

TLIC PAPER

What Drives Student Engagement? A Community Engagement Framework for Online Education

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ABSTRACT

Cultivating a sense of community can be difficult in online education. We build on the work of Redmond et al. [9] and their proposal of an Online Engagement Framework for Higher Education to investigate online course designs and pedagogies that are likely to foster increased perceptions of social capital, confidence, and resilience in the learning process among students. Our research builds on the student-engagement themes proposed by Redmond et al.: cognitive, behavioral, collaborative, and emotional engagement; these forms of engagement can be facilitated by online course design and pedagogy. These types of engagement, in turn, help foster students' social engagement, which, as a manifestation of social capital, is linked to better learning outcomes, increased confidence, and resilience in the online learning process. Following a comprehensive literature review that draws on concepts from the community of inquiry and community of practice frameworks, we propose a new model—a Community Engagement Framework for Online Education. With this model, we aim to identify the elements of online course design and pedagogy that correlate with increased student social engagement and, therefore, increased students' social capital. Our model is more theoretically complex and analytically sound than previous proposals, rendering applicability through testing with real-world data. Future studies can use this model to survey online students and cross-validate it using path analysis and structural equation modeling. Future research can also survey online instructors to identify practical uses of our proposed engagement constructs.

KEYWORDS

Student engagement, online education, social capital, cognitive presence, teaching presence, social presence

1 INTRODUCTION

Multiple factors can affect the experiences of online students. These factors include but are not limited to minimal or no sense of community, lack of motivation, the feeling of isolation, confusing course design, and support systems available

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at institutions, individual academic programs, and instructor levels [1], [2], [3]. Suppose that we wish to enhance students' learning in an online environment. Instructors must create an efficient and influential learning community where students feel connected with their peers and the faculty/teacher to effectively engage in well-designed collaborative learning [4], [5], [6]. Scholars stress that a strong feeling of community among students is crucial to increasing academic benefits by encouraging cooperation and commitment among students and achieving students' goals [7], [8]. This suggests that students who collaborate actively in the group space, as part of the learning approach, can better explore concepts in depth, have enhanced learning experience, increased confidence, participation, satisfaction, and a greater sense of achievement.

However, it has been noted that cultivating a sense of community can be difficult in online instruction. Lack of collaboration, communication, motivation, in-person participation, and social presence in the virtual medium of learning leads to increased frustration, disengagement, and lower levels of learning among many students. Additionally, some instructors may neglect the community aspect of their courses since they do not see and interact with learners regularly [7], [8]. These authors believe that a sense of community, built through communication and collaboration and "is connected to student engagement," is an essential element of online students' success. When students have a sense of community, they understand the purpose of learning, so they can contribute by connecting with other students and feel a sense of ownership of *their learning* experience. Our study focuses on this, as we aim to continue the conversation by investigating the elements of online course design and pedagogical methods that are most likely to foster increased student social capital, confidence, and resilience in the online learning process.

Our research builds on Redmond et al.'s proposal of an Online Engagement Framework for Higher Education and their four student-engagement themes: cognitive, behavioral, collaborative, and emotional engagement; we see these as varying forms of *capital* that can be facilitated by online course design and pedagogical methods [9]. We argue that this capital, in turn, helps foster students' *social capital*, which we see as the attribute of an individual, not a group, much like Astone and her colleagues (1999) when they describe social capital as an extension of social exchange theory and argue for a focus on the types of social exchange that individuals are motivated to pursue to develop social capital for their benefit [10]. Existing research links students' social capital to higher confidence levels, and students with high *social capital* can more easily recover from setbacks, displaying greater resilience. Furthermore, higher student confidence levels correlate with learning outcomes, as the "learners' performance" in online settings is facilitated by skills like Self-Regulated Learning, which we will discuss at length [11]. Moreover, the "development of social capital ... is critical for [students'] resilience" [12, p. 5]; additionally, Beals et al. note that *social capital* helps "foster confidence ... and resilience" through increased "peer and faculty support" [13, p. 2]. As such, it is worth exploring how these relationships correlate in online learning settings to achieve the best academic outcomes for online learners.

Following a meta-analysis of contemporary literature on distance education, we utilize concepts from the community of inquiry and the community of practice frameworks to identify meaningful ways to operationalize these constructs. In doing so, we propose a new theoretical model—the Community Engagement Framework for Online Learners. This novel model aims to identify elements of online course designs and pedagogy that are most likely to foster students' cognitive, behavioral,

collaborative, and emotional capital—our latent-independent variables, which should, in turn, influence students’ social capital—our latent-dependent variable.

Our work contributes to the literature on distance learning by suggesting a model that is more theoretically complex and analytically sound than previous proposals related to online student engagement and which renders applicability through testing with real-world data. By looking at students’ cognitive, behavioral, collaborative, and emotional capital as latent-independent variables, which influence students’ social capital—our latent-dependent variable—we can advantageously survey online students for cross-validation using path analysis and structural equation modeling. As such, this model is of value to faculty, administrators, and instructional designers teaching or facilitating academic processes online or in a hybrid format during the pandemic, post-vaccine stage, and in the post-pandemic world. Future studies can also survey online instructors to identify practical uses of our proposed engagement variables in their course designs and pedagogies, as those are likely to correlate with increased student engagement, confidence, and resilience in the learning process.

2 THEORIZING ENGAGEMENT IN ONLINE LEARNERS

In the “Online Engagement Framework for Higher Education,” Redmond et al. call for follow-up research to expand upon the framework they laid out [9]. The constructs they present focus on various forms of *engagement*, including cognitive, behavioral, collaborative, and emotional engagement [4]; however, we view these terms as varying forms of *capital* for our proposal. Additionally, we are building upon the insights gleaned from prior research into “The Power of Synchronous Sessions in Distance Education: Building Community and Resilience in the Age of COVID-19” by Toma & Mhamed [12] and “Online Teaching in a Time of Crisis: Social Capital and Community Building Tools” by Toma & Berge [14]. Ultimately, our focus is on *social capital*, which we see as a latent-dependent variable, with the other four engagement themes serving as latent-independent variables that influence students’ perceptions of social capital.

Shea, Vickers & Hayes’ research provides the foundational “Community of Inquiry” (CoI) theoretical framework, originally “developed by Garrison (2000) ... based on a model of critical thinking and practical inquiry” [15, p. 128]. Moreover, the identified constructs were frequently examined in the existing literature on the CoI framework [11], [16], [17]. Additional literature examining the CoI framework comes from [15], other journal articles by Shea et al. [18], [19], and a more recent “conceptual paper” that examines the CoI framework from a “distributed perspective” by Piera Biccard from 2021 [20].

We also look to Wenger’s “Community of Practice” (CoP) theoretical framework by examining a “critical review” from 2014 of the CoP framework in “online and blended learning research” between 2000–2014 by Smith, Hayes, & Shea [21]. It is worth noting that *emotional engagement* is an indicator in the Redmond et al. [9] framework; however, there is little to no mention of this in the other literature on the CoI framework. As such, we turn to an article from 2016 by Cottingham titled “Theorizing emotional capital” [22]. We aim to build upon these works and create a *community engagement framework* that can potentially increase student learning outcomes, which we theorize will correlate with increased student perceptions of social capital, confidence, and resilience in the learning process.

2.1 Cognitive capital

Reviewing the literature on the CoI framework presented many examples of what we should look for when identifying *cognitive capital*. Redmond et al. use the term “cognitive engagement” [9]; meanwhile, Shea & Bidjerano, as well as Biccard, use terminology like “cognitive presence” and “epistemic engagement” [14], [16], [17], [18], [19], [20] in describing the construct we are examining as *cognitive capital*. The literature provides indicators of what to look for to measure *cognitive capital* through survey research methods. Redmond et al. plainly state that cognitive engagement is the “active” learning process [9]. Shea & Bidjerano provide the following definition for cognitive presence: the ability of learners “to construct and confirm meaning through sustained reflection and discourse” [16]. It has been suggested that the community of inquiry framework intends to utilize a strong foundation built by teaching and social presence to stimulate cognitive presence in course spaces. It is worth noting that cognitive presence is considered “the ostensible goal” for any community of learners and must aim to achieve in higher education [23], [24].

“Cognitive presence includes the practical inquiry model (PIM), which moves students’ thinking/discussion from a triggered event that makes them aware of some new idea, concept, or problem to the exploration of the new information, integration of ideas, and finally to resolution of the problem” [7]. Fiock states that instructors can improve learners’ cognitive presence through the four phases of the PIM, namely the triggering event, exploration, integration, and resolution [25]. Online instructors can enhance their student’s critical thinking and learning skills by allowing students to enquire about learning activities, brainstorm, discover and openly discuss problems, and allowing students to reflect on the learning process [24]. Some of the strategies that can be incorporated to enhance the cognitive presence in online teaching include techniques like allowing learners to self-select topics that they are curious about to learn and explore, involving them in critical analyzing discussions, establishing course rules to enhance a positive environment, and encouraging students to share resources related to course topics [25], [26]. In the future, students should be encouraged to take ownership of their learning and be allowed to participate in discussions or other activities as engaged co-hosts. They should lead/co-lead major assignments or discussions, post questions, and facilitate further discussion. Furthermore, they should be invited to summarize points of importance raised during the asynchronous discussions and complete summary assignments [27].

Redmond et al. identified six indicators for cognitive engagement: “thinking critically, activating metacognition, integrating ideas, justifying decisions, developing deep discipline understandings, [and] distributing expertise” [9, p. 190]. At this stage, we have identified four traits as indicators to measure students’ self-reported level of *cognitive capital*: Activating Metacognition, Epistemic Engagement, Strategic Learning, and Confidence in Online Discussions. We used Redmond et al.’s [9] indicators to define *cognitive capital* by coupling them with principles, such as those that Shea outlines when describing “cognitive presence” [16].

Activating Metacognition is part of cognitive engagement and “the active process of learning” [9], making this an inherent component of *cognitive capital*. Tanner notes that a concrete definition for metacognition remains elusive because the term “is used in different disciplines in different ways” [28, p. 113]. However, the most clear-cut overarching practical definition for *active metacognition* is “emphasis on planning, monitoring and evaluating one’s ... learning processes” [28, p. 114]. In this light, metacognition is akin to the reflective learning process, which can

be seen as an *identity construction* feature in community online learning settings. Students with activated metacognition will go through a process of *transformative learning* “because learning transforms who we are and what we can do, [making this] an experience of identity” [21, p. 213].

Epistemic Engagement is identified within the CoP framework by “the modes of thinking and acting that ... help individuals learn how to participate meaningfully” [21, p. 224]. In contrast, in the CoI framework, epistemic engagement can be the reflective “processes of participatory practice” featuring course design elements to aid students in developing the “skills of a disciplinary discourse community” [16, p. 544]. As such, *Epistemic Engagement* can be considered part of the process identified by Redmond et al. of “developing deep discipline understandings” [9, p. 193]. As students engage with course content, especially when taking the further step to engage with supplemental reading materials provided by instructors, they show increased rates of cognitive capital through their increased epistemic engagement.

Strategic Learning indicates *cognitive capital* because it is highly correlated with the self-accountability often found in online learners; given this modality’s “self-directed” nature, students who develop *strategic learning* tend to be more successful [17, p. 1723]. The indicators from Redmond et al. that most closely fit within this category are integrating learned concepts or ideas and “distributing expertise” [9, p. 190]. Furthermore, Biccard expands on this when describing cognitive presence and the benefits of a “distributed design [for] research sharing,” allowing for “research finding [with] a distributive approach” [21, p. 7]. Similarly, Biccard describes one function of cognitive presence as the student’s ability to “select the appropriate content to meet the [desired] outcomes” [20, p. 6], fitting the mold of integrating learned concepts and distributing expertise developed by the student through their ability to learn while strategically engaging with course content.

Confidence in Online Discussions is an inherent feature commonly found in individuals with high cognitive presence. Shea & Bidjerano indicate this in their study, as students who strongly agreed with the statement “I felt comfortable participating in the course discussions” displayed “significantly higher levels of cognitive presence” than those who were neutral or disagreed with this statement as presented [16, p. 549]. Redmond et al. present “justifying decisions” as an indicator of cognitive engagement, noting that students displaying “deep cognitive engagement” will “justify or compare ideas and solutions” by integrating concepts from “multiple sources, providing new information,” supporting their arguments in online discussions [9, p. 192]. These students bring novel ideas to the discussion space because they are confident in their ability to justify their position with supporting evidence, making this a clear indicator of *cognitive capital*.

2.2 Behavioral capital

Redmond et al. use the term “behavioral engagement,” which they describe as “doing the work and following the rules” [9, p. 193]. Further noting that this principle is referred to in various terms, like “learning presence” or “self-regulating behaviors,” both of which are frequently found in the literature from Shea & Bidjerano [11], [17], [19]. Similarly, Biccard refers to learning presence as an extension of the CoI framework relating to the “distribution of teaching presence” [20, p. 6], which makes sense as many qualities we associate with *behavioral capital* relate to students engaging with course content provided by instructors. The indicators of *behavioral capital* we have identified fall under what Shea and Bidjerano call Self-Regulated

Learning and Self-Efficacy, coupled with Redmond et al.'s indicators of *behavioral engagement* [9].

Self-Regulated Learning (SRL) falls under the behavioral engagement indicators identified by Redmond et al., with concepts like “developing academic skills,” “developing agency,” and one’s ability to uphold “online learning norms” [9, p. 193]. Shea & Bidjerano hold that SRL is given particular importance in online learning environments and “personally directed forms of learning,” especially when “seeking information from electronic sources”; moreover, they hold that SRL is potentially part of the “larger construct” of *learning presence* [17, p. 1723]. Furthermore, they postulate that *self-efficacy* also falls under this veil, most closely resembling the development of agency described by Redmond et al., as learners with “adaptive self-efficacy beliefs” are more likely to see failure as providing them an opportunity to put in the “effort to achieve better” [17, p. 1723]. Shea & Bidjerano explain that learners with high levels of SRL will set “proximal attainable goals” based on their perceptions of their abilities concerning the “complexity of the learning task” and will create a learning environment that works best for them; furthermore, they will “constantly monitor” their progress and evaluate how well their goals are being met [11, p. 317].

Furthermore, a quintessential component of SRL is the ability to identify opportunities and challenges and engage with appropriate institutional resources associated with these opportunities or challenges. For example, suppose a student is struggling with a particular course but they have a high level of *self-efficacy*. In that case, they will be more likely to admit they are having challenges and seek appropriate academic support opportunities offered by the institution. Moreover, Fensie notes that mere “participation in online learning” does not improve one’s SRL skills; however, “these skills can be taught,” as improved SRL skills are associated with better learning outcomes, particularly for adults in online learning [29, p. 142]. Additionally, Fensie notes that executive functioning skills are fostered in traditional classroom learning settings but are less frequent in “asynchronous online learning” [29, p. 142]. From a pedagogical standpoint, it is thus worth exploring how synchronous learning sessions in online learning can influence executive functioning skills.

Peer support can be considered for both *behavioral* and *collaborative capital*. Nevertheless, under the Redmond et al. model, students’ willingness to support and encourage their peers indicates *behavioral engagement* [9, p. 193]. Furthermore, they note that students with high *behavioral engagement* display “high effort and persistence” through participation, maintaining “positive attitudes” with high levels of SRL [9, p. 193]. Similarly, Shea & Bidjerano note that Self-Regulated Learners (SRLs) often hold “more positive perceptions of online courses” [11, p. 318]; furthermore, “positive self-efficacy beliefs” are associated with the ability to recognize challenges and even “failure as an occasion to be informed” [17, p. 1723]. Shea et al. note that *social presence*, which relates to *social capital*, is found in SRL through “online discourse that promotes positive affect, interaction, and cohesion” [19, p. 90]. Ultimately, one of the most critical indicators of *behavioral capital* in assessing *social capital* is the students’ ability to build relationships with their fellow students or faculty members; likewise, relationship building is also crucial for our next indicator, *collaborative capital*.

2.3 Collaborative capital

Redmond et al. describe *collaborative engagement* as the “development of different relationships and networks that support learning”; furthermore, they identify

indicators of collaborative engagement as follows: “learning with peers, relating to faculty members, connecting to institutional opportunities, and developing professional networks” [9, p. 194]. Similar themes arise in Smith, Hayes & Shea’s review of Wenger’s CoP, where they identify indicators of what we have defined as *collaborative capital*. For instance, “joint enterprise” occurs when a community develops a “collective understanding” concerning the purpose of said community, or “mutual engagement,” which is inherently collaborative as this relies upon interacting with peers to establish “norms, expectations, and relationships”; additionally, they identify the development of a “shared repertoire” through “using the communal resources” afforded to them by the course instructor, or institution [21, p. 212]. *Epistemic Engagement* goes beyond merely indicating cognitive capital, as the “deep discipline understandings” [9, p. 193] can also be accomplished through interaction among students with peers and faculty. As such, interaction leads to “co-construction of knowledge,” which affords learners with the opportunity to “build upon each others contributions, defend and argue positions, challenge and criticize each other ... and ask and answer each others questions” [11, p. 324]. Ultimately, the social aspect of collaborative learning is witnessed as an element of Shea & Bidjerano’s concept of *learning presence*; furthermore, collaboration with peers should correlate with increased *cognitive* and *social capital* [9, 11, 17, 19, 20].

Indicators within the realm of *collaborative capital* beyond those mentioned by Redmond et al. [9] for *collaborative engagement* include other elements of the CoI framework conception of *learning presence* (see Table 1). Across the literature, the concept of *learning presence* arises in correlation to *teaching presence*. Both are associated with learners’ self-efficacy, which is “stronger for students in blended learning environments” [17, p. 1727]. Indeed, the literature makes it clear that students have higher success rates when the instructor is actively involved in the learning process. Furthermore, prior research by Toma & Mhamed found that the addition of “regular synchronous sessions to otherwise fully asynchronous courses” seemingly results in better learning outcomes for online learners, as this creates an opportunity to “empower students and provide them with an effective way to build community and social capital” [12, p. 11]. As such, this indicates that the “blended classroom” described by Shea & Bidjerano over a decade ago can be achieved through a fully online learning setting due to advances in modern technology and online meeting spaces by implementing synchronous learning sessions where students can collaborate in otherwise asynchronous learning environments.

2.4 Emotional capital

Redmond et al. note that *emotional engagement* is the “emotional reaction to learning,” associated with “feelings and attitudes towards learning,” further noting that *emotional engagement* is activated by “both negative and positive emotions” [9, p. 195]. Moreover, Redmond et al. state that *emotional engagement* is observable through students’ “attitude, enthusiasm, interest, anxiety or enjoyment in the learning process,” additionally noting the following indicators for *emotional engagement*: “managing expectations, articulating assumptions, recognizing motivations, [and] committing to learning” [9, p. 195]. Furthermore, these indicators of *emotional engagement* directly correlate with the principles of *emotional capital*, which Cottingham calls “a form of cultural capital” utilizing individuals’ “emotion-specific ... resources that [they] activate and embody in distinct fields”

[22, p. 451]. Under our framework, principles of *emotional capital* are observed in the distinct field of online learning. Additionally, our indicators for measuring *emotional capital* include peer support systems, academic self-esteem, coping skills or adaption techniques to manage stressors, and perceptions of inclusion or exclusion within the college community.

Cottingham views *emotional capital* through a “framework of emotion-as-practice” by combining the concepts of “social practice with emotional management theory”; under this framework, *emotional capital* and *social capital* highly correlate [22, p. 453]. When defining *emotional capital*, Cottingham points to the “capacity to reinvest emotional capital” [22, p. 453] in the most productive way, which can easily be applied to the concept of “committing to learning,” as presented by Redmond et al. [9, p. 195]. Furthermore, Cottingham notes that Nowotny is generally credited for coining the term *emotional capital*, which Nowotny defines as “knowledge, contacts, and relations as well as access to emotionally valued skills and assets” [22, pp. 453–454]. Subsequently, Cottingham notes how Froyum built upon the definition to view *emotional capital* as a form of capital that “treats emotions and their management as skills ... that translate into social opportunities,” which aligns with our conception of *emotional capital* and how a higher capacity should also raise an individual’s *social capital* [22, p. 454].

2.5 Social capital

Redmond et al. view social engagement in higher education as “students’ social investment in the collegiate experience,” including “participation in academic [and] non-academic activities,” happening beyond the “virtual classroom” [9, p. 191]. Furthermore, social engagement is a means of “developing relationships” and a “sense of belonging” and community in online learning; most importantly, social engagement helps students establish trust, and all of these factors serve as indicators of social capital [9, p. 191]. Moreover, Fensie holds that “learning is socially contextualized” as students subjectively interpret their lived experiences with “social relationships [and] cognitive opportunities as ... emotionally experienced by the learner” [29, p. 142]. This contextualization of online learning shows how *social engagement* relates to *cognitive*, *collaborative*, and *emotional capital*. Furthermore, *behavioral capital* is an inherent underlying feature as the executive function of SRL is needed for online learners to utilize their *cognitive*, *collaborative*, and *emotional capital* effectively. In other words, for students to be socially engaged at their college/university, the various forms of student capital must be undertaken and shown through their work.

Social presence is a common theme in the literature by Shea & Bidjerano [11], [16], [17], Shea, Hayes & Vickers [15], Shea et al. [18], [19], and Biccard [20]. Shea & Bidjerano use *social presence* in the CoI model, emphasizing the necessity for students in online learning to portray themselves as “real people” [16, p. 545]. Furthermore, they define *social presence* as “a supportive collegial online setting” [17, p. 1722], which inherently “promotes positive affect, interaction, and cohesion” in online learning and supports “productive participation” [11, p. 317]. This element supports cognitive presence and helps to facilitate critical thinking processes in a community of learners. Effective social presence in an online teaching environment allows learners to express themselves freely, build connections, and function as a cohesive group. This, in turn, leads to more meaningful and engaging learning experiences [23], [24]. Social presence helps create an environment of trust and open dialog that

supports interaction, collaboration, and a questioning predisposition. Students in a community of inquiry must feel free to express themselves openly without risk of retaliation or persecution [5], [7].

Moreover, Shea et al. found that when courses had higher levels of *teaching* and *social presence*, the result was “higher levels of student *cognitive presence*” [18, p. 15], which shows how different elements within the CoI framework work together. Shea et al. also note that within the CoI framework, *social presence* supports “a functional collaborative environment” that allows for discourse in online learning settings that are affected by elements of *behavioral capital*, like “positive affect, interaction, and cohesion” [19, p. 90]. Biccard notes that *social presence* may be “set in motion by the instructor,” which can be direct through *teaching presence* or “as part of the design of the course” [20, p. 2].

Indeed, Fensie notes that “motivation is an important consideration” when examining online learning environments, as “lower levels of motivation” highly correlate to “course performance” in online learners [29, p. 143]. Fensie identifies motivation as an “emotional factor” but further notes that self-efficacy serves as a “relevant component of motivational theories” [29, p. 143]; furthermore, the concept of motivation falls under our constructs of both *behavioral* and *emotional capital*, which influences student social capital. Nevertheless, motivation is one of many factors with overlapping variables for consideration; indeed, others include the accessibility and use of resources by students, which involves elements of *cognitive capital* through epistemic engagement, *behavioral capital* through SRL, and *emotional capital* through emotional management theory. Synchronous learning sessions in otherwise asynchronous courses should help foster *cognitive capital* as students display their confidence in discussions, *collaborative capital* as these sessions inherently promote working with the instructor and your peers, and *behavioral capital* through active participation in the learning process.

Students’ social engagement can be measured in several ways. For instance, students can be asked about their community-building experiences or sense of belonging to the institution. Furthermore, the previously identified latent-independent variables of *cognitive capital*, *behavioral capital*, *collaborative capital*, and *emotional capital* will most certainly play a role in this assessment. After all, one must collaborate with peers when building a community, which also takes cognitive investment, and the ability to follow through directly relates to the principles that define *behavioral capital*. Moreover, it can be expected that students who develop a sense of belonging to the institution will have higher levels of *emotional capital* invested in their studies and community-building practices.

We must learn how and if students develop meaningful relationships with faculty and their peers in online learning communities, making this a subject worth studying. Research has shown that emotions play a significant role in the online learning experience [30] and that the online learning context is robust enough to allow for caring relations to emerge at a level that goes *even deeper* than that experienced in face-to-face contexts [31]. As a result, several researchers have investigated design elements and pedagogical practices that can enhance emotional sensitivity and support the development of caring relations in online learning [31], [32], [33], [34]. If these relationships develop, it is likely from a sense of mutual trust established by building rapport with faculty and peers. Elements of course design, like synchronous learning sessions in otherwise asynchronous courses, fit this description and can provide the means for students to utilize their *collaborative capital* through open discourse by providing their lived experience through *emotional capital*. Nevertheless, *social engagement* is also shaped by the learners’ *cognitive capital*, through which

they devote themselves to learning, and the *behavioral capital* to commit to self-regulated learning.

3 OUR PROPOSAL

Thus far, we have expanded upon Redmond et al.'s [9] framework to operationalize the constructs of *cognitive*, *behavioral*, *collaborative*, and *emotional capital*. We also utilized the CoI and CoP frameworks to identify and further describe the *social engagement* construct that pertains to social capital in the online learning environment. In doing so, we showed how many of these indicator variables can measure these constructs, and indeed, the latent-independent variables themselves are likely to influence each other/covary.

Our work is summarized in Table 1 in the form of a checklist of features that can be assessed to gauge students' cognitive, behavioral, collaborative, emotional, and social engagement in online education. We take the approach that instructors *can* exercise some control over these features through online course design and pedagogy. We also theorize that cognitive, behavioral, collaborative, and emotional engagement are likely to influence students' social engagement, which, in turn, is linked to better learning outcomes, increased confidence in the learning process, and greater resilience.

Table 1. Features to be considered in online course design and pedagogy that facilitate different forms of student capital/engagement

Cognitive Capital	Behavioral Capital	Collaborative Capital	Emotional Capital	Social Engagement
<ul style="list-style-type: none"> - Activating metacognition - Ensuring epistemic engagement - Fostering strategic learning - Building confidence in online discussions 	<ul style="list-style-type: none"> - Facilitating Self-Regulated Learning (SRL) - Engaging with course resources - Identifying opportunities and challenges - Supporting and encouraging peers 	<ul style="list-style-type: none"> - Learning with peers - Interacting with peers to establish trust - Building rapport with course instructors - Engaging with institutional opportunities/resources - Developing professional networks 	<ul style="list-style-type: none"> - Managing expectations - Articulating assumptions - Recognizing motivations - Building commitment to learning - Developing peer support systems - Building academic self-esteem - Developing the ability to cope/adapt to stressors - Fostering a sense of inclusion within the college/university community 	<ul style="list-style-type: none"> - Building community - Creating a sense of belonging - Developing purposeful relationships with others - Establishing trust and rapport

Surveys of students in online courses can identify which elements of course design and pedagogical methods foster various types of student capital and correlate with higher social engagement on their part. Additionally, instructor surveys can also identify their practice in terms of each of the engagement indicators; more specifically, which of the online engagement elements and their associated indicators they considered in designing and delivering their online courses by asking them to give relevant examples of activities that demonstrate indicators of various engagement.

It is worth mentioning that some of these indicator variables are likely to affect multiple types of capital. For example, instructor engagement with students is critical for various reasons. Effective teaching presence can improve social and cognitive presence, leading to better educational outcomes [23], [24]. Redmond et al. noted that engagement initiated by college faculty or staff “is essential before

students can engage” [9, p. 184]. Instructors taking the initiative to engage with the student first can be likened to *teaching presence*, which the literature notes is correlated with student *cognitive presence*, *learning presence*, and *social presence* in the CoI framework [11], [15], [16], [17], [18], [19], [20]. Moreover, Shea and Bidjerano suggest that *teaching presence* impacts not only students’ *social presence* but also their *learning presence*; additionally, each form of presence helps foster overall *cognitive presence* [17, p. 1727]. Ultimately, they then suggest that SRL, which is indicative of *behavioral capital*, serves as an “important mediator” for evaluating the “links between teaching presence, social presence, and cognitive presence” [11, p. 318].

Furthermore, it is also worth noting that underlying factors might give the student an increased chance of scoring higher or lower on *social engagement* compared to the ordinary online learner. For example, participation in Esports programs is shown to help students “develop different social and behavioral skills” [35], and involvement in student clubs or team-based activities fosters a “sense of belonging” among students [36]. On the other hand, first-generation college students are predisposed to have less *social engagement* than their peers whose parents went to college and shared their lived experiences with their children, helping prepare them for higher education. Indeed, Moschetti and Hudley note that the “pre-college social networks” found in students whose parents attended college grant them “insights on how to seek help when needed and how to seek access to campus support are resources,” while first-generation students coming from working-class backgrounds are “less likely to access institutional” supports [37, p. 29]. However, socioeconomic status (SES) seems to break this mold, as Cottingham notes that the lived experience of the “working-class and poor” potentially fosters the generation of the *emotional capital* “needed to confront economic adversities” [22, p. 456]. Finally, employment status is worth noting because students who work full-time are less likely to have the time to stay engaged in the college community, resulting in a limited sense of belonging to the college.

4 DISCUSSION

We expanded upon Redmond et al.’s [9] Online Engagement Framework for Higher Education to build a novel model by focusing on student social engagement in online courses. This model can functionally measure students’ self-reported *cognitive*, *behavioral*, *collaborative*, and *emotional capital* levels in online classes and their perceptions of *social capital*. The latter can be evaluated through students’ self-reported sense of community and belonging to the institution, the development of purposeful relationships, and the establishment of a mutual feeling of trust and rapport with faculty and their peers. We postulate that, in turn, *social capital* fosters higher student confidence levels, and students with high levels of *social capital* can more easily recover from setbacks, displaying greater resilience. As such, it is worth exploring how these relationships correlate in online learning settings to achieve the best academic outcomes for online learners.

Future research can utilize this model to survey online students and cross-validate it with path analysis and structural equation modeling. Future studies can also survey online instructors to identify practical uses of our proposed engagement variables in their course designs and pedagogy, as those are likely to correlate with increased student social capital, confidence, and resilience in the learning process.

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