching Presence	Pearson Correlation	.449[**]	.670[**]	.735[**]	1
	Sig. (2-tailed)	.000	.000	.000	
	N	69	68	69	70

**. Correlation is significant at the 0.01 level (2-tailed).

There were also statistically significant correlations between the subfactors,

cognitive presence, social presence, and teaching presence, indicating a potential problem

with multicollinearity if the subfactors were used independently in a multiple regression

analysis. Because of this multicollinearity, the multiple regression analysis below uses

only the overall measure of Community of Inquiry with the factors averaged together

rather than separating the subfactors into individual variables. Including the entire

instrument as one measure eliminates the problem of multicollinearity between the

subfactors (Keith, 2019).

Given the strong correlations between learner engagement, personal community,

and course community, it is appropriate to continue with multiple regression analysis

(Hatcher, 2013).

Data Exploration

The goal of multiple regression analysis is to construct a model with as few

variables as possible that explains as much of the variance in the dependent variable,

learner engagement, as possible (Keith, 2019). A parsimonious model provides more

accurate results and clearer interpretations. In keeping with the exploratory nature of this

study, there were ten different variables that were considered as possible inputs as

predictors of learner engagement: course community (combination of teaching presence,

cognitive presence, and social presence), personal community, teaching presence

(subfactor of course community), cognitive presence (subfactor of course community),

social presence (subfactor of course community), gender, age, parental level of education,

high school grades, and previous experience with online courses.

Demographic Variables

As demonstrated above, none of the proposed control variables (gender, age,

parental level of education, and previous experience with online courses) had a

statistically significant correlation with learner engagement. However, they were

included as possible predictors in the stepwise regression below in case any individual

factor could improve the overall reliability of the model in predicting learner engagement (Keith, 2019).

Community of Inquiry Instrument Variables

There were four different variables that were considered for inclusion in the multiple regression analysis from the Community of Inquiry instrument.

The first variable considered was teaching presence. Teaching presence demonstrated a moderate correlation with learner engagement, $r(69)=0.45$, $p<0.01$. The data did display a positive skew, as seen in Figure 4.6. This variable measures a participant's perception of teaching presence in an online course, as demonstrated by the professor and in course activities.
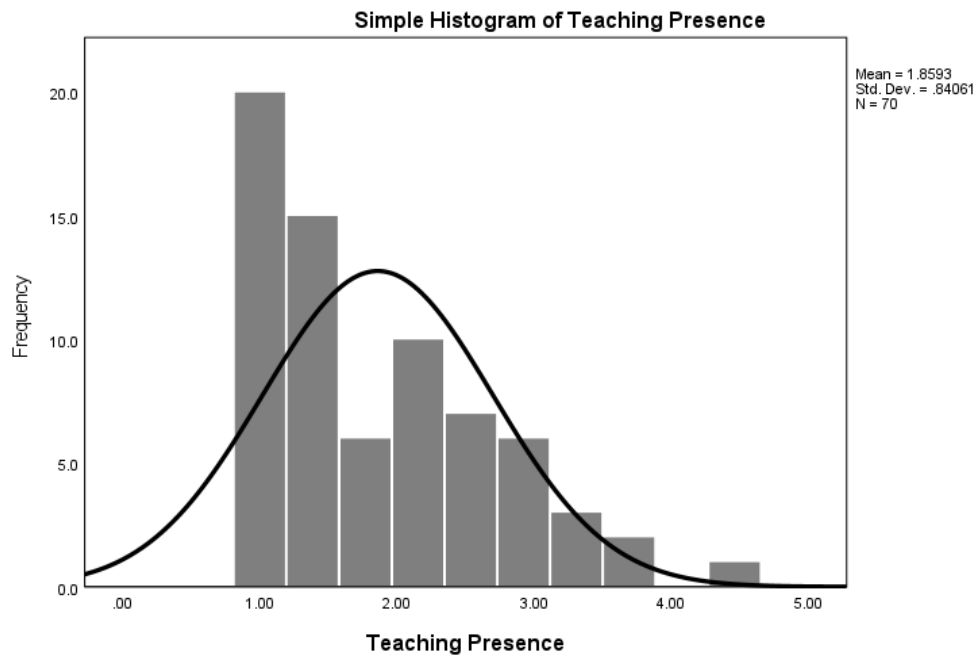
Figure 4.6.   Histogram of Teaching Presence

The next variable from the CoI instrument that was considered was social presence. Social presence also demonstrated a moderate correlation with learner

engagement, r(69)=0.62, p<0.01. The data also displayed a positive skew, as seen in

Figure 4.7, with far more participants having a lower perception of social presence.
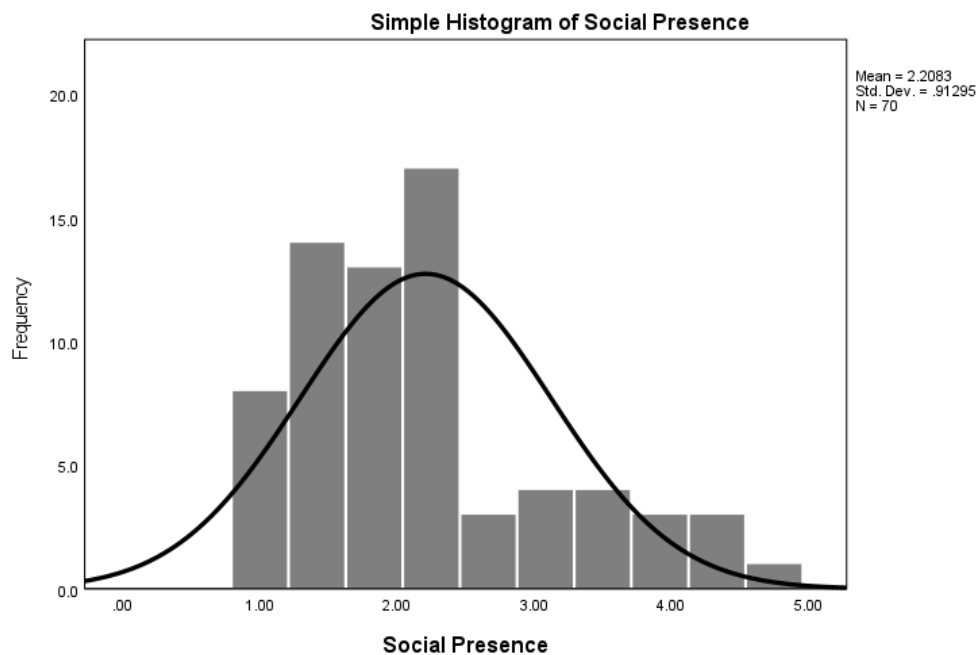
Figure 4.7.   Histogram of Social Presence

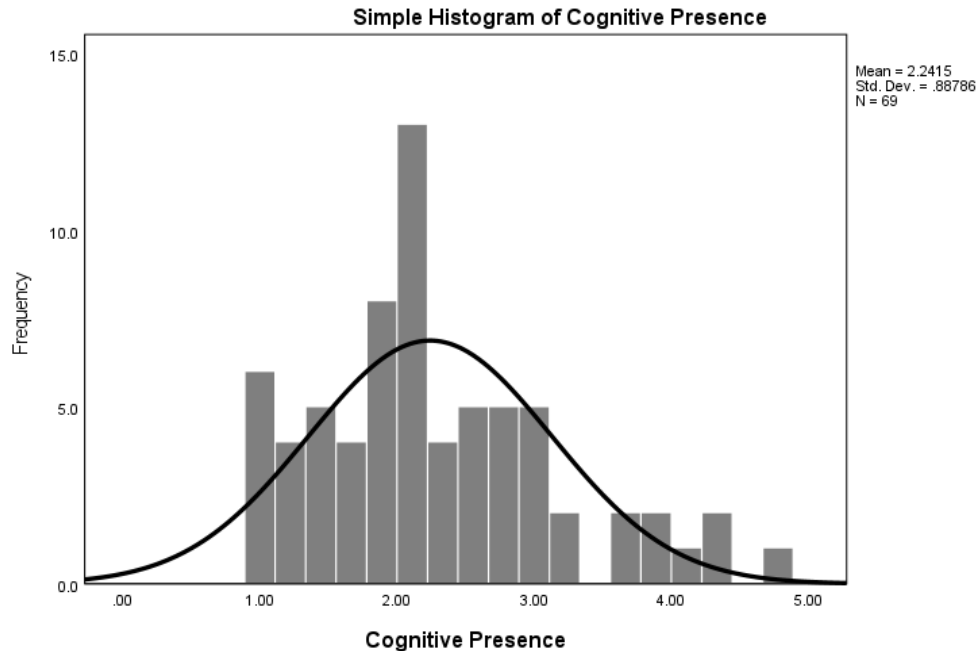The next variable from the CoI instrument that was considered was cognitive

presence. Cognitive presence also demonstrated a moderate correlation with learner

engagement, r(68)=0.67, p<0.01. The data was much more normally distributed than

teaching presence and social presence, as seen in Figure 4.8. This variable measures the

extent to which participants feel they have engaged with course content and learning.

Figure 4.8.   Histogram of Cognitive Presence

Overall Measure of Community of Inquiry Variable

The final variable from the Community of Inquiry instrument that was considered

for inclusion in the multiple regression analysis was an average of all three subfactors in

the instrument: cognitive presence, social presence, and teaching presence. This

combined score was an average of a student's responses on all 34 questions from the CoI

instrument. Like the subfactors, this measure of course community demonstrated a

moderate correlation with learner engagement, $r(66)=0.61$, $p<0.01$. This combined course

community measure also displayed a positive skew but less so than teaching presence and

social presence, as displayed in Figure 4.9.
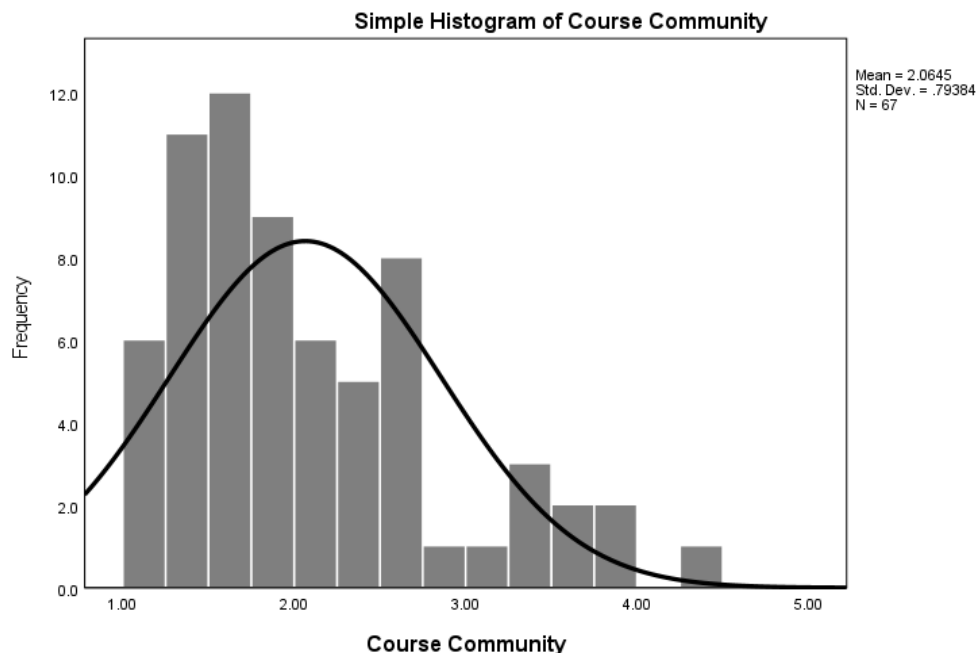
Figure 4.9.   Histogram of Course Community

Because this combined measure of Course Community was created out of the same questions in the survey as the sub-factors of teaching presence, cognitive presence, and social presence, it was not possible to include the overall measure and the subfactors in the multiple regression analysis without creating multi-collinearity in the model (Keith, 2019). Since this overall measure of course community demonstrated similar correlations to the subfactors in a more parsimonious model, it was decided to include only Course Community in the multiple regression model. Including just the overall measure also avoided problems of multicollinearity between cognitive presence, teaching presence, and social presence, as described above.

Personal Community Variable

The final independent variable considered for the multiple regression model was the measure of personal community from the social support survey. This measure was the mean of participant's responses to the 15 questions included from the Medical Outcomes

Social Support Survey (Sherbourne & Stewart, 1991). Personal community displayed a

moderate correlation with learner engagement, r(69)= 0.37, p<0.01. Personal community

also had a significant positive skew, as seen in Figure 4.10.
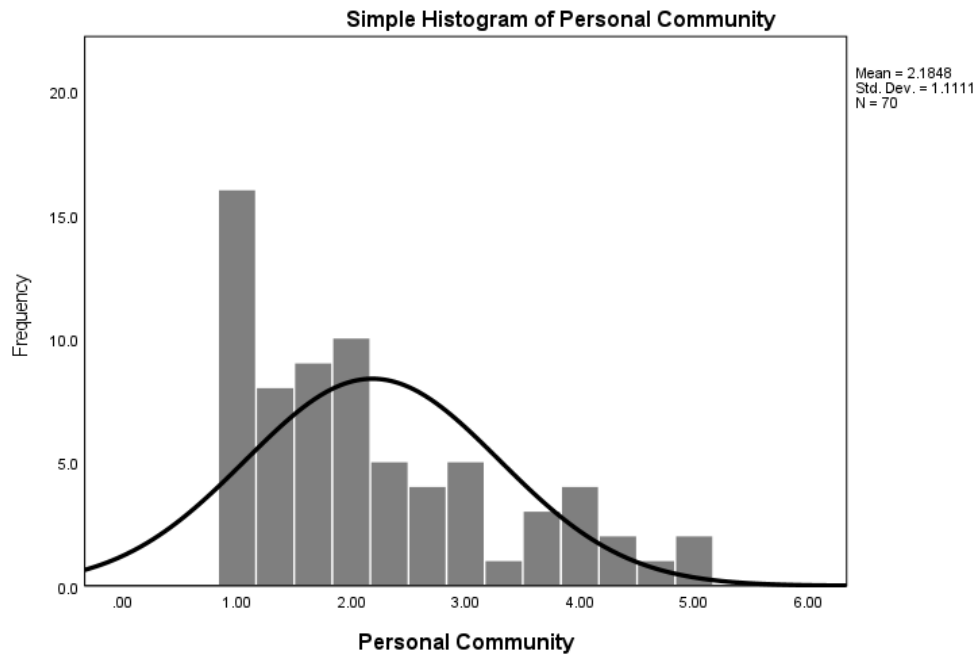
Figure 4.10.   Histogram of Personal Community

<u>Learner Engagement Variable</u>

The dependent variable in this multiple regression analysis is Learner

Engagement. This was an average of participant's responses on the 19 question Online

Student Engagement Scale (Dixson, 2015). Participant's responses on this measure of

engagement had a mean of 2.19 with a normal distribution, as seen in Figure 4.11.
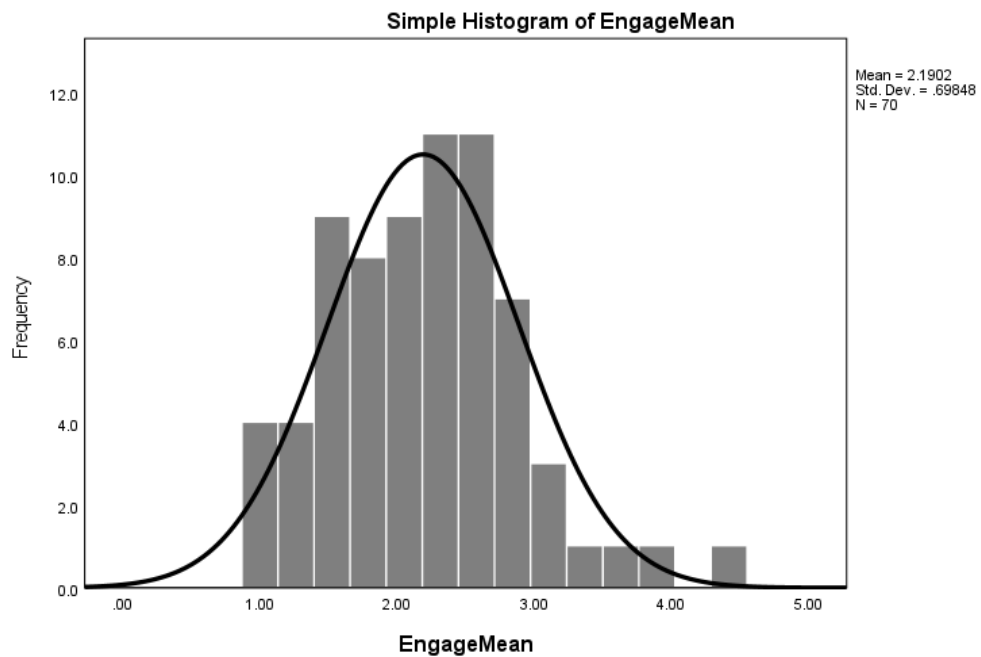
Figure 4.11.   Histogram of Learner Engagement

<u>Variables Summary</u>

All of the variables considered for inclusion in the multiple regression model can

be seen in Table 4.12, including a description and rationale for including or excluding

each variable for consideration in the stepwise multiple regression analysis.

Table 4.12.   Summary of Variables for Multiple Regression Analysis

Variable	Description	Included as a Potential Variable in Stepwise Regression	Rationale
Learner Engagement	Measure of learner engagement, calculated from responses on Dixson's (2015) Online Student Engagement Scale	Yes	Dependent variable
Course Community	Measure of course community, calculated from the Community of Inquiry Instrument (Arbaugh et al., 2008)	Yes	Demonstrates a correlation with learner engagement and is a core part of the study's research question, eliminates problems of multicollinearity by combining all subfactors of the Community of Inquiry instrument
Teaching Presence	Subfactor of the Community of Inquiry Instrument (Arbaugh et al., 2008)	No	Demonstrated multicollinearity with social presence and cognitive presence
Social Presence	Subfactor of the Community of Inquiry Instrument (Arbaugh et al., 2008)	No	Demonstrated multicollinearity with teaching presence and cognitive presence
Cognitive Presence	Subfactor of the Community of Inquiry Instrument (Arbaugh et al., 2008)	No	Demonstrated multicollinearity with social presence and teaching presence
Personal Community	Measure of personal community, calculated from the Medical Outcomes Social Support Survey (Sherbourne & Stewart, 1991)	Yes	Demonstrates a correlation with learner engagement and is a core part of the study's research question
Age	Participant's age	Yes	Control variable

Gender	Participant's gender	Yes	Control variable
Experience in online courses	Participant's level of experience with online coursework	Yes	Control variable
High school grades	Participant's self-reported grades from high school	Yes	Control variable
Parental level of education	Participant's parental level of education, created from combining father and mother's level of education	Yes	Control variable

Regression Analysis

Each of the variables above were entered into the analysis as a stepwise multiple regression. This is an appropriate method when the purpose is to "determine the extent of the influence of one or more variables on some outcome," as it is in this study but only if the order of the variables is thoughtfully determined (Keith, 2019, p. 80). Variables were added to the analysis in the order shown in Table 4.12, eliminating the subfactors of the Community of Inquiry instrument due to multicollinearity. As explained by Keith (2019), the order of inclusion for variables in a stepwise analysis has an enormous impact on the results of the multiple regression analysis. Variables should be entered in a logical fashion based on existing research about the variables and their potential to impact the dependent variable. In this case, the order was selected based on the likelihood of an individual variable's impact on learner engagement, as evaluated in the correlations explained above and in existing research. Variables were entered into the model in the same order as identified in Table 4.11 with the subfactors of the CoI omitted. The results of this stepwise regression analysis can be seen in Table 4.13.

Table 4.13.   Model Summary

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Course Community	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	Personal Community	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: Learner Engagement

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.598[a]	.358	.347	.56014	.358	33.975	1	61	.000
2	.640[b]	.409	.390	.54156	.052	5.258	1	60	.025

a. Predictors: (Constant), Course Community
b. Predictors: (Constant), Course Community, Personal Community

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.660	1	10.660	33.975	.000[b]
	Residual	19.139	61	.314		
	Total	29.799	62			
2	Regression	12.202	2	6.101	20.803	.000[c]
	Residual	17.597	60	.293		
	Total	29.799	62			

a. Dependent Variable: Learner Engagement
b. Predictors: (Constant), Course Community
c. Predictors: (Constant), Course Community, Personal Community

Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	1.079	.202		5.350	.000		
	Course Community	.537	.092	.598	5.829	.000	1.000	1.000
2	(Constant)	.894	.211		4.236	.000		
	Course Community	.467	.094	.520	4.960	.000	.895	1.117
	Personal Community	.147	.064	.240	2.293	.025	.895	1.117

a. Dependent Variable: Learner Engagement

There were two models that were created in stepwise fashion before it was determined that the addition of any more variables would not improve the power of the model. The first model included only course community as a predictor of learner engagement. This model was able to account for 35.8% of the variance in learner engagement ($F(1, 61)= 33.975$, $p<0.001$, $R2=0.358$).

The second model included course community and personal community as

predictors of learner engagement. In this model, Course Community and Personal Community were able to explain 40.9% of the variance in learner engagement ($F_{(2, 60)}$=20.803, p<0.01, R2=0.409). In this model, both personal community and course community were statistically significant predictors of learner engagement and thus were included in the multiple regression model. Course community was more significant with a standardized coefficient of 0.52, compared to a standardized coefficient of 0.24 for personal community. This means that, though both predictors are important in explaining variations in learner engagement, course community had almost twice the impact on learner engagement as personal community.

All other variables were excluded from the final multiple regression model because they did not meet the stepwise regression rule for entry, meaning that they did not improve the model by F=0.05 or more. A summary of the excluded variables is found in Table 4.14.

**Table 4.14.   Summary of Excluded Variables**

Excluded Variables[a]

Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance	VIF	Minimum Tolerance
1 Personal Community	.240[b]	2.293	.025	.284	.895	1.117	.895
Age	-.083[b]	-.808	.422	-.104	1.000	1.000	1.000
Gender	.030[b]	.287	.775	.037	.999	1.001	.999
Online course experience	-.042[b]	-.407	.686	-.052	.999	1.001	.999
HS Grades	-.023[b]	-.216	.830	-.028	.981	1.019	.981
Average of parental education	-.134[b]	-1.278	.206	-.163	.953	1.049	.953
2 Age	-.039[c]	-.386	.701	-.050	.960	1.042	.859
Gender	.017[c]	.171	.865	.022	.996	1.004	.892
Online course experience	-.045[c]	-.451	.653	-.059	.999	1.001	.894
HS Grades	-.037[c]	-.369	.714	-.048	.977	1.023	.875
Average of parental education	-.105[c]	-1.020	.312	-.132	.936	1.068	.840

a. Dependent Variable: Learner Engagement
b. Predictors in the Model: (Constant), Course Community
c. Predictors in the Model: (Constant), Course Community, Personal Community

The diagram in Figure 4.12 illustrates the standardized coefficients for personal community and course community and the contributions of each variable to the overall multiple regression model.
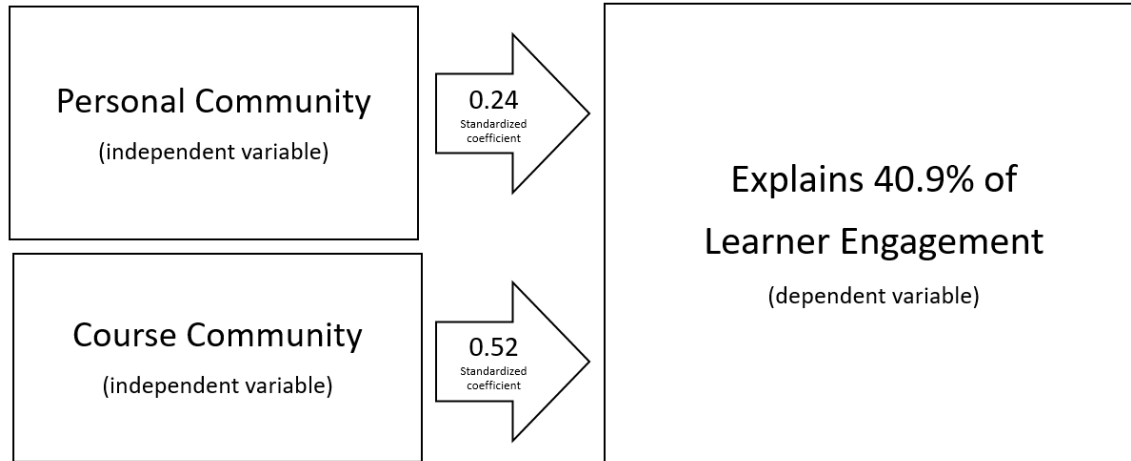
Figure 4.12.   Illustration of Variable Relationships

Assumptions of Multiple Regression

A final analysis was completed to ensure that this multiple regression model met the five assumptions of multiple regression analysis (Keith, 2019). First, the dependent variable must be a linear function of the independent variables. Data visualizations and correlation coefficients all supported the assertion that learner engagement is a linear function of course community and personal community. Second, each observation must be drawn independently from the population. The 71 survey responses in this study were drawn from 71 different students and thus the observations are independent. Third, the variance of the errors must not be a function of any of the independent variables, also known as homoscedasticity (Keith, 2009). A plot of the predicted values vs. actual values, also known as error, is included in Figure 4.13. The scatterplot shows no discernable pattern and thus the model displays homoscedasticity.
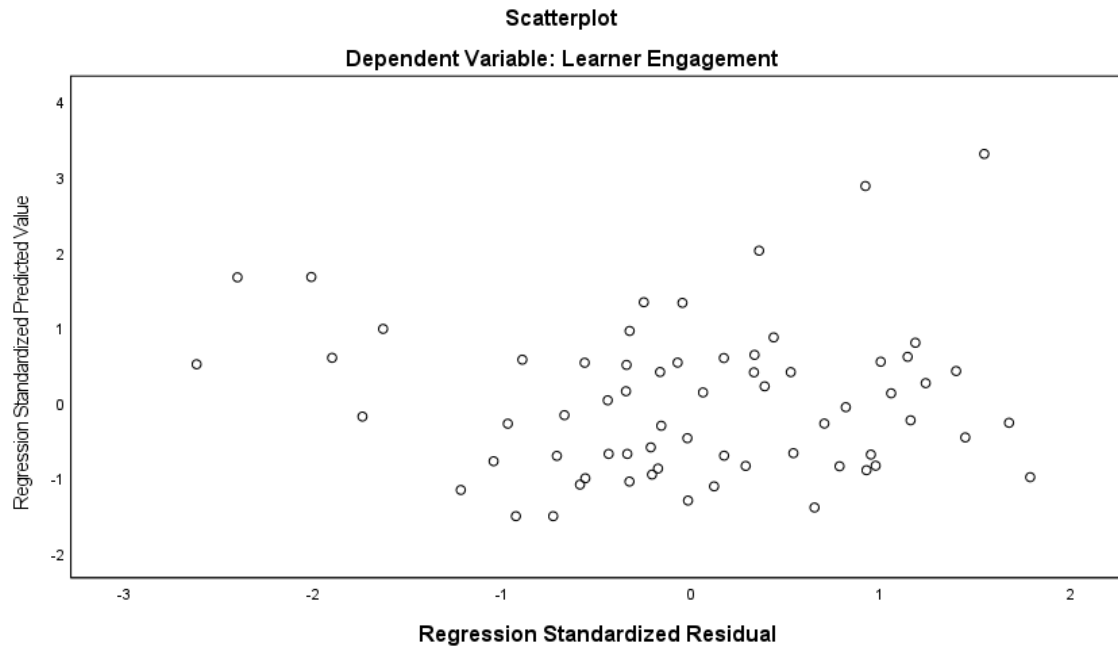
Figure 4.13.   Scatterplot of Errors

Fourth, the errors are normally distributed. Figure 4.14 is a probability plot that displays

the multiple regression line and actual values. There is no pattern to where the values

differ from the multiple regression line and thus the errors are normally distributed.

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: EngageMean
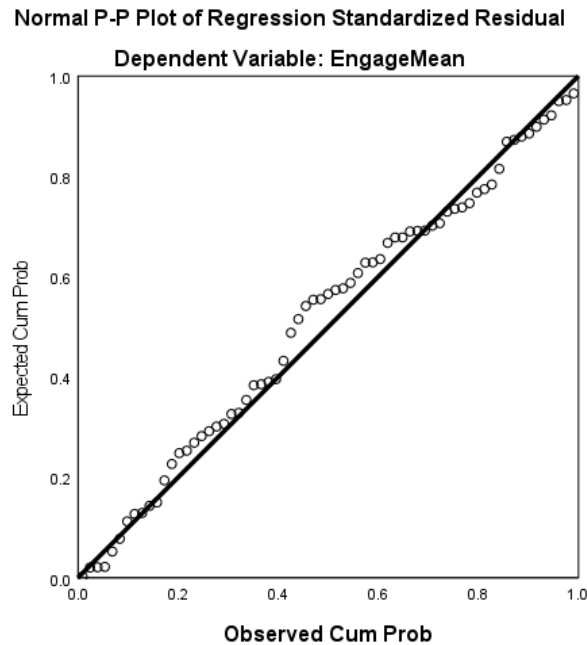
Figure 4.14.   Plot of Residuals

Finally, there must be an absence of multicollinearity. In this case, the tolerance for

personal community and course community was 0.91 and the VIF was 1.1. A VIF of less

than 10 indicates an absence of multicollinearity, especially in combination with a

tolerance value of close to 1 (Keith, 2019). Collinearity diagnostics are included in Table

4.13.

This analysis indicated that the assumptions for multiple regression analysis were

met in this model.

Summary of Analysis

The research question for this study was: To what extent did course community

and personal community explain variations in learner engagement in online courses? The

multiple regression model indicated that course community and personal community, in

combination, can explain 40.9% of the variance in learner engagement. In this model,

course community accounts for almost twice as much of the variance in learner

engagement as personal community. However, both are significant predictors of learner engagement. These findings have significant implications for practice, which will be discussed in the next chapter.

CHAPTER FIVE: DISCUSSION AND CONCLUSIONS

Introduction

The research question in this study was: To what extent did course community and personal community explain variations in learner engagement in online courses? Understanding the interaction between personal community, course community, and learner engagement can lead to a better understanding within engagement research of what factors influence learner engagement and how practitioners can encourage learner engagement in online learning.

As explained in chapter 4, a multiple regression analysis of learner engagement with personal community and course community as independent variables was able to account for 40.9% of the variance in online learner engagement with course community having more than twice the influence as personal community on learner engagement. Keith (2019) stated that, within education research, a model that accounts for more than 20% of the variance in a variable is a significant finding since 20% represents approximately one year of student growth. Education research is prone to confounding variables and thus multiple regression analysis that identifies more than 20% of the variance in a dependent variable is rare (Keith, 2019). Being able to account for 40.9% of the variance in learner engagement with just personal community and course community as variables is a significant finding with important implications for both research and instructional practice, which will be explored below.

Key Insights

<u>Demographics and Engagement</u>

There were several findings within the demographics of this study that are important to note in considering how a student's pre-existing qualities may or may not impact their engagement in a course.

First, prior research has indicated that learners who have stronger academic preparation in the form of higher high school GPA's are more likely to be engaged in their online courses (Hu & Kuh, 2002). However, there were no significant patterns in learner engagement in this study's sample based on self-reported high school grades. This finding would indicate that learners can come into an online learning experience with a variety of academic backgrounds and still find engagement. These results may have been impacted by the context of this study, an art and design school. It is possible that students in an art school are engaged in the content regardless of their high school background because they are interested in art and art-related studies. At the participating university, even courses within liberal arts are customized to be relevant for learners who have expertise in the arts. Thus, prior academic background measured through high school grades may have less of an impact on learner engagement.

Second, prior research indicated that learners whose parents have a higher level of education are more likely to be engaged in their online courses (Hu & Kuh, 2002). However, in contrast to Hu and Kuh's (2002) findings, the correlation between parental level of education and learner engagement was not statistically significant in this study. In this sample, there were no obvious patterns in parental level of education and learner engagement. Students whose parents had at least some college education were slightly

more likely to be in the high-mid range of engagement but the result was not statistically significant at the 0.05 level. This finding would require additional research in order to explore the connection or lack of connection between parental level of education and learner engagement. Still, it sheds some doubt on Hu and Kuh's (2002) assertion that parental level of education has an impact on engagement.

Third, prior research indicated generational differences in learner engagement. Hampton and Pearce (2016) found that learner's engagement varied based on their age with younger learners preferring collaborative work and older learners preferring a focus on real-world application. While this study did not explore instructional strategies used in the participant's courses, there were no significant variations in engagement based on the age of the participants. Since the courses in this study used similar instructional methodologies including limited collaborative work and a broad focus on application, if Hampton and Pearce's (2016) findings were correct, then there should have been variations based on age. This finding warrants further research into instructional strategies, age, and variations in engagement.

Finally, prior research indicated that gender could be a mitigating factor in online learner engagement. Hu and Kuh (2002) found that male students are more likely to have extreme measures of engagement, to be either dis-engaged from a course or fully engaged in a course. Though there were only 16 male participants in this study, the distribution of engagement in male students aligns with Hu and Kuh's (2002) findings. Male students were more likely to be in the low level of engagement or the high level of engagement with far fewer students in a middle level of engagement. This finding bears further exploration. If true, then male student's patterns of engagement could significantly

impact their learning experiences with male students who are highly engaged having better outcomes than those who choose to disengage. Further research should consider these patterns of engagement and what factors influence whether a male student engages in a course at a high level or chooses a lower level of engagement. Instructor connections, instructional strategies such as collaborative learning, feedback mechanisms, and community-building activities could be factors that influence the choice to engage or not, perhaps mitigated the learner's gender (Berry, 2017; Cho & Cho, 2014; Jaggars & Xu, 2013; Martin & Bolliger, 2018; Richardson et al., 2016). Instructors should consider how to purposefully connect with male students early, pushing them toward a higher level of engagement.

Community of Inquiry and Engagement

Another important finding within these results is how different factors in the Community of Inquiry framework (CoI) correlated with learner engagement. Research by Young and Bruce (2011) and Conrad (2005) indicated that instructors have a significant impact on engagement. In this study, teaching presence was not any more significant in learner engagement than any other element of the CoI framework. Learner engagement had a moderate correlation with each element of the CoI framework with cognitive presence having the highest correlation, $r(68)=0.67$, $p<0.01$, and teaching presence having the lowest correlation, $r(69)=0.45$, $p<0.01$. This finding would indicate that all elements of the Community of Inquiry framework have an important role in learner engagement. In order to increase engagement, an instructor or course designer cannot focus just on social presence or just on cognitive presence. It is the combination of all three factors that encourages engagement. This aligns with Garrison and Arbaugh's

(2007) assertion that the Community of Inquiry framework should be studied and implemented comprehensively when possible rather than trying to isolate any individual factor of the model. It is the combination of factors that best encourages learner engagement.

Influence of Personal Community on Engagement

In this study's multiple regression model, personal community accounted for about five percent of the variance in learner engagement with course community accounting for the other 35%. While five percent is a modest result, it does provide support for the assertion that a student's support outside the classroom will directly impact their ability to engage inside the classroom. This finding lends support for Borup et al.'s (2020) Academic Communities of Engagement model, which proposed that to fully understand engagement, researchers and practitioners must consider the impact of personal community on engagement in addition to course community. It also aligns with researcher's previous findings indicating that personal community and achievement are correlated (Hernandez et al., 2016; Li et al., 2018; Roksa & Kinsley, 2019). Findings by Roksa and Kinsley (2019) are particularly pertinent as they indicated that family emotional support aligns with persistence in online courses. That connection between learner engagement, family support, and persistence should be explored further, especially exploring how persistence and engagement are connected and how each is mitigated by personal community.

It is also important to note that findings around personal community in this study may have been impacted by the 2020 Covid-19 outbreak and subsequent quarantines, which were ongoing during this study. The importance of personal community may be

more or less significant in its impact on learner engagement while in a pandemic. It could be that, during a pandemic, students relied more heavily on their personal community to find engagement than in other times. It could also be that, during a pandemic, students were more isolated from their personal communities than normal, adversely affecting their engagement.

Influence of Course Community on Engagement

The multiple regression model in this study indicated that course community, as measured by the Community of Inquiry instrument, can explain 35% of the variation in learner engagement in an online learning experience (Arbaugh et al., 2008). This finding supports the validity of the Community of Inquiry framework as an important predictor of learner engagement (Garrison et al., 2000). Borup et al. (2020) called out the Community of Inquiry framework as being insufficient to explain variations in learner engagement. They indicated that researchers "need better theoretical frameworks that explain the role and interaction of important supplemental relationships and personal communities (e.g., families and friends) that support students' engagement in online and blended learning" (Borup et al., 2020, p. 2). The results of this study indicate that, contrary to Borup et al.'s assertion, both the Academic Communities of Engagement model and the Community of Inquiry framework have important contributions to make in the field of engagement (Borup et al, 2020; Garrison et al., 2000). Both models have significant explanatory power in understanding variations in learner engagement.

Course Community, Personal Community, and their Combined Influence on Engagement

In the multiple regression model in this study, the combination of course community and personal community was able to account for 40.9% of the variance in

learner engagement. The fact that both variables were statistically significant provides support for Borup et al.'s (2020) assertion in the Academic Communities of Engagement framework that both personal community and course community influence learner engagement. To focus on just one element or the other would be insufficient. Instructors, course designers, and university support staff will need to focus on developing a learner's sense of course community and personal community in order to increase their engagement in an online course. Rather than a singular focus on any one factor (course community, personal community, or any single element of the CoI framework), the findings of this study indicate that it is the combination of these factors that improves engagement.

While the stated purpose of this study was to help simplify engagement frameworks and identify what elements can best explain variations in engagement, the end result did not do that. It indicated that practitioners who want to focus on increasing learner engagement would be wise to pay attention to both personal community and course community. In this instance, Borup et al.'s (2020) Academic Community of Engagement framework provides a good way to envision how the factors can interact to promote engagement. The study also did not account for an additional 60% of the variance in learner engagement. This indicates that there is more research to do to fully understand online learner engagement and create a model that can reliably explain variations in that engagement.

Limitations

There are a few limitations that should be considered in evaluating the results of this study. First, the study was completed at an art and design school. Thus, all of the

participants were practicing artists. Artists may have particular tendencies that would impact the results of the study and make it not easily generalized to other populations. Second, the study had a large female population. There may be gender differences in learner engagement that could impact the results of this study. While the analysis of gender differences in this study was not statistically significant, there were patterns in gender and engagement that warrant further exploration. Third, the study used a convenience sample that was self-selecting with a relatively low response rate of 16%. Students who chose to participate may display different characteristics related to learner engagement than other students who chose not to participate in the study. Fourth, this study took place during the Covid-19 pandemic. The results could have been impacted by student's isolation and quarantines while they were taking their online course. In that case, course community and personal community in this study could be more important or less important than they would be in a regular course term. Finally, this study took place in courses with 8-week terms. In an instructional situation with longer course terms, it is possible that community develops at a deeper level and, thus, might have a greater impact on learner engagement. Previous research indicated that interactions across time significantly strengthens relationships (Conrad, 2005; Nicholson & Bond, 2003). In this case, courses were time-limited and that could have impacted the results.

Recommendations for Future Research

The results of this study indicate several areas of exploration for future research initiatives. One is that more research is needed into elements of personal community and how they interact with learner engagement. Since personal community demonstrates potential as a predictor of learner engagement, future studies should look at what specific

elements of a personal community are most impactful for learners. For instance, do friends influence a learner more than family and how does the age of the learner influence the impact of personal community on engagement? An additional research area to consider is whether there are particular types of supportive relationships that have a larger impact on learner engagement. For instance, if both members of a personal community relationship are goal-oriented, does that have a larger impact on learner engagement than if they are not? This would build off the findings in this study that personal community impacts engagement and the findings of Hernandez et al. (2016) indicating that relationships that are goal-oriented are more impactful on engagement.

Another area for additional research would be in using a different measure of course community, focusing on a learner's emotional perception of community rather than the elements of the Community of Inquiry framework. In this study, the Community of Inquiry instrument was used as a measure of course community in order to take into account the influence of teaching presence, social presence, and cognitive presence within the sense of community (Arbaugh et al., 2008), accounting for the individual and collective impact on learner engagement. Though the individual factors of teaching presence, social presence, and cognitive presence were not included in the multiple regression analysis in this study due to multicollinearity, the subfactors of the CoI still provided an important area of analysis in considering how course community impacts learner engagement. The CoI instrument focuses on the learner's perception of a course experience, including both course quality and their connection to others. However, repeating the study with an instrument like Rovai's Classroom Community scale (2002b) would provide a different understanding of community, focused instead on a learner's

emotional perception of community within their learning experience. While the Community of Inquiry Instrument focuses on measuring elements of the Community of Inquiry framework, Rovai's scale focuses on emotional perceptions of the course community, including connectedness and learning. That different understanding of course community could have more or less of an impact on learner engagement. One of the limitations of using Rovai's Classroom Community scale (2002b) in this context is that the scale is not specifically designed for online learning, though it has been used that way (Trespalacios & Perkins, 2016). Researchers would have to consider whether Rovai's measure can adequately capture a sense of course community within an online learning experience.

An additional area of future research would be to focus on elements of the Community of Inquiry framework and their impact on learner engagement. While this study demonstrated a relatively equal impact on learner engagement from social presence, teaching presence, and cognitive presence, that finding should be explored with a larger population. The impact of each CoI element was relatively equal at an art school, but their relative importance could be different in a broader population.

Finally, as mentioned above, this study accounted for 40% of the variance in learner engagement. Additional research should seek to explore the other 60% and what additional factors within an online learning experience impact engagement.

Implications of the Results

The results of this study have several key implications with importance for instructors, instructional designers, and university support staff.

For instructors, this study indicates the importance of both course community and personal community within online learning. It is worth an instructor's time to find ways to build a sense of community within a course. The result should be greater learner engagement. While discussion boards are a widely-used method of facilitating student-to-student connections in a course, a discussion alone cannot adequately create classroom community (Pawan, Paulus, Yalcin, & Chang, 2003). Instructors should implement a broad range of strategies to facilitate course community. Strategies like synchronous sessions, varying modes of communication, video feedback, and collaborative assignments have potential in increasing that sense of community (Berry, 2017; Bloomberg & Grantham, 2018; Borup, West, & Thomas, 2015; Trespalacios & Perkins, 2016).

Because personal community helps to explain variations in learner engagement, instructors should also consider finding ways to identify students who lack support outside the classroom. Understanding that a student does not have a sense of personal community could be a powerful way to identify learners who are at-risk for low engagement in a class. In this case, the modified Medical Outcomes Social Support Survey (Sherbourne & Stewart, 1991), found in Appendix C and used in this study, could be used as a screener for a student's sense of personal community at the beginning of a course or when enrolling in a university. Students with a low perception of personal community may require additional interventions to find engagement and academic success. Interventions such as campus counseling and advising services demonstrate promise in supporting learner engagement and achievement (Kot, 2014; Lee et al., 2009). Instructors should combine frequent, timely student-to-instructor communications as well

as referrals to these services as a way to encourage personal community in learners and thus encourage learner engagement (Jaggars & Xu, 2013; Martin & Bolliger, 2018; Martin, Wang, & Sadaf, 2018; Richardson et al., 2016).

It is also worthwhile for instructors to find ways to help students build a greater sense of personal community outside the class. That could be done by encouraging learners to make time for their friends and family, even within a semester. Those connections outside of the course also have positive benefits for the learner's engagement.

For instructional designers, this study indicated the importance of course designs that emphasize building community. Discussions, group projects, and back-channel communications all demonstrate potential in building a sense of course community through course design (O'Shea, Stone, & Delahunty, 2015; Price & Tovar, 2014; Zhu, 2006; Zydney, deNoyelles, & Seo, 2012). These design-focused interventions built into a course before it runs are distinct from community-building strategies that can be implemented by an instructor while a course is running. For instance, an instructional designer, in collaboration with a content expert, could build a group project into a course design in order to build community in a class, while an instructor can focus on providing frequent feedback in different modalities to increase community (Aragon, 2003; Dringus, Snyder, & Terrell, 2010; Martin, Wang, & Sadaf, 2018). Both strategies demonstrate potential in building learner engagement, and both should be utilized to their fullest extent. Designers should prioritize these instructional strategies as a way to increase learner engagement.

Designers should also consider incorporating assignments that have the potential to build a student's personal community. For instance, volunteering in the community as an assignment has potential as a learning activity and as a way to build personal community. Brail (2016) found that students who participated in this sort of service learning earned higher course grades. The current study would indicate that those who participate in service learning may also have higher levels of personal community and thus stronger engagement. These types of instructional strategies, while non-traditional, could build a student's sense of personal community and thus their engagement.

For university support staff, especially student affairs, this study indicates the importance of community building activities on campus. Mixers, social events, student clubs, student mentors, and any other event that helps students make friends could increase learner engagement. The findings of this study support these efforts as not just a frivolous addition to the academic experience but as an integral part of encouraging a learning environment. Kot (2014) found that students who engaged with advising during their first year were more likely to persist in their learning. Lee et al. (2009) also found that students who engaged with on-campus counseling services had stronger academic performance. The current study indicates that these types of support services could lead to increased personal community and thus increased learner engagement.

University support staff should also be aware that students who lack a personal community are at-risk for lower engagement in their courses. Support staff can work to identify these at-risk students and implement interventions for them, including counseling, advising, and proactive connections with other students (Kot, 2014; Lee et al., 2009).

The results of this study indicate the critical importance of community in the learning process. Both personal community and course community are significant predictors of learner engagement and, thus, should be considered key elements in the learning process. The results indicate that a focus on community-building is a core instructional strategy in encouraging learner engagement.

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APPENDIX A

Questions from the Online Student Engagement Scale (Dixson, 2015) Learner

Engagement: Online Student Engagement Scale--dependent variable

Within that course, how well do the following behaviors, thoughts, and feelings describe you? Please answer using the following scale:

1. not at all characteristic of me
2. not really characteristic of me
3. moderately characteristic of me
4. characteristic of me
5. very characteristic of me

1. Making sure to study on a regular basis
2. Putting forth effort
3. Staying up on the readings
4. Looking over class notes between getting online to make sure I understand the material
5. Being organized
6. Taking good notes over readings, PowerPoints, or video lectures
7. Listening/reading carefully
8. Finding ways to make the course material relevant to my life
9. Applying course material to my life
10. Finding ways to make the course interesting to me
11. Really desiring to learn the material
12. Having fun in online chats, discussions or via email with the instructor or other students
13. Participating actively in small-group discussion forums
14. Helping fellow students
15. Getting a good grade
16. Doing well on the tests/quizzes
17. Engaging in conversations online (chat, discussions, email)
18. Posting in the discussion forum regularly
19. Getting to know other students in the class

APPENDIX B

Questions from the Community of Inquiry Instrument (Arbaugh et al., 2008)

Course Community Support: Community of Inquiry Instrument--independent variable

Please answer using the following scale:

1. Strongly disagree
2. Disagree
3. Neither agree or disagree
4. Agree
5. Strongly agree

Teaching Presence

1. The instructor clearly communicated important course topics.
2. The instructor clearly communicated important course goals.
3. The instructor provided clear instructions on how to participate in course learning activities.
4. The instructor clearly communicated important due dates/time frames for learning activities.
5. The instructor was helpful in identifying areas of agreement and disagreement on course topics that helped me to learn.
6. The instructor was helpful in guiding the class towards understanding course topics in a way that helped me clarify my thinking.
7. The instructor helped to keep course participants engaged and participating in productive dialogue.
8. The instructor helped keep the course participants on task in a way that helped me to learn.
9. The instructor encouraged course participants to explore new concepts in this course.
10. Instructor actions reinforced the development of a sense of community among course participants.
11. The instructor helped to focus discussion on relevant issues in a way that helped me to learn.
12. The instructor provided feedback that helped me understand my strengths and weaknesses relative to the course's goals and objectives.
13. The instructor provided feedback in a timely fashion.

Social presence

14. Getting to know other course participants gave me a sense of belonging in the course.
15. I was able to form distinct impressions of some course participants
16. Online or web-based communication is an excellent medium for social interaction.
17. I felt comfortable conversing through the online medium.
18. I felt comfortable participating in the course discussions.
19. I felt comfortable interacting with other course participants.
20. I felt comfortable disagreeing with other course participants while still maintaining a sense of trust.
21. I felt that my point of view was acknowledged by other course participants.
22. Online discussions help me to develop a sense of collaboration.

Cognitive presence

23. Problems posed increased my interest in course issues.
24. Course activities piqued my curiosity.
25. I felt motivated to explore content related questions.
26. I utilized a variety of information sources to explore problems posed in this course.
27. Brainstorming and finding relevant information helped me resolve content related questions.
28. Online discussions were valuable in helping me appreciate different perspectives.
29. Combining new information helped me answer questions raised in course activities.
30. Learning activities helped me construct explanations/solutions.
31. Reflection on course content and discussions helped me understand fundamental concepts in this class.
32. I can describe ways to test and apply the knowledge created in this course.
33. I have developed solutions to course problems that can be applied in practice.
34. I can apply the knowledge created in this course to my work or other non-class related activities.

APPENDIX C

Questions from the Medical Outcomes Social Support Survey (Sherbourne &

Stewart, 1991) Modified from Sherbourne and Stewart (1991)

Please answer using the following scale:
1. *None of the time*
2. *A little of the time*
3. *Some of the time*
4. *Most of the time*
5. *All of the time*

Omitted Items: Items 1-4 omitted because they focus on physical health exclusively
If you needed it, how often is someone available.
Item 1 to help you if you were confined to bed?
Item 2 to take you to the doctor if you need it?
Item 3 to prepare your meals if you are unable to do it yourself?
Item 4 to help with daily chores if you were sick?

Included Items
If you needed it, how often is someone available.
Item 5 to have a good time with?
Item 6 to turn to for suggestions about how to deal with a personal problem?
Item 7 who understands your problems?
Item 8 to love and make you feel wanted?
Item 9 you can count on to listen to you when you need to talk?
Item 10 to give you good advice about a crisis?
Item 11 who shows you love and affection?
Item 12 to give you information to help you understand a situation?
Item 13 to confide in or talk to about yourself or your problems?
Item 14 who hugs you?
Item 15 to get together with for relaxation?
Item 16 whose advice you really want?
Item 17 to do things with to help you get your mind off things?
Item 18 to share your most private worries and fears with?
Item 19 to do something enjoyable with?