THE RELATIONSHIP BETWEEN A COMMUNITY OF INQUIRY AND TRANSFORMATIVE LEARNING

by

Patrick Robert Dempsey

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

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ABSTRACT

To prepare learners for success in the 21st century, institutes of higher education must provide students with meaningful learning opportunities, including participation in discourse and critical reflection. The community of inquiry framework describes the elements necessary to create collaborative, online learning environments, while transformative learning describes the content and outcomes of meaningful learning. The purpose of this quantitative, correlational study of 242 online, graduate MBA students from a business school in Maryland, was to measure the relationship between a community of inquiry and transformative learning in online, graduate business courses. Multiple linear regression analyses were used to analyze scores from the Community of Inquiry survey instrument and Reflection Questionnaire to determine if there was a significant relationship between a community of inquiry and transformative learning. Results indicated that a significant relationship existed between a community of inquiry and transformative learning. Specifically, cognitive presence within a community of inquiry was found to be significantly related to both the reflection and critical reflection constructs of transformative learning, and teaching presence was significantly related to the reflection subscale. Future studies can investigate strategies for fostering transformative learning within a community of inquiry in online courses, examine different aspects of transformative learning and their relation to a community of inquiry, and replicate the study in different populations and in different disciplines.

Keywords: community of inquiry, transformative learning, critical reflection, confirmation bias, online education

Copyright

Dedication

To my Lord and Savior, Jesus Christ.

Acknowledgements

Jennifer, I thank you for listening to me blather on about CoI and TLT, helping to clarify my thoughts and focus my ideas, your incessant motivation, and most essentially for believing in me. I thank you and love you with all my heart.

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CHAPTER ONE: INTRODUCTION

Overview

With the proliferation of information via modern communication technologies, the purpose of higher education has shifted from providing learners *access* to information, to developing skills in learners that enable them to *assess* the information they access (Garrison, 2015). Paradoxically, increased access to information can result in narrower, rather than wider perspectives—a "reinforcement of prior beliefs" (Park, Konana, Gu, Kumar, & Raghunathan, 2013, p. 1051), rather than the expansion or transformation of them. Learners have a natural tendency to ignore perspectives alternative to their own; preferring information that conforms to existing meaning-making schemes (Hernandez & Preston, 2013). Thus, rather than the augmentation of epistemic capacities, exposure to increasing amounts of information can lead to the development of maladaptive tendencies (Garrison, 2015). Through assessment, however, "distorted meaning perspectives" (Mezirow, 1991, Chapter 3, Section 6, para. 1) can be revised. In its ideal form, assessment entails not only a careful consideration of the value and validity of information, but consideration of the process by, and the premises on which that information is assessed (Cranton, 2016). This ability to engage in critical reflection of the products, processes, and premises of knowledge is "essential for reaching decisions on complex issues affecting individuals and society and, therefore, is widely espoused as a principal goal of adult and higher education" (Kreber, 2012, p. 323).

Background

For Dewey (1933), enabling students to engage in this type of reflectivity was the sole purpose of education. Dewey criticized the uncritical cognitive practice of formulating beliefs based on little or no evidence, and seeking only *ad hoc* support for those beliefs. This practice,

Dewey suggested, was however the practice of education proper. In turn, Dewey challenged the traditional conception of education where knowledge is simply transmitted to learners, and advocated instead a conception of education that saw knowledge being actively shaped by learners. The challenge for this new educational paradigm was, of course, overcoming the engrained process whereby information is uncritically assimilated into established epistemic structures due to learners' natural aversion to ideas that conflict with existing meaning-making schemes. To this challenge, Dewey offered two primary cures: reflective thought and discourse.

Reflective thought is the practice of deliberately investigating the basis of a belief and evaluating "its adequacy to support the belief examined" (Dewey, 1933, p. 1). There is, yet, a certain untenable circularity to this reflective process. After all, if a meaning-making scheme is built on the information allowed into it, and learners tend to assimilate only the sorts of information that confirm existing beliefs, then the reflective process ought to reinforce existing beliefs, not reform them, as reflective thought is supposed to do (Kasworm & Bowles, 2012). Thus, Dewey suggested that discourse was also necessary for engagement in the deepest and most meaningful levels of thought. Discourse is an expression of, and inquiry into, meaning. Through discourse, learners rehearse the information they have been exposed to and the ways in which that information confirms or contradicts prior beliefs. Through this practice of discourse, ideas are built up, torn down, and raised again. Vygotsky (1978) furthered this dialectical conception of education, offering that meaning is made primarily, if not essentially, in the context of social intercourse.

Through reflective thought in the context of discourse it is possible for learners to transcend and transform established meaning-making schemes. Yet, even under ideal conditions, the reforming of beliefs is unnatural. Wason (1960) studied learners' propensity to search for

evidence confirming existing beliefs along with their unwillingness to revise prior understandings when faced with contrary evidence. Wason presented learners with a triplet, a series of three numbers (2–4–6), and charged participants to hypothesize the rule by which the triplet was formed. Learners typically concluded the rule of *successive even numbers*, and in turn tested only those hypotheses that knowingly accorded with, and so confirmed, the rule. As a result, alternative explanations were neither explored nor even considered. This phenomenon, Wason equated with "magical thinking . . . [where] the failure of a spell or curse can always be ascribed to some inexactitude in its utterance, rather than to its intrinsic deficiency" (p. 136). Nickerson (1998) argued that this phenomenon of *confirmation bias*—a natural resistance to alternative perspectives—is utterly ubiquitous, and as such could be responsible for "a significant fraction of disputes, altercations, and misunderstandings that occur among individuals, groups, and nations" (p. 175).

At its foundation, *transformative learning* is about enabling learners to overcome confirmation bias, to experience "a deep shift in perspective, leading to more open, more permeable, and better-justified meaning perspectives" (Cranton, 2016, p. 3). Piaget's (1952) concept of adaptation explains the process involved in a perspectival shift. According to Piaget, learners organize information into schemes. When new information is encountered, learners have two options: *assimilate* the information into an existing scheme, or augment the existing scheme to *accommodate* the new information. Because it is the need of the learner to maintain a sense of cognitive equilibrium, assimilation has more immediate utility. Yet, it is accommodation that has more developmental potential, for through it cognitive structures are enlarged. In this way, confirmation bias is a move toward assimilation, while transformative learning is a move toward accommodation (Kegan, 1982). In accord with Piaget's idea that

unfamiliar data can force the accommodation (transformation) of a meaning-making scheme, Mezirow (1978) offered that a disorienting dilemma is the first of ten steps in the transformative process, a process complete with the reformation of a meaning-making scheme. Foundational to this perspective transformation is critical reflection on habits of mind, those "taken-for-granted frames of reference" (Mezirow, 2012, p. 74) that result in confirmation bias. Therefore, to overcome confirmation bias, genuine epistemological transformation is needed—a change in not only what is known, but how it is known (Kegan, 2000).

In a *community of inquiry*, critical reflection is set within the confines of collaborative discourse for the purpose of countermanding confirmation bias (Garrison, 2015). The community of inquiry framework is built on the Practical Inquiry Model (Garrison, Anderson, & Archer, 2001), where reflection and discourse, the private and shared worlds of learners (Garrison, 2015), fuse in the exploration, interpretation, and integration of ideas and experiences. For the community to be effective, each participant must act as both teacher and student (Garrison & Akyol, 2013). In this way, learners within the community contribute to the construction of their own knowledge as well as the knowledge of the community as a whole (Swan, Day, Bogle, & Matthews, 2014). The desired outcome of this collaborative inquiry process is engagement in, and the development of, critical thinking, the hallmark (Vaughan, Cleveland-Innes, & Garrison, 2013) and goal (Habermas, 1971) of higher education.

As enrollment in online higher education continues to increase (Allen & Seaman, 2016), so does the need for institutes of higher education to create online learning environments capable of engaging students in meaningful learning. Meaningful learning is about much more than the accumulation of information. Rather, meaningful learning is about the construction of new knowledge (Kovanović, Gašević, Joksimović, Hatala, & Adesope, 2015), the alteration of beliefs

(Taylor, 2015), increased flexibility of meaning-making structures (Cranton & Hoggan, 2012), and transformation of learners' very ways of being (Kegan & Lahey, 2016). By establishing and sustaining critical reflection and discourse, online learning environments have the potential to engage students in such meaningful learning (Boyer, Maher, & Kirkman, 2013; Cranton, 2010).

Problem Statement

While the community of inquiry framework describes the elements requisite for the creation of an effective, collaborative online learning environment (Garrison, 2015), Oyarzun and Morrison (2013) spotlighted the need for more research on the framework's ability to "achieve deep and meaningful learning" (p. 185). Transformative learning, as a move from simplistic to "more complex ways of knowing or higher orders of consciousness" (Cranton & Taylor, 2012, p. 11), is just this sort of deep and meaningful learning (Cranton, 2016; Mezirow, 2012; Taylor & Elias, 2012). However, research on fostering transformative learning online is minimal (Cranton & Hoggan, 2012). Smith (2012) called for additional research into "all aspects of fostering transformative learning online" (p. 418), and more specifically, empirical investigations of "instructional design and facilitation" (p. 418) strategies lending to transformative learning in online environments. The problem, then, is determining if and how online learning within the context of a community of inquiry can impel student engagement in transformative learning (Oyarzun & Morrison, 2013; Smith, 2012).

Purpose Statement

The purpose of this study is to measure the relationship between a community of inquiry and transformative learning in online, graduate business courses. Business schools have been charged with failing to create meaningful learning opportunities for students (Tello, Swanson, Floyd, & Caldwell, 2013)—opportunities that would lay a foundation for students, as future

business leaders, to become lifelong learners (Senge, 2006). More research is needed to understand how to create online learning environments that enable students to engage in such meaningful learning (Cranton & Hoggan, 2012; Oyarzun & Morrison, 2013; Smith, 2012). In this study, community of inquiry, as measured by the Community of Inquiry survey instrument (Arbaugh et al., 2008), served as the predictor variable. A community of inquiry is a collaborative educative environment wherein knowledge is co-constructed through the interaction of three presences (Garrison, Anderson, & Archer, 2000). *Teaching presence* has to do with the design, facilitation, and direction of the learning experience; *social presence* accounts for community, communication, and relationships within the learning environment; and *cognitive presence* is about discourse, inquiry, and resolution, specifically as they relate to content (Garrison, 2015). Transformative learning, as measured by the Reflection Questionnaire (Kember et al., 2000), and indicated by engagement in reflective thought, served as the criterion variable. Transformative learning describes learning that results in epistemological reformation, from the simplistic to the more complex (Kegan, 2000). This reformation is typically born of critical reflection (Arends, 2014). *Critical reflection* suggests an evaluation of the presuppositions underlying the products, processes, and premises of knowledge (Mezirow, 1991). Online, graduate students enrolled in MBA courses in a research institution in Maryland served as the population for this study. Participating students completed an online survey including the Community of Inquiry survey instrument and the Reflection Questionnaire.

Significance of the Study

Institutes of higher education in general, and business schools in particular, have been criticized for failing to provide meaningful learning opportunities to learners (Tello et al., 2013). Yet, it is engagement in meaningful learning, specifically critical reflection and discourse, that

prepares learners for success in work and life in the 21st century (Weinbaum, Kass, Gutekunst, Schleckser, & Caracena, 2015). As Watkins, Marsick, and Faller (2012) put it, "A common organizational narrative in a rapidly changing, complex, globally linked world is that valued employees are those who can think critically, challenge assumptions, and proactively help organizations change" (p. 373). Indeed, Kegan and Lahey (2016) noted that the ability of organizations to adapt to the challenges and complexities of the modern business world depends entirely on the ability of individuals within that organization to adapt to the challenges and complexities of modern life. Coincidentally, as enrollment in online higher education represents a greater percentage of overall college enrollment year-after-year (Allen & Seaman, 2016), it is essential for institutes of higher education to understand the need for, and have the ability to create, online learning environments that engage students in meaningful learning opportunities so as to become persistent learners (Kegan & Lahey, 2016). This study explored the potential of online learning environments to impel student engagement in meaningful learning. Specifically, it explored the potential for a *community of inquiry* to engage students in "deep and meaningful learning" (Oyarzun & Morrison, 2013, p. 185) as measured by characteristics of *transformative learning* in the context of online education (Smith, 2012).

Research Question

The research question for this study is:

RQ1: Is there a significant predictive relationship between a *community of inquiry* and *transformative learning* in online, graduate business courses?

Null Hypotheses

The null hypotheses for this study are:

$H_0$1: There is no significant predictive relationship between the community of inquiry, as measured by the teaching presence, social presence, and cognitive presence subscales, and transformative learning, as measured by the reflection subscale, in online, graduate business courses.

$H_0$2: There is no significant predictive relationship between the community of inquiry, as measured by the teaching presence, social presence, and cognitive presence subscales, and transformative learning, as measured by the critical reflection subscale, in online, graduate business courses.

Definitions

1. *Community of inquiry* – a collaborative educative environment wherein knowledge is co-constructed (Garrison, Anderson, & Archer, 2000).
2. *Confirmation bias* – the tendency to seek only that evidence that confirms existing beliefs (Wason, 1960).
3. *Critical reflection* – an investigation of presuppositions with the intention of finding incoherence or incompleteness within them (Mezirow, 1991).
4. *Meaningful learning* – learning that results in a change in epistemic structures (Kegan, 1982).
5. *Meaning-making schemes* – the organization of existing information within cognitive structures, and the way that organization influences the interpretation of new information (Mezirow, 2001)
6. *Transformative learning* – epistemological growth, from a simplistic, parochial meaning-making scheme, to higher orders of consciousness (Kegan, 2000).

CHAPTER TWO: LITERATURE REVIEW

Overview

Communication technologies, with the internet as a general frame, have made information utterly ubiquitous (Garrison, 2016). The extent to which learners can make good cognitive use, and ultimately sense, of this information depends, in no small measure, on the ability of educators to help learners critically assess the information available to them (Wittenbols, 2016). Engaging critically with information is essential for overcoming distorted information processing schemes (Muris, Debipersad, & Maher, 2014), which can lead to the rejection of any information that does not cohere with existing knowledge (Brycz, Wyszomirska-Gora, Bar-Tal, & Wisniewski, 2014). Indeed, the consideration of alternative perspectives and the ability to make use of novel ideas are essential for success in modern society (Kreber, 2012), both personally (Weinbaum et al., 2015) and professionally (Watkins et al., 2012). Therefore, the inculcation of critical assessment skills should be the objective of education generally, and institutes of higher education (Weimer, 2012) and business schools more specifically (Glasper & Caldwell, 2016; Tello et al., 2013). Achievement of such educational outcomes—where learners are not merely given access to information, but gain the necessary skills to assess the information they access—requires a move from a transmission to transformational model of education, as learners take increasing responsibility for and ownership of their learning in a collaborative learning environment (Njiro, 2014).

Transformative learning theory (Mezirow, 1978) provides a frame for understanding the process of, and requisites for, learning that leads to the augmentation of cognitive capacities. However, more research is needed to understand whether and how online environments can support this type of meaningful learning (Cranton & Hoggan, 2012; Smith, 2012). The

community of inquiry (Garrison et al., 2000) provides a framework for creating collaborative-constructivist learning contexts with the goal of helping learners develop critical thinking skills and ultimately overcome distorted meaning-making processes (Garrison, 2015). However, the potential of the framework to facilitate the deepest levels of learning requires further research (Archibald, 2013; Oyazrun & Morrison, 2013). While Guthrie and McCracken (2014), Lee and Nicolaides (2014), and Smith (2012) have noted the conceptual ties between transformative learning theory and a community of inquiry, to date no research has studied the relationship between the frameworks. This research studied the relationship between the two theories, and determined whether, and in what ways, communities of inquiry can support transformative learning in online courses.

Theoretical Frameworks

Transformative Learning Theory

Perspective Transformation. Piaget (1952) described a process of learning guided by the formation and reformation of meaning-making schemes. To make sense of the world, learners catalog experiences into schemes. With each novel experience, learners are faced with two basic choices for making sense of the data: *assimilate* the information into an existing scheme, or *accommodate* the scheme to allow for the incorporation of the new information. Assimilation perpetuates the existing meaning-making scheme. Accommodation leads to the creation of a new or significantly augmented scheme of sense-making. In other words, assimilation changes *what* a learner knows; accommodation transforms *how* a learner knows (Kegan, 2000). It is this latter type of epistemic transformation that forms the basis of transformative learning theory.

Perspective transformation, as termed by Mezirow (1978) in a study of 83 women returning to college, is the foundation of transformative learning theory. In the process of perspective transformation described by the study participants, Mezirow identified 10 common steps or stages: 1) a disorienting dilemma, 2) self-examination, 3) critical assessment of assumptions, 4) recognition that discontent is a universal experience, 5) consideration of new roles, 6) creating a plan for change, 7) building skills to operationalize the plan, 8) trying on new roles, 9) increasing confidence and competence in new roles, and 10) a reintegration of new roles and perspectives into life. Just as in the Piagetian (1952) conception, participants in Mezirow's study faced novel experiences and were forced to assimilate that information into their existing schemes or transform the schemes to accommodate the experiences. It was the accommodative process, the 10 steps of perspective transformation, that Mezirow mapped and that became the foundation of transformative learning theory.

With the presentation of transformative learning as a comprehensive theory, Mezirow (1991) defined transformation as, "Overcoming limited, distorted, and arbitrarily selective modes of perception and cognition through reflection on assumptions that formerly have been accepted uncritically" (p. 5). To Mezirow (1997), knowledge is shaped by a frame of reference—the manner and method by which information is processed. A frame of reference is molded by and consists of "cognitive, conative, and emotional components, and is composed of two dimensions: habits of mind and a point of view" (p. 7). Points of view are dynamic, changing frequently with exposure to and reflection on experiences that do not easily fit into familiar frames. Habits of mind, on the other hand, are more entrenched and resistant to change. Habits of mind typically are tied to cultural and familial roots, and so become the basis upon which attitudes are held and judgements are made. In this way, points of view are the result of habits of mind, they emerge

from and are fashioned by them. Transformative learning, then, has to do with the transformation not of points of view but habits of mind, the basic structures upon which beliefs and entire knowledge systems are built.

Mezirow (1997) proposed four methods of learning: 1) new knowledge can be added to an existing view, 2) acquired knowledge can be used to construct new points of view, 3) knowledge can transform an existing point of view, or 4) habits of mind can be transformed by the acquisition of new knowledge. It is this last type of learning, the transformation of habits of mind, with which transformative learning theory is concerned. Because habits of mind are so foundational, so engrained in the noetic structure of the learner, to transform a habit of mind requires engagement with alternative perspectives and critical reflection on the basic assumptions upon which those habits of mind are based.

Mezirow relied on Habermas's (1984) theory of communicative action in describing the environment in which and through which transformation occurs. Through critical reflection on critical dialogue—the intermingling of the intrapersonal and interpersonal—private perspectives interact with and are challenged by public understanding. This dialogic process, to impel the transformation of distorted meaning-making schemes, must occur in a public sphere—a space that allows equal access to ideas, the formulation of them, and the eventual construction of shared-knowledge or shared-truth. Thus, to engage learners in the process of transformative learning, Mezirow suggested the creation of a safe and open environment for the free exchange of ideas, as well as the facilitation of critical reflection.

For educative purposes, Hoskins (2013) proposed that cognitive dissonance, critical reflection, rational discourse, and action can result in transformation. In this view, a disorienting dilemma, resulting in cognitive dissonance, is the instigator of transformation, and the

transformative process proceeds predictably from it. Lange (2012), however, criticized linear processes of transformation, particularly as formulated by Mezirow (1978). Because living systems are complex and unpredictable, it is impossible to identify those singular, definable moments—disorienting dilemmas—responsible for transformation. Furthermore, it is equally impossible to predict the outcomes of those experiences. Similarly, Alhadeff-Jones (2012) suggested that the cataloguing of transformation into orderly steps ignores the disorderly, the "neglected, forgotten, repressed, rejected, disqualified, excluded, or silenced" (p. 181) elements in the lives of learners.

Nohl (2015) agreed that a definable, epochal moment of change—disorienting dilemma—was hardly the change agent Mezirow (1978) supposed it to be. However, like Mezirow, Nohl offered several stages of transformation: 1) experiencing a nondetermining start (seemingly inconsequential exposure to a new idea or experience of some sort), 2) undirected inquiry about the idea, 3) social testing of the idea, 4) shifting of relevance about the idea, and 5) reconstitution of personal identity based on incorporation of the idea. Accordingly, transformative learning does not actually begin with a disorienting dilemma. In many cases, it is the so-called nondetermining event that instigates the change process. Therefrom, over a period of several months or even several years, learners may experience transformation, in ways almost imperceptible to them. In this model, it is only in the third phase—the social testing of the idea—when any awareness of disorientation occurs. In this phase, it is the application of new practices onto, or in replacement of, old habits that causes the disorientation. In this way, while Mezirow (2012) allowed for transformation that was either epochal or incremental, Nohl suggested that most transformation is, in fact, incremental.

In line with the incremental understanding, Charaniya (2012) saw transformation as an ongoing cycle of identity formation and reformation. Coke, Benson, and Hayes (2015) described transformative experiences as recursive—oscillating between reflecting back and forging ahead. Willis (2012) conceived of transformation as the very act of human becoming. This view of transformation as an incremental, ongoing, and recursive process of human becoming is most fully developed in Kegan's (1982) constructive-development model.

Transformation as Human Development. To Kegan (1982), transformative learning is about epistemological change—a change of not only what is known, but how it is known. Central to this conception of the *how* of knowing, is the subject-object relationship. When a learner is subject to something, the learner is had by it. When a learner is object to something, the learner has it. Taylor and Elias (2012) used the illustration of the matryoshka doll to illustrate how the subject-object relationship informs the transformative process of human development. Starting from the smallest doll and moving outward, each incremental increase in size indicates a transformation of what is object and what is subject. The smallest, innermost doll is the simplest, and is subject to all others—it contains only itself and is held by all others. The next successively bigger doll is slightly more complex, the smallest doll is object to it, even while it is subject to all others. As each doll becomes successively bigger and so more complex, nesting all other dolls in the set within itself, progressively more dolls become object to it as it becomes subject to fewer.

Kegan (1982) originally described six stages of human development, from simplest to most complex: incorporative, impulsive, imperial, interpersonal, institutional, and interindividual. In the first stage, nothing is object to the individual. In the final stage, even individual identity has become object. Thus, throughout this developmental process, the

changing subject-object relationship is fundamentally about what is *self* and what is *other*. Kegan and Lahey (2016) provided a revised understanding of the final three stages in adult development: the socialized mind, the self-authoring mind, and the self-transforming mind. Again, in the final, most complex stage, learners have become object to themselves and therefore have the capacity to subject their own ideas and assumptions to critical scrutiny. That is, learners can actively engage in metacognitive reflection on the products of their beliefs, the processes by which they come to have them, and the premises on which those beliefs are formed. For Mezirow (2003), transformative learning is precisely this "uniquely adult form of metacognitive reasoning" (p. 58) where the products, processes, and premises of reasoning become better justified through critical assessment.

Transformative Learning in Higher Education and Beyond. Metacognition allows learners to become more aware of, and more capable of assessing and regulating their cognitive processing, resulting in more justifiable beliefs (Brycz et al., 2014). As Watkins (2012) noted, metacognitive capabilities are required to meet the personal and professional demands of life in a "rapidly changing, complex, globally linked world" (p. 373). However, the learning opportunities provided by institutes of higher education are not adequately enabling learners to meet the demands of life and work in the 21st century (Weinbaum et al., 2015). The incorporation of transformative learning into curricula can facilitate the critical shift from surface, content-learning to deep, metacognitive-learning. Njiro (2014) insisted that transformative learning must inform curricula if education is to address the needs of learners in the modern world. Lee and Nicolaides (2014) suggested that transformative education can indeed help learners "meet the adaptive challenges and persistent demands of early 21st century life" (p. 273). Thus, the challenge for educators is designing curricular spaces that facilitate

transformative learning (Cranton, 2016; Cranton & Hoggan, 2012), particularly in online environments (Hoskins, 2013; Smith, 2012).

Community of Inquiry

Teaching and Learning Collaboratively. The "most widely referenced framework associated with the study of online and blended learning" (Garrison, 2015, p. 68), the community of inquiry has become the preeminent theory for the study and design of purposeful e-learning communities (Garrison, 2016). Garrison, Anderson, and Archer (2000) popularized the community of inquiry framework in their work on computer-based conferencing. Unlike traditional distance-education theories, which positioned learning as an individualistic activity, computer-based conferencing utilized text-based, asynchronous discussions to connect learners to one another, thereby creating a community of learners (Garrison, 2016).

Garrison, Anderson, and Archer (2010) credit the term "community of inquiry" to Dewey (1916) via Lipman (1991). From the Deweyan perspective, cognitive engagement and enrichment occur in social contexts. Learners first develop meaning within the context of the larger community and only therein create an individualized perspective (Oyarzun & Morrison, 2013). Habermas's (1984) ideas about the intersection of private and public meaning also inform the framework. As such, the community of inquiry framework is built on the assumptions of the essential contexts for and purposes of education, videlicet the development of personal meaning in the context of public knowledge and understanding (Garrison, 2016).

This idea that learning occurs at the intersection of the psychological and the social, the private and the public, the self and other, is rooted in collaborative-constructivism. Accordingly, individual meaning-making (constructivism) is dependent on and informative of the learning of the entire community (collaboration). In short, constructivism suggests a commitment to

facilitating the development of autonomous and independent thought in learners, while at the same time developing this independence of thought within the context of social settings—collaboration. Piaget (1977) and Vygotsky (1978) identified the social context as the environment in which cognitive conflicts are resolved. In the Vygotskian view, the community of inquiry creates a zone of proximal development wherein the community of learners, together, enable individual learners to create meaning and overcome cognitive dissonance (Garrison, 2013).

Three Essential Presences. To support this zone of proximal development, this community of learners, a supportive environment that encourages and facilitates critical reflection and discourse must be created (Garrison, 2016). Promoting the collaborative-constructivism upon which communities of inquiry are built, this supportive environment must comprise both social (collaborative) and cognitive (constructivist) elements. In a community of inquiry, these elements are called presences; and both the *social* presence and *cognitive* presence components are undergirded by design and facilitation considerations, properly called *teaching* presence in a community of inquiry.

The term *presence* is used to connote the idea of fidelity—how *real* the learning and the learning environment are (Hosler & Arend, 2013). The greater the presence, the greater the fidelity, and thus the more realistic—that is, the less mediated—the learning experience is perceived to be. In creating an authentic collaborative-constructivist learning context, then, the three presences—social, cognitive, and teaching—work together and support one another. To wit, social presence has been shown to be the mediating factor between cognitive and teaching presence (deNoyelles, Zydney, & Chen, 2014; Joksimović, Gašević, Kovanović, Riecke, & Hatala, 2015; Whiteside, Dikkers, & Swan, 2017), cognitive presence is most indicative of

student satisfaction and success (Holser & Arend, 2012; Yang, Quadir, Chen, & Miao, 2016), and teaching presence is understood to be of the greatest value to students (Hodges & Cowan, 2012; Preisman, 2014) and the most critical in establishing purposeful communities of inquiry (Borokhovski, Bernard, Tamim, Schmid, & Sokolvskaya, 2016; Rockinson-Szapkiw, Wighting, & Nisbet, 2016; Rubin & Fernandes, 2013). As such, Archibald (2013) reported that, in creating communities of inquiry, each of three presences is statistically and conceptually interdependent, and Wicks, Craft, Mason, Gritter, and Bolding (2015), and Rockinson-Szapkiw et al. (2016) showed the framework as a whole—through the operationalization of the three presences—to be predictive of learning outcomes.

Social. Prior to the introduction and proliferation of the community of inquiry framework, social presence was related mostly to the emotional experiences of learners as individuals (Garrison, 2016). Learning as a shared experience, however, requires that social presence consider the implications of both intrapersonal and interpersonal—self and other—relationships. Thus, the frame of social presence as an individual affective and expressive concern is enlarged in a community of inquiry to include the context of the learning community. In this more holistic view, *affective communication*, *open communication*, and *group cohesion* together form the social presence construct. Garrison (2015) identified this enhanced view as a change of focus "from the person to the purpose of the communication" (p. 71).

Indeed, within a community of inquiry social presence is operationalized foundationally through identification with shared learning goals—the purposeful pursuit of the achievement of specific cognitive ends (Garrison, 2016). As such, Whiteside et al. (2017) identified social presence as the "unifying component that synchronizes interactions among the instructor, students, academic content, media, tools, instructional strategies, and outcomes within an online

learning experience" (p. 2). In this way, social presence is understood to be the mediating factor between cognitive and teaching presence (deNoyelles, 2014; Joksimović et al., 2015; Whiteside et al., 2017).

Cognitive. With the purpose of engaging learners in deep and meaningful learning, communities of inquiry are designed around the Practical Inquiry Model (Garrison, Anderson, & Archer, 2001). Based on Dewey's (1933) model of reflective thinking, where learners critically assess their beliefs in the context of personal reflection and shared discourse, the Practical Inquiry Model serves to frame the interactions and intersections of personal and private thought in the construction and confirmation of knowledge (Garrison, 2016). According to the model, cognitive dissonance, resulting from a *triggering event*, occurs in the public sphere when existing beliefs do not cohere with, or are unable to make sense of, some stimulus. Personal, reflective *exploration* of the cause of, and possible solutions to, the challenge to existing meaning-making schemes then ensues. *Integration* of these solutions, these new ways of knowing, proceeds, again in a critically reflective manner. Finally, the learner achieves *resolution* of the original cognitive challenge as the new meaning-making scheme is applied and tested in the public sphere.

Successful navigation through this process of constructing personal meaning and confirming public knowledge requires learners to engage in shared-metacognition (Garrison, 2016). Garrison and Akyol (2013) identified three functions of metacognition: *knowledge* of cognition, *monitoring* of cognition, and *regulation* of cognition. Knowledge of cognition is a basic understanding of the learning process. Monitoring of cognition is active reflection on the learning process. Regulation of cognition is enactment of strategies to direct the learning process towards meaningful outcomes.

Ultimately, engagement in metacognition allows learners to make more symmetrical judgements about self-knowledge and the knowledge of others (Brycz, 2014), thus contributing to the achievement of the intended collaborative-constructivist learning outcomes within a community of inquiry (Rubin & Fernandes, 2013). However, for learners to engage in this process of critical assessment and regulation of their own and others' cognition, educators must purposefully steer the process (Wittenbols, 2016). Gašević, Adesope, Joksimović, and Kovanović (2015) demonstrated the importance of facilitating the metacognitive processes of learners through incorporation of scaffolding strategies as a primary element of teaching presence in a community of inquiry.

Teaching. Teaching presence is the cornerstone of the actualization of cognitive presence in learners—increasing learners' awareness of, and their responsibility for, their own and others' contributions to the learning process (Garrison & Akyol, 2013). Inasmuch as shared-metacognition serves as a guiding process for, and intended outcome of, communities of inquiry, teaching presence is recognized as the most influential and informative of the three presences (Garrison, 2016). The foundational characteristic of teaching presence was highlighted in a study by Hosler and Arend (2012), which found that teaching presence accounted for 47% of variance in cognitive presence scores.

Teaching presence is organized around three principles—*design*, *facilitation*, and *direction* (Garrison, 2016). Each of these principles supports both social and cognitive presences. *Design* has to do with the creation of communication (social) and a plan to establish critical discourse (cognitive). *Facilitation* is about establishing community (social) and inquiry dynamics (cognitive). *Direction* mean sustaining respect and responsibility (social), and inquiry through resolution (cognitive).

It is important to distinguish this component as teach*ing* and not teach*er* presence, with the realization that all learners, and more foundationally the design of the course as a whole and the individual activities therein, are supportive of the learning environment and overall learning outcomes (Garrison, 2016). Underling this distinction, Preisman (2014) found that student satisfaction and success are best supported through the execution of the essential teaching presence principles, rather than the presence of the teacher as such. Since the construction of personal meaning within a shared cognitive space requires every member of the learning community to take responsibility for and ownership of their own and others' learning, teaching presence is about the distribution of authority and responsibility—for designing, facilitating, and directing the learning process—throughout the community (Garrison, 2013).

Deep Learning in a Community of Inquiry. Ultimately, it is the interaction of the three presences—social, cognitive, and teaching—that creates an environment for the discourse and reflection required for the achievement of the higher levels of cognitive engagement (Oskoz, 2013; Rockinson-Szapkiw et al., 2016; Rubin & Fernandes, 2013). As such, the context for learning—the learning environment—must be so designed to support learners through the actualization of the three presences, with the objective of engaging them in the deepest levels of thinking and learning (Preisman, 2014). However, because of the difficulty learners experience in moving to the most meaningful levels of learning (Archibald, 2013; Goda & Yamada, 2013; Hosler & Arend, 2013; Lee, 2014; Oskoz, 2013; Richardson, Sadaf, & Ertmer, 2013; Stein & Wanstreet, 2013), videlicet resolution of cognitive challenges due to distorted meaning-making schemes (Rienties, Giesbers, Tempelaar, & Lygo-Baker, 2013), the learning environment must be intentionally designed and utilized to create a context in which learners are supported in the development of metacognitive skills (Meyer, 2013; Winne, 2015). The development of

metacognitive skills becomes essential as learners are confronted with an increasing variety, volume, and velocity of information, much of which conflicts with or even contradicts expectations of how the world works (Garrison, 2016). Thus, the challenge of educational communities of inquiry is to help learners make sense out of, and good use of, information through participation in, and the development of, metacognitive reasoning (Archibald, 2013).

Related Literature

Adapting to, and constructing and confirming knowledge in, a modern, dynamic knowledge society requires learners to engage in iterative assessment of what they know, how they know it, and whether—considering new and oftentimes conflicting information—they should continue to know it (Garrison, 2016; Kreber, 2012; Marisck, & Faller, 2012; Weinbaum et al., 2015; Wittenbols, 2016). At their foundations, both transformative learning theory and the community of inquiry framework describe contexts in which, and processes by which, inadequate meaning-making schemes can be reconditioned through the development of metacognitive reasoning (Cranton, 2016; Garrison, 2016). Both theories describe learning environments wherein engagement in discourse and critical reflection are meant to, through the construction of personal meaning and shared-understanding, eventuate engagement in high levels of cognition, leading ultimately to more pliable habits of mind. Guthrie and McCracken (2014), Lee and Nicolaides (2014), and Smith (2012), in their research on transformative learning theory, offered that the establishment of a community of inquiry has the potential to promote these transformative learning experiences. In this way, through the creation of an environment supportive of discourse and critical reflection, the community of inquiry can become the context for the achievement of transformative learning in online courses.

Transformative Learning Environments

Hammond (2015) credited Habermas (1984) with informing the creation of transformative online learning environments, where private reflection and public discourse are central to a learning process that can result in the construction of individual meaning and shared understanding. Knowledge, drawing from intrapersonal and interpersonal experience, requires, and is founded on, consensus amongst participants. Genuine consensus assumes genuine debate and introspective interrogation of assumed truth. In this way, Habermas understood the purpose of communication to be the "cooperative search for truth" (p. 225). Requisite for this sort of communication is an environment allowing open communication of ideas with the goal of achieving consensus about the truthfulness of them. Accordingly, Habermas offered that discourse:

> needed to take place in a kind of ideal speech situation in which those with competence were allowed to speak, no one was constrained in speaking, all were allowed to question the grounds for any assertion and new assertions could be put forward. (p. 225)

Of course, only when learners are willing to embrace and explore the possibility that what they know is not actually true can genuine consensus be achieved. That is, genuine consensus through discourse assumes critical reflection. This engagement in critical reflection requires active participation in communication, with all learners providing justification for their beliefs, and maintaining awareness that some of their assumptions may be found deficient. In other words, participation in discourse aimed at the achievement of resolution of cognitive challenges demands assessment of the products, processes, and premises of beliefs. Habermas (1984) elaborated:

> The search for consensus required an active attempt to see the world through the eyes of the "other" and to recognise ways in which one's own understanding of a situation may be distorted by one's own subjectivity and the social roles one was expected to play. (p. 225)

That is, knowledge is created through critical assessment of the perspectives of self and other—through metacognition.

Kegan (1982) carried forward this idea that knowledge is formed and transformed in context, when offering that it is the *holding environment* that creates the context for perspective transformation. Accordingly, a holding environment provides three things for learners: confirmation, contradiction, and continuation. Kegan and Lahey (2016) updated this language in their work on organizational development, using the terms *home*, *groove*, and *edge* to convey the elements requisite for the creation of transformational environments.

Home. Home refers to the establishment of developmental communities supportive of transformation. As Kegan (1982) described it, transformation is relational. That is, transformation is always about changes in what learners understand to be *self* and *other*. In other words, transformation occurs in the context of intrapersonal and interpersonal relationships—in community.

While Cranton (2016) noted that learners experience transformation in unique ways, and transformation is possible apart from the context of community proper, participation in a supportive learning community is regularly cited as central to the process and product of transformation (Baumgartner, 2012; Christie, Carey, Robertson, & Grainger, 2015; English & Irving, 2012; Hammond, 2015; Kasworm & Bowles, 2012; Kumi-Yeboah & James, 2014; Lee & Nicolaides, 2014; Schapiro, Wasserman, & Gallegos, 2012; Taylor & Snyder, 2012; Weinbaum

et al., 2015). Edwards-Groves (2013), borrowing Habermas's (1987) concept of a *lifeworld*, saw learning communities as spaces where *solidarity*—individual and collective identity—and *agency*—individual and collective power and control—interact in the formation and transformation of the individual and the group. Indeed, communities emerge precisely as individuals engage with others in the context of shared-identity and shared-purposes (Kegan, 1982; Kegan & Lahey, 2016).

To actualize their transformative potential, learning communities must be authentic (Lee & Nicolaides, 2014). That is, learning communities must be supportive of the individuals who comprise them so that "learners feel safe to reveal their genuine identities and thoughts" (Lee & Brett, 2015, p. 80). Guthrie and McCracken (2014) similarly noted that the creation of, and participation in, "secure intellectual and emotional spaces" (p. 240) is essential to transformation. Likewise, Taylor and Laros (2014) described transformative communities as places where learners fully engage with their own and others' ideas "free from coercion and distortion" (p. 137). In this way, Mezirow (2012) saw trust, solidarity, security, and empathy as foundational to the proper functioning of a transformative learning community. Thus, community undergirds transformative learning through the development of continuity and commitment, curiosity and openness, emotional engagement, and reflection on shared sense-making (Schapiro et al., 2012).

Schapiro et al. (2012) wrote of "an ineffable element of mystery" (p. 368) to the power of community in fostering transformation. Ultimately, participation in a community of learners can transform not only what is known and how it is known, but also the very being of the community and its learners. Through a process of dialogic reciprocity, where learners form a community, share knowledge that informs the community, engage with divergent perspectives that reform the knowledge of the community, and test new knowledge within and without the community, the

entire community becomes a transformative organism (Edwards-Grove, 2013). Thus, as learning communities construct shared knowledge, they are likewise constructed by it. Kegan (1982) highlighted the importance of process in the creation and maintenance of community:

> Intact, sustaining communities have always found ways to recognize that persons grow and change, that this fate can be costly, and that if it is not to cost the community the very loss of its member, then the community must itself be capable of "re-cognition." (Chapter 9, Section 1, para. 12)

Accordingly, as learners engage with and connect to one another in meaningful and purposeful ways, learning communities become living organisms that transform themselves along with the individual learners within them.

Groove. Groove refers to the interaction of ideas and perspectives leading to occasions of cognitive dissonance, which ultimately make possible the transformation of perspectives (Kegan & Lahey, 2016; Wittenbols, 2016). To Piaget (1952), learners have two options when confronted with new information: assimilate the information into existing meaning-making schemes, or adjust the schemes to accommodate the new information. In either case, exposure to new information leads to cognitive disequilibrium, "a situation in which a person's worldview is disrupted by new information which contradicts or supplants the current view" (Wittenbols, 2016, p. 2). The task of the learner in these situations is to regain cognitive equilibrium—to make sense of the new data—as economically as possible, which generally favors assimilation over accommodation (MacKerarcher, 2012). However, rejecting knowledge that does not cohere with an existing meaning-making scheme, rather than evaluating the viability of the meaning-making scheme itself—*confirmation bias*—delimits the potential for epistemic growth and transformation (Wittenbols, 2016). Muris et al. (2014) explained that the strategy of selecting

assimilation over accommodation for the purposes of immediate sense-making "means that everyday rationality is characterized by various reasoning errors, which result in dysfunctional and maladaptive behavior" (p. 604).

Chater and Loewenstein (2016) remarked on this drive for sense-making—an innate cognitive requirement to process and organize data in such a way as to make the best sense and, ultimately, use of it—as a lens through which to understand the phenomenon of confirmation bias. Grounded in, but enlarging on, Mill's (1859) principal of utilitarianism, Chater and Lowenstein proposed four key features of sense-making. First, as it is a basic human need to make sense of data and life more generally, sense-making is pleasurable. Second, not all sense-making is equally pleasurable. Making sense of data that has the most personal utility will be most pleasurable. Third, the pleasure of specific instances of sense-making is based on expectations. Having the world match expectations will lead to the greatest pleasure. On the other hand, experience that fails to conform to expectations can lead to pain. In this way, the fourth principle provides that the pains of disconfirming expectations are greater than the pleasures of matched expectations. This utilitarian model offers a parsimonious understanding of the phenomenon of confirmation bias—utility is maximized when experiences and knowledge conform to expectations. In other words, it is in an individual's greatest personal interest to seek out only that data that builds onto existing meaning-making schemes while avoiding contradictory inputs. Brycz et al. (2014) put the matter simply, "Generally, people estimate the world in a manner which favors their own interests" (p. 310).

As Nickerson (1998) noted, confirmation bias is an utterly ubiquitous phenomenon, which Kreber (2012) called "one of the most pervasive human weaknesses" (p. 334). Confirmation bias is seen in medical research where participants for studies are frequently

selected based on the careful matching of symptoms with specific reference standards, thereby altering the predictive value of a treatment for the broader population (Bashir, Sirlin, & Reeder, 2015). It is seen in ecology, where researchers' prior knowledge of and attitudes about specific phenomena significantly influenced research findings (Kozlov & Zvereva, 2015). Park et al. (2013) showed that confirmation bias distorts the analyses of investors, and is negatively correlated with investment returns. In the field of technology, confirmation bias leads to increased incidences of defect as testers enable codes to run rather than employing strategies that could possibly make them fail (Calikli & Bener, 2015). Confirmation bias in the analysis of forensic evidence—including fingerprinting and DNA—leads to false criminal convictions as efforts are made to fit the evidence to the primary suspect, instead of allowing the evidence to speak for itself (Perez, 2015). Confirmation bias has been proposed as a critical inducer of anxiety-based disorders (Dibbets, Fliek, & Meesters, 2015; Muris et al., 2014). At the same time, psychotherapy is tainted by confirmation bias as therapists see the change in their clients they expect to see, even in the absence of any actual changes (Lilienfeld, Ritschel, Lynn, Cautin, & Latzman, 2014).

Fforde (2016) offered a sweeping indictment about the effects of confirmation bias. Fforde criticized scientific and statistical methodology as being entirely confined by a basic confirmation bias—a bias that the unknown answer to the question being asked is in fact knowable. In this way, theories postulated at 5% or 10% confidence levels suggest that, even given a lack of certainty, the unknown (or perhaps just inconvenient) data do in fact conform to reality and so allow for theorization. The problem is that, applied to all situations and studies, the confirmation bias tends towards affirming some measure of knowledge as opposed to

accepting some limitations to it. Thus, it is a confirmation bias toward knowing certainly, rather than knowing tentatively, or not knowing at all.

Yet, it is precisely within the space of not-knowing that learning occurs (Vygotsky, 1978). Indeed, it is interactions with novel perspectives—when existing meaning-making schemes cannot account for some new data—that serve as gateways to epistemic transformation (Coke et al., 2015). In this way, Kumi-Yeboah and James (2014) offered that discourse—exposure to diverse and even conflicting ideas—can be a prime instigator of transformation. When new ideas are introduced, or familiar ideas are introduced in new ways, learners are forced to consider the validity of those ideas as well as their own ideas about them (Cranton, 2016). Hernandez and Preston (2013) found that diversity of perspectives, or merely diversity in the presentation of perspectives (disfluency), can impel epistemic transformation.

> [J]ust like speed bumps cause one to drive more slowly and carefully, the experience of difficulty associated with disfluency prompts a slower, more careful mindset when making judgements, even when one comes to the issue with existing beliefs . . . Disfluency may offer an opportunity for better judgment and discourse between opposing positions, ultimately giving what was once an overlooked message, a chance to be seen. (p. 181)

As such, discourse—an interplay between private thought and public knowledge—within a socially-supportive environment plays a critical role in transformative learning (Cranton, 2016; Kumi-Yeboah & James, 2014).

Habermas (1984) saw discourse as a means for achieving genuine consensus within a community of learners. Mezirow (2012) agreed, suggesting that "Discourse, in the context of transformation theory, is that specialized use of dialogue devoted to searching for a common

understanding and assessment of the justification of an interpretation or belief" (p. 78). However, Lee and Brett (2015) described a Bakhtinian dialogic process whereby the achievement of genuine consensus within the community of learners is not the goal. Rather, discourse is meant to enable learners to view their ideas from multiple perspectives, particularly within the context of the ideas and experiences of others within the community. This idea that consensus might not be achieved within a community, or that the achievement of consensus might not be a goal of the community, is not contrary to a Habermasian understanding of discourse, however. Hammond (2015) argued that, even when consensus about an idea is not reached, discourse can nevertheless conclude with a consensus of understanding. "Discussion can finish with an agreement to disagree, but in the process participants may gain a reflexive understanding as to why they disagree and a move towards intersubjective understanding and mutual recognition" (Hammond, 2015, p. 233). Kegan (1982) noted that it is just this type of intra- and intersubjective thinking that characterizes the most advanced levels of cognition:

> Among the central features of this new way of thinking seems to be a new orientation to contradiction and paradox. Rather than completely threatening the system, or mobilizing the need for resolution at all costs, the contradiction becomes more recognizable as contradiction; the orientation seems to shift to the relationship between poles in a paradox rather than a choice between the poles. (Chapter 8, Section 1, para. 1)

Thus, discourse—exposure to and exploration of alternative perspectives and ideas—can produce in learners, if not shared-knowledge about the meaning of some *thing*, shared-metacognition about knowledge in general and thinking more generally. In this way, discourse lays the foundation for perspective transformation through engagement in critical reflection (Schapiro et al., 2012).

Edge. Edge refers to the space where, through the enactment of metacognitive strategies, cognitive challenges are resolved and perspective transformation is actualized. As Meijer, Geijsel, Kujipers, Vrieling, and Vrieling (2016) put it, epistemic curiosity—a willingness to question personal beliefs, and an openness to learn from the ideas, perspectives, and experiences of others—facilitates transformative learning. However, because confirmation bias acts as a "cognitive shortcut or heuristic that simplifie[s] complex inferential tasks" (Hernandez & Preston, 2013, p. 178), engagement in epistemic curiosity, in metacognition, must be facilitated (Kasworm & Bowles, 2012; Mezirow, 1997; Phillip & Cain, 2015; Smith, 2012; Weimer, 2012; Weinbaum et al., 2015; Wittenbols, 2016). Therefore, designing a space that allows for and enables critical reflection on the products, processes, and premises of the learner's own and others' cognition is essential to fostering transformative learning (Forte & Blouin, 2016; Hammond, 2015; Kreber, 2012; Mezirow, 2012).

A primary critique leveled against the traditional view of transformative learning is its favoring of rationality over other ways of knowing (Arends, 2014). Acknowledging the myriad ways researchers have approached the study of perspective transformation, Taylor and Cranton (2012) called for the development of an integrative theory of transformative learning. This more holistic understanding of transformation would acknowledge the possibility of not only rational means of transformation, but also relational (Baumgartner, 2012; English & Irving, 2012; Lee & Nicolaides, 2014; Schapiro et al., 2012), conative (MacKeracher, 2012), aesthetic (Cranton, 2016), and spiritual (Charaniya, 2012; Dirkx, 2012) influences and outcomes. However, as Papastamatis and Panitsides (2014) noted, "cognitive, physical, emotional, and spiritual dimensions are closely interrelated" (p. 74) in the construction of knowledge generally and in the process of transformation more specifically. Brookfield (2012) remarked similarly, suggesting

critical reflection is itself contextually and socially situated. Taylor and Cranton (2012) agreed, "The point here is that we need to cease the discussion of rationality as a separate entity, because the very existence of rationality is rooted in the presence of emotion, without which it cannot exist" (p. 566). More foundationally, Mezirow (2012) assumed that it was the integration of the entirety of private and public knowledge and experience that necessarily informed critical reflection. Therefore, critical reflection is never a purely rationalistic exercise, even while the process and product of it may be the re-cognition of the learner (Kegan, 1982).

Kember at al. (2000) synthesized Mezirow's (1991) conceptions of cognition, offering a four-stage scheme of increasing epistemic complexity: *habitual action*, *understanding*, *reflection*, and *critical reflection*. Habitual action results from taken-for-granted assumptions of how the world works and the corresponding responses triggered by those deeply engrained beliefs. Understanding requires the surfacing of existing knowledge to make sense of new knowledge and experiences, though it does not seek to evaluate those basic perspectives. Reflection considers both the cognitive experiences caused by some stimulus as well as the processes by which those experiences derived. Critical reflection examines not only the products and processes of beliefs, but also the premises of them—"*why* we perceive, think, feel or act as we do" (Mezirow, 1991, p. 108). In this way, critical reflection is an intentional act, requiring "a provisional suspension of judgement about the truth or falsity of, or the belief or disbelief in, ideas until a better determination can be made" (Mezirow, 2012, p. 80).

For Mezirow (2003), beliefs are only as good as the justifications made for them. As such, Mezirow offered that transformative learning, with critical reflection its immediate precursor, is a "process of advancing and assessing reasons, especially those that provide arguments supporting beliefs resulting in decisions to act" (p. 58). As Cranton and Taylor

(2012) noted, transformation resulting from critical reflection is about "a deep shift in perspective, leading to more open, more permeable, and better-justified meaning perspectives" (p. 3).

Because learners are not likely to engage volitionally in critical reflection of beliefs, metacognitive reasoning must be scaffolded (Weinbaum at al., 2015). Mezirow (2003) saw the role of instructor as "facilitator and provocateur" (p. 11), establishing an environment and utilizing methodologies conducive to encouraging engagement in metacognition. Yungwei (2016) noted that, to meet the needs of modern learners, instructors do not necessarily have to help learners access information, but instead help learners understand what information is relevant and, perhaps more importantly, what to do with it. Meijer et al. (2016) offered that the "development of society" (p. 64) depends on instructors' abilities to help students adapt to, if not guide, the "rapidly changing knowledge society" (p. 64) through the development of metacognitive skills resulting in perspective transformation.

Perspective Transformation in a Holding Environment. Transformative environments are built on meaningful interactions of the self (critical reflection) and other (discourse), which culminate in the implementation of new ideas (Charaniya, 2012). Ultimately, then, a holding environment is about practice—the testing of newly formed individual meaning within the context of the shared-knowledge of the learning community (Hodge, 2014). To this view, the holding environment, built on discourse and reflection in a supportive community, creates a context for an iterative and recursive process of perspective transformation (Coke et al., 2015; Kegan, 1982; Kegan & Lahey, 2016; Lee & Nicolaides, 2014).

Transformative Learning in Communities of Inquiry

In the study of transformative learning in online environments, Guthrie and McCracken (2014), Lee and Nicolaides (2014), and Smith (2012) suggested that the community of inquiry framework (Garrison et al., 2000) creates an ideal context for perspective transformation. Through the operationalization of its three presences—social, cognitive, and teaching—learners become part of a supportive community whose purpose is to engage in discourse and reflection to collaboratively resolve cognitive challenges (Garrison, 2016). Conceptually, if not practically then, communities of inquiry are designed to create holding environments wherein the self and other interact in ideal speech situations, as individual meaning is formed and transformed in the context of public discourse and private reflection.

Social presence. According to the collaborative-constructivist assumptions upon which the community of inquiry framework is built, learning is a social experience (Garrison, 2016). In this model, individual meaning-making (constructivism) is dependent on and informative of the learning of the entire community (collaboration). As such, learning within a community of inquiry is essentially relational as learners express and explore the self, while also connecting with and learning from the other (Bentley, Secret, & Cummings, 2015).

In a community of inquiry, this relational element surfaces through social presence. Garrison (2016) defined social presence "as the ability of participants to identify with a group, communicate openly in a trusting environment, and develop personal and affective relationships progressively by way of projecting their individual personalities" (pp. 41–42). Social presence is created through the design of supportive communicative spaces and is sustained through shared-identification with learning goals (Garrison, 2016). Alavi and Taghizadeh (2013) offered that an organic exchange of information, open sharing of problems, and a collaborative search for

solutions are characteristic of communicative spaces in communities of inquiry. However, because collaboration tends not to occur naturally, and mere participation in a community does not guarantee collaboration (Lee, 2014), social presence and with it the emergence of community are actualized through affective and open communication (Zhao, Sullivan, & Mellenius, 2014). Thus, Borup, Graham, and Drysdale (2014) noted the importance of creating a safe environment in which to operationalize a community of inquiry, a space where learners feel open to and supported in the sharing of ideas and perspectives (van Niekerk, 2015). Trust, according to Malmber, Järvelä, Järvenoja, and Panadero (2015), is the first condition of a successful community. Ultimately, these conditions—openness, support, and trust—are motivated by a shared goal, and an agreement to explore ideas and perspectives collaboratively (Zhao et al., 2014) and to work towards the resolution of cognitive challenges (Winne, 2015). Community thus emerges through the creation and facilitation of a social experience built on a shared commitment to purposeful discourse and critical inquiry (Cleveland-Innes, 2013; Garrison, 2016).

Cognitive presence. Perspective transformation begins when public knowledge challenges private understanding. As Vladimirschi (2013) recognized, the avoidance of knowledge limits cognitive capacity. Therefore, meaningful learning requires that learners engage in active discourse with the purposes of sharing, challenging, and co-constructing knowledge (Rienties et al., 2013). Cognitive presence within communities of inquiry provides the context for this critical interaction of ideas and eventual resolution of cognitive challenges.

Cognitive presence within communities of inquiry is operationalized by the Practical Inquiry Model (Garrison et al., 2001). The model describes a four-step process of learning: triggering event, exploration, integration, and resolution. Essential to this process is the

interaction of private thought and public knowledge. The triggering event occurs in the public sphere as new knowledge—the ideas and perspectives of others—disrupts taken-for-granted assumptions. Exploration and integration are private matters, as learners consider and reflect on novel knowledge in an attempt to determine whether the knowledge on the one hand, or the learner's own meaning-making scheme on the other, is in some way deficient. With resolution, the learning process once again becomes public as the learner projects the modified epistemic scheme into the shared-world. In this way, Warner (2016) offered that the community of inquiry is essentially about presenting learners with cognitive challenges and opportunities for the resolution of them. Nickel and Overbaugh (2013) remarked similarly, suggesting that communities of inquiry present learners opportunities "to share their experiences in order to negotiate and construct meaning" (p. 227). Cleveland-Innes (2013) wrote of the benefits and outcomes of this sort of discourse within communities of inquiry.

> Student-student interaction serves to broaden understanding of subject matter and role expectations. As different backgrounds and experiences are used to interpret course content, students have the opportunity to consider matters from multiple perspectives. They may re-examine previously help interpretations and perspectives in light of new information. (Cleveland-Innes, 2013, p. 393)

Ultimately, communities of inquiry present learners with opportunities for perspective transformation as they are confronted with the subjectivity of the knowledge of the learning community while at the same time being provided a context in which to resolve the ensuing cognitive conflicts (Bentley et al., 2015).

Teaching presence. Perspective transformation is unnatural—it is more efficient to maintain existing meaning-making schemes than to alter them. As such, epistemic

transformation often must be facilitated (Ertmer & Koehler, 2015; Oskoz, 2013). In communities of inquiry, teaching presence extends the responsibilities for the resolution of cognitive challenges to the entire learning community, enabling students to engage in a process of shared-metacognition.

In communities of inquiry, it is precisely this distribution of teaching authority and responsibility that results in increased achievement of higher order cognition (Liu & Yang, 2014; Pozzi, Ceregini, Ferlino, & Persico, 2016; Warner, 2016; Zhao & Sullivan, 2015). Gašević et al. (2015) suggested that communities of inquiry achieve meaningful cognitive outcomes just as the learning space and the activities therein are designed for "more equitable knowledge construction opportunities" (p. 61). Likewise, Lai (2015) noted how an environment of "distributed expertise" (p. 565) with communities of inquiry leads to enhanced cognitive outcomes. In this way, it is the learners, less so than the instructor, who guide the learning process.

While teaching authority and responsibility are distributed throughout communities of inquiry, instructors still play a critical role in the learning process (Cho & Tobias, 2016; Pinchevsky-Font & Dunbar, 2015; Stover & Pollock, 2014). Borup et al. (2014) offered that beyond design, facilitation, and direction—the three functions of teaching presence—teacher engagement in the creation of the learning environment and motivation of learning within the community are essential instructor roles within communities of inquiry. Stover and Pollock (2014) found that the design of the course and scaffolding of activities contribute to increases in cognitive outcomes. Courses must be designed specifically to enable student engagement at the highest cognitive levels (Alavi & Taghizadeh, 2013), while scaffolding allows students to take greater responsibility for their learning (Lafuente, Remesal, & Valdivia, 2014).

Gallego-Arrufat, Gutiérrez-Santiuste, and Campaña-Jiménez (2015) commented on this paradox of teaching presence, suggesting that instructors utilize and model leadership and learning actions at the service of distributing the same throughout the community of learners. Ultimately then, as Diaz (2013) noted, teaching presence is about helping learners learn how to learn. Thus, communities of inquiry, through the distribution of teaching authority and responsibility, enable learners to practice (Vaughan, 2013) and become more proficient at engaging in a process of ongoing, shared-metacognition (Kovanović et al., 2015; Malmberg et al., 2015), resulting in the construction of more justifiable beliefs in the context of shared-knowledge (Lafuente et al., 2014).

Summary

It is no longer enough for institutes of higher education to provide learners mere access to information. Instead, universities must enable learners to assess information—to make sense of and with it. In other words, education must help prepare individuals to adapt to the persistent challenges of, and changes in, modern society (Diaz, 2013). Thus, metacognition—an ability to engage in critical reflection on the products, processes, and premises of beliefs—is essential to success in this "rapidly changing society and knowledge based economy" (Garrison, 2016, p. 168).

Transformative learning theory provides an understanding of how adult learners engage in metacognitive reasoning, while the community of inquiry framework describes an online environment designed to develop metacognition. Yet, despite the many and strong conceptual similarities between transformative learning theory and the community of inquiry framework, scant research has drawn explicit connections between the two. Therefore, this study explored the relationship between a community of inquiry and transformative learning in online courses,

and more specifically the ways in which a community of inquiry can potentially support transformative learning experiences.

CHAPTER THREE: METHODS

Overview

Two multiple linear regressions were used to measure the relationship between a community of inquiry and transformative learning in online, graduate business courses at a research university in Maryland. Students enrolled in at least one online MBA course in the Spring 2017 term served as the participants for the study. Participating students provided demographic as well as information about online learning experience, and completed the Community of Inquiry survey instrument and the Reflection Questionnaire. Data was analyzed using SPSS.

Design

A quantitative correlational research design was used to study the relationship between a community of inquiry and transformative learning in online, graduate business courses. Gall, Gall, and Borg (2007) explained the usefulness of multiple regression analysis: "The popularity of multiple regression stems from its versatility and the amount of information it yields about relationships among variables" (p. 353). In this study, the community of inquiry subscales of teaching, social, and cognitive presence, as measured by the Community of Inquiry survey instrument (Arbaugh et al., 2008; Swan et al., 2008), served as the predictor variables; the transformative learning subscales of reflection and critical reflection, as measured by the Reflection Questionnaire (Kember et al., 2000), served as the criterion variables.

Research Question

The research question for this study is:

RQ1: Is there a significant predictive relationship between a *community of inquiry* and *transformative learning* in online, graduate business courses?

Null Hypotheses

The null hypotheses for this study are:

$H_0$1: There is no significant predictive relationship between the community of inquiry, as measured by the teaching presence, social presence, and cognitive presence subscales, and transformative learning, as measured by the reflection subscale, in online, graduate business courses.

$H_0$2: There is no significant predictive relationship between the community of inquiry, as measured by the teaching presence, social presence, and cognitive presence subscales, and transformative learning, as measured by the critical reflection subscale, in online, graduate business courses.

Participants and Setting

The participants for this study were drawn from a convenience sample of graduate level business students taking online courses at a business school in Maryland. The business school is part of an established research university, and has a population of approximately 2,000 full- and part-time students enrolled in six graduate business degree programs. All students enrolled in the online MBA program, and taking at least one online course during the 2017 Spring term were invited to participate in the study. This convenience sample was easily accessible by the researcher and reasonably homogenous, allowing for a reliable extrapolation of the data (Gall et al., 2007).

Data was gathered from 242 students after the Spring 2017 term, corresponding to a 41% response rate, and exceeding the minimum sample size of 66 required for a medium effect size with statistical power of .7 at an alpha of .05 (Gall et al., 2007). The sample consisted of 44% female and 56% male students, with 56% White, 12% Black, 20% Asian, and 12% Other. Ages

ranged between 22 and 62, with a mean age of 35.

Instrumentation

Reflection Questionnaire

The Reflection Questionnaire (Kember et al., 2000) was used to measure transformative learning in online, graduate business students (See Appendix D for the open-source instrument). Having developed a method for assessing critical reflection—the foundation of transformative learning—in written works through content analysis, Kember et al. (2000) developed the Reflection Questionnaire to provide a more exacting instrument by which to measure the presence of critical reflection in the educational environment more generally. The questionnaire is based on Meziow's (1991) conception of thinking. According to the scheme as synthesized by Kember et al., thinking occurs at one of four increasingly complex levels: habitual action, understanding, reflection, and critical reflection. The most complex level, critical reflection, contains the germs of epistemic transformation. Through critical reflection learners question their most basic assumptions, and thus their habits of mind—the foundations of individual meaning making—are challenged, if not changed (Mezirow, 1991).

The Reflection Questionnaire is composed of 16 questions scored on a five-point Likert scale. The 16 questions are spread evenly over the four subscales—habitual action, understanding, reflection, and critical reflection. Responses range from *strongly disagree* to *strongly agree* (1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree). Each subscale has a minimum score of 4 and maximum of 20, with higher scores in the reflection and critical reflection subscales indicating a greater presence of reflective thought (Leung & Kember, 2003). The instrument is self-administered, takes approximately 2 minutes to complete, and can be completed on a computer or in pencil-and-paper form.

Kember et al. (2000) showed the Reflection Questionnaire to be valid, based on the established conceptual frame, and reliable on each subscale. Lethbridge, Andrusyszyn, Iwasiw, Laschinger, and Fernando (2013) confirmed the reliability of each subscale through six second-order confirmatory factor analyses, with Cronbach's alphas as high as .74, .81, .84, and .85 for habitual action, understanding, reflection, and critical reflection respectively. Kalk et al. (2014) confirmed the reliability of an abbreviated, 2-factor (reflection and critical reflection) instrument through confirmatory factor analysis, with Cronbach's alphas of .77 for the reflection subscale and .70 for the critical reflection subscale. In practice, the Reflection Questionnaire is widely used to assess learner engagement in reflective thought (Buzdar & Ali, 2013; Hao, 2016; Meijer et al., 2016; Tricio et al., 2015; Yungwei, 2015).

Community of Inquiry

The Community of Inquiry survey instrument (Arbaugh et al., 2008; Swan et al., 2008) was used to measure the perception of a community of inquiry by online, graduate business students (See Appendix E for the open-source instrument). Garrison, Anderson, and Archer (2000) originally proposed the community of inquiry framework as a way of explaining how significant learning occurs in digitally-mediated learning environments. Since its inception, the framework's application has expanded beyond online education to both traditional and blended learning environments (Garrison, 2015). According to Garrison (2015), the community of inquiry framework is "the most widely referenced framework associated with the study of online and blended learning" (p. 68). Within the framework, teaching, social, and cognitive presences combine to create an educational environment wherein "participants collaboratively construct meaning and share understanding" (Garrison, 2015, p. 8).

The Community of Inquiry survey instrument was created to examine each of the framework's three components—teaching presence (design, facilitation, and direction of the course), social presence (community, communication, and respect within the course), and cognitive presence (discourse, inquiry, and resolution of content)—as well as the framework as a whole (Garrison, Cleveland-Innes, & Fung, 2004). The original 28-item questionnaire (Swan et al., 2008) was expanded by Arbaugh et al. (2008) to include 34 items scored on a five-point Likert scale. In the updated instrument, teaching presence is composed of 13 questions, social presence is composed of 9 questions, and cognitive presence is composed of 12 questions. Responses range from *strongly disagree* to *strongly agree* (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree). The instrument as a whole has a minimum score of 34 and a maximum score of 170, with a subscale minimum and maximum of 13 and 65 for teaching presence, 9 and 45 for social presence, and 12 and 60 for cognitive presence. A low score indicates an educational environment that restricts collaboration and critical thinking. A high score indicates an educational environment built on and fostering a process of collaborative knowledge construction. The instrument is self-administered, takes approximately 5 minutes to complete, and can be completed on a computer or in pencil-and-paper form.

In a multi-institutional study of the Community of Inquiry survey instrument, Arbaugh et al. (2008), using the *Principal Components Analysis* (PCA) in SPSS, oblique rotation, and factor analysis, showed the instrument to be both valid and reliable, with Cronbach's alphas of .94 for teaching presence, .91 for social presence, and .95 for cognitive presence. Other studies also have confirmed the validity of the subscales (Archibald, 2010; Richardson & Swan, 2003; Shea & Bidjerano, 2008; Shea, Fredericksen, Pickett, & Pelz, 2003; Wise, Chang, Duffy, & del Valle, 2004) as well as the reliability of the instrument as a whole (Arbaugh, 2007; Bangert, 2009;

Carlon et al., 2012; Horzum & Uyanki, 2015; Swan et al., 2008; Yu & Richardson, 2015). In practice, the Community of Inquiry survey instrument has been used successfully to measure the effectiveness of online courses and their designs (Cho & Tobias, 2016; Moore & Shelton, 2013; Swan, Day, Bogle, & Matthews, 2014; Warner, 2016; Wicks et al., 2015; Yang et al., 2016).

Procedures

Permission to conduct the study was obtained from officials at the business school. IRB approval was awarded from the researcher's institution and the business school. Requests were made to individual faculty members to participate and assist in survey deployment. During the final week of classes in the Spring 2017 term, all students enrolled in at least one online MBA course were alerted of the study and invited to participate in it through an email sent to school-affiliated, student email accounts (See Appendix C for the email). The email provided a summary of the study and its importance, as well as a link to complete the survey through Qualtrics™, an online survey platform. Before participating in the study, students were asked to provide informed consent through the survey platform (See Appendix B for the form). Students who did not provide consent were unable to access the survey. The survey consisted of three demographic questions (age, gender, and ethnicity), one question about online learning experience (the number of online classes taken), the Community of Inquiry survey instrument, and the Reflection Questionnaire. Only fully completed surveys were included in the study. Data was uploaded into SPSS.

Data Analysis

Data from the survey instruments were analyzed using multiple regression to: measure the predictive relationship between the community of inquiry, as measured by the teaching presence, social presence, and cognitive presence subscales, and transformative learning, as

measured by the reflection subscale; and, measure the predictive relationship between the community of inquiry, as measured by the teaching presence, social presence, and cognitive presence subscales, and transformative learning, as measured by the critical reflection subscale, in online, graduate business courses. Multiple regression is one of the most commonly used techniques in educational research (Gall et al., 2007). To analyze the data, first descriptive statistics, means, and standard deviations were calculated. A box and whisker plot was run to identify outliers. Next, assumptions testing was completed at an alpha of .05 using the Kolmogorov-Smirnov test for normality. Scatter plots were created to test the assumptions of: bivariate outliers, linearity, and bivariate normal distribution. Variance Inflation Factor tests were run to test for multi-collinearity. Finally, the magnitude of relationship between the linear combination of teaching presence, social presence, and cognitive presence community of inquiry subscales, and the transformative learning subscale of reflection; and the magnitude of relationship between the linear combination of teaching presence, social presence, and cognitive presence community of inquiry subscales, and the transformative learning subscale of critical reflection, were measured using multiple regression analyses.

CHAPTER FOUR: FINDINGS

Overview

Data from 242 students taking at least one online MBA course in the Spring 2017 term were collected and analyzed using SPSS. Results indicated a significant predictive relationship between the linear combination of teaching, social, and cognitive presences, and the reflection subscale. A significant predictive relationship was also found between the linear combination of teaching, social, and cognitive presences, and the critical reflection subscale.

Research Question

The research question for this study is:

RQ1: Is there a significant predictive relationship between a *community of inquiry* and *transformative learning* in online, graduate business courses?

Null Hypotheses

The null hypotheses for this study are:

$H_0$1: There is no significant predictive relationship between the community of inquiry, as measured by the teaching presence, social presence, and cognitive presence subscales, and transformative learning, as measured by the reflection subscale, in online, graduate business courses.

$H_0$2: There is no significant predictive relationship between the community of inquiry, as measured by the teaching presence, social presence, and cognitive presence subscales, and transformative learning, as measured by the critical reflection subscale, in online, graduate business courses.

Descriptive Statistics

The sample size for this study was (N = 242). Data was obtained for the predictor variables: teaching presence (X_1), social presence (X_2), and cognitive presence (X_3), and the criterion variables: reflection (Y_1), and critical reflection (Y_2). Mean (M) and standard deviation ($S.\ D.$) for each group were calculated using SPSS, where ($X_1 = M = 54.12$, $S.\ D. = 11.06$), ($X_2 = M = 36.88$, $S.D. = 6.61$), ($X_3 = M = 49.95$, $S.\ D. = 9.89$), and ($Y_1 = M = 17.12$, $S.\ D. = 2.60$), and ($Y_2 = M = 13.56$, $S.\ D. = 4.18$). Descriptive statistics can be found in Table 1.

Table 1

Descriptive Statistics

	Teaching	Social	Cognitive	Reflection	Critical
Valid	242	242	242	242	242
Mean	54.12	36.88	49.95	17.12	13.56
Std. Deviation	11.06	6.611	9.885	2.599	4.177

Assumption Tests

Data Screening

Data screening was conducted on each of the predictor and criterion variables using box and whisker plots to identify outliers. Visual inspection identified several outliers. Records associated with outliers were inspected, and no obvious entry errors were identified. Further, because few of the outliers were extreme, and model significance was unchanged by removal of outlier cases, the outliers were included in the analysis (Warner, 2013). The box and whisker plots can be found in Figure 1.

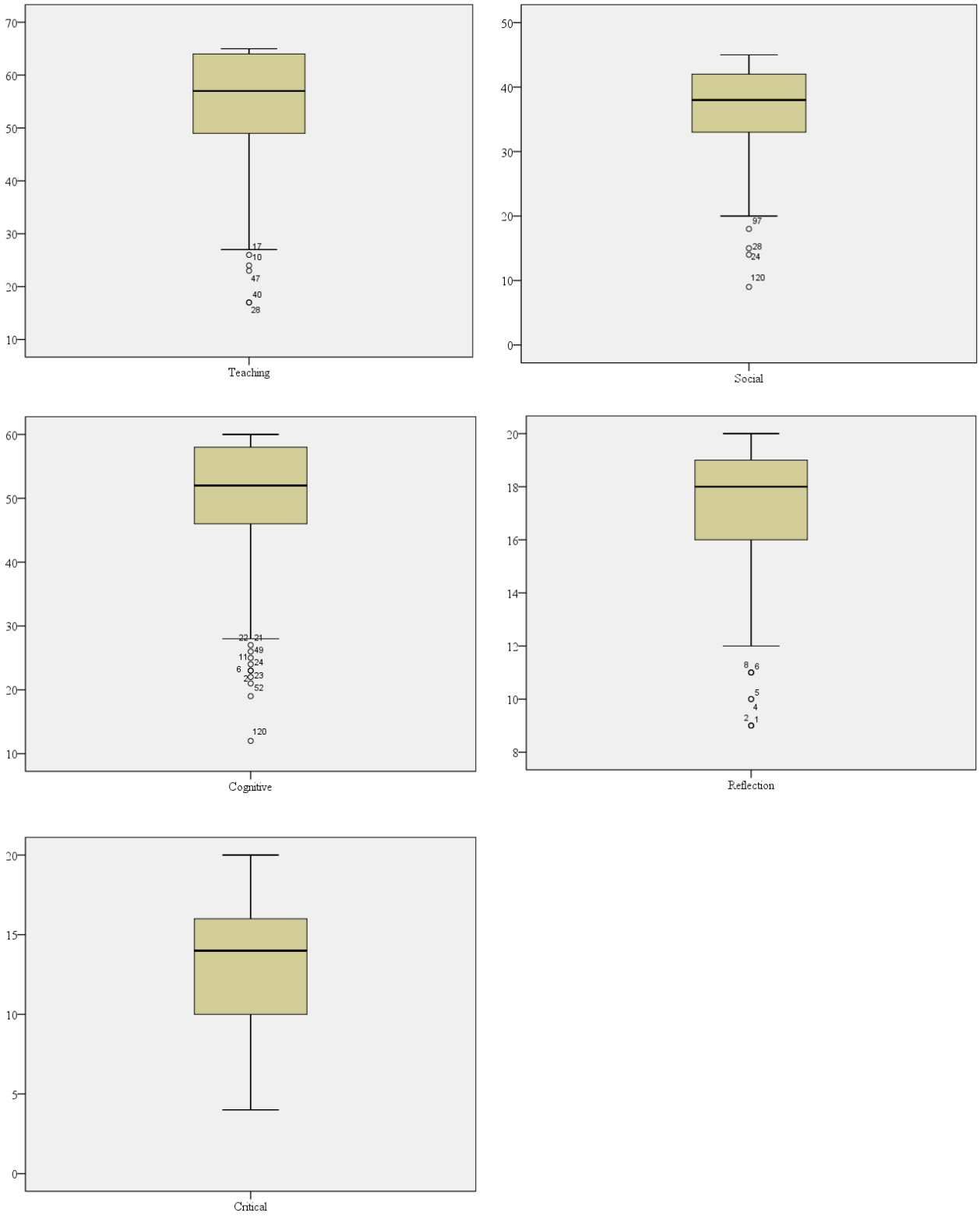

Figure 1. Box and whisker plots for predictor and criterion variables, showing outliers.

Assumptions

The assumption of normality was tested using the Kolmogorov-Smirnov (K-S) test of normality. Both reflection ($p < .001$) and critical reflection ($p < .001$) were significant. However, because visual inspection of the Q-Q plots indicated normal distribution and multiple regression is robust to the assumption of normal distribution (Williams, Grajales, & Kurkiewicz, 2013), it was reasonable to proceed with the regression analysis. See Table 2 for results from the K-S test, and Figure 2 for the Q-Q plots.

Table 2

Tests of Normality

	Kolmogorov-Smirnov[a]		
	Statistic	df.	Sig.
Reflection	.145	242	.000
Critical	.099	242	.000

a. Lilliefors Significance Correction

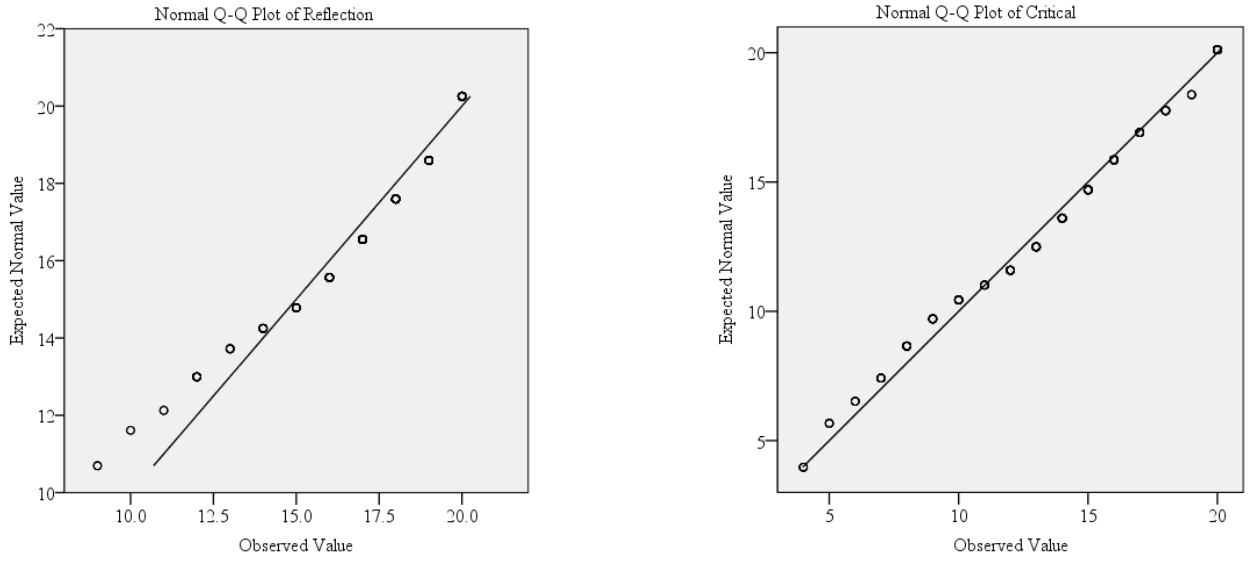

Figure 2: Q-Q plots for the transformative factors of reflection and critical reflection, demonstrating normality of distribution.

The assumptions of bivariate outliers, linearity, and multivariate normal distribution were tested using scatterplots. No extreme outliers were identified, meeting the assumption of bivariate outliers. Lines of best fit indicated linear relationships amongst all variables, thus meeting the assumption of linearity. Finally, the data appeared to be normally distributed, and therefore the assumption of multivariate normal distribution was met. See Figure 3 for the scatter plots.

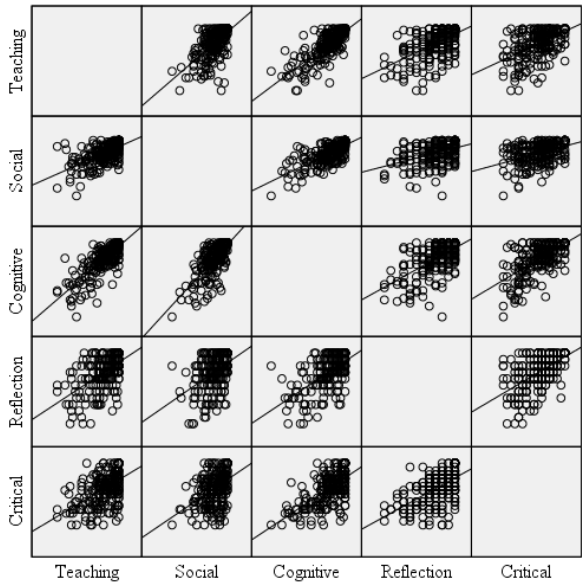

Figure 3. Scatterplot of predictor and criterion variables, showing no extreme outliers, linearity, and normal distribution.

A Variance Inflation Factor (VIF) test was run to test the assumption of non-mulitcollinearity for each of the predictor variables on both criterion variables. The assumption of non-mulitcollinearity ($\alpha = .05$) was met for reflection, where ($X_1 = 2.84$), ($X_2 = 2.15$), and ($X_3 = 3.75$); and critical reflection, where ($X_1 = 2.84$), ($X_2 = 2.15$), and ($X_3 = 3.75$). See Table 3 for the VIF test on reflection, and Table 4 for the VIF test on critical reflection.

Table 3

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1	(Constant)	8.975	.789		11.376	.000		
	Teaching	.050	.020	.211	2.461	.015	.352	2.840
	Social	-.021	.029	-.055	-.733	.464	.466	2.147
	Cognitive	.125	.026	.476	4.834	.000	.267	3.752

a. Dependent Variable: Reflection

Table 4

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1	(Constant)	.607	1.254		.484	.629		
	Teaching	.025	.032	.066	.773	.440	.352	2.840
	Social	-.041	.047	-.066	-.890	.374	.466	2.147
	Cognitive	.263	.041	.623	6.389	.000	.267	3.752

a. Dependent Variable: Critical

Results

Null Hypothesis One

There is no significant predictive relationship between the community of inquiry, as measured by the teaching presence, social presence, and cognitive presence subscales, and transformative learning, as measured by the reflection subscale, in online, graduate business courses.

Results of Null Hypothesis One

A multiple regression was run to determine if there was a significant predictive relationship between the linear combination of predictor variables (teaching presence, social presence, and cognitive presence) and the criterion variable (reflection) in online, graduate business courses. The linear combination of teaching, social, and cognitive presence predicted 38.4% of variance in reflection scores (R^2 = .38). The reflection model summary can be found in Table 5.

Table 5

Model Summary

Model	R	R^2	Adjusted R^2	RMSE
1	0.620	0.384	0.376	2.053

Analysis of an ANOVA found a significant relationship between the linear combination of predicator variables and the criterion variable (α = .05), where $F(3, 238) = 49.42$, $p < .001$. Therefore, the null hypothesis is rejected. Results of the ANOVA can be found in Table 6.

Table 6

ANOVA

Model		Sum of Squares	df	Mean Square	F	p
1	Regression	624.7	3	208.239	49.42	< .001
	Residual	1002.8	238	4.213		
	Total	1627.5	241			

The regression model found that teaching presence ($X_1 = p$ = .01) and cognitive presence ($X_3 = p < .001$) were significant predictors of reflection (Y_1), while social presence ($X_2 = p$ = .46) was not a significant predictor (α = .05). Results of the regression analysis can be found in Table 7.

Table 7

Coefficients

Model		Unstandardized	Standard Error	Standardized	t	p
1	intercept	8.975	0.789		11.376	< .001
	Teaching	0.050	0.020	0.211	2.461	0.015
	Social	-0.021	0.029	-0.055	-0.733	0.464
	Cognitive	0.125	0.026	0.476	4.834	< .001

Null Hypothesis Two

There is no significant predictive relationship between the community of inquiry, as measured by the teaching presence, social presence, and cognitive presence subscales, and transformative learning, as measured by the critical reflection subscale, in online, graduate business courses.

Results of Null Hypothesis Two

A multiple regression was run to determine if there was a significant predictive relationship between the linear combination of predictor variables (teaching presence, social presence, and cognitive presence) and the criterion variable (critical reflection) in online, graduate business courses. The linear combination of teaching, social, and cognitive presence predicted 39.7% of variance in reflection scores (R^2 = .39). The critical reflection model summary can be found in Table 8.

Table 8

Model Summary

Model	R	R^2	Adjusted R^2	RMSE
1	0.630	0.397	0.390	3.264

Analysis of an ANOVA found a significant relationship between the linear combination of predicator variables and the criterion variable (α = .05), where $F(3, 238) = 52.28$, $p < .001$. Therefore, the null hypothesis is rejected. Results of the ANOVA can be found in Table 9.

Table 9

ANOVA

Model		Sum of Squares	df	Mean Square	F	p
1	Regression	1670	3	556.83	52.28	< .001
	Residual	2535	238	10.65		
	Total	4206	241			

The regression model found that cognitive presence ($X_3 = p < .001$) was significantly predictive of critical reflection (Y_2), while teaching presence ($X_1 = p = .44$), and social presence ($X_2 = p = .37$), were not significant predictors ($\alpha = .05$). Results of the regression analysis can be found in Table 10.

Table 10

Coefficients

Model		Unstandardized	Standard Error	Standardized	t	p
1	intercept	0.607	1.254		0.484	0.629
	Teaching	0.025	0.032	0.066	0.773	0.440
	Social	-0.041	0.047	-0.066	-0.890	0.374
	Cognitive	0.263	0.041	0.623	6.389	< .001

CHAPTER FIVE: CONCLUSIONS

Overview

This study found that there is a significant predictive relationship between a community of inquiry and transformative learning in online, graduate business courses. These findings fit with the conceptual similarities between these theories, primarily by the educational and psychological traditions on which they are based, as well as the conception of reflective thinking used to frame each. This study adds to the limited research on fostering transformative learning online, by providing a framework within which to study and promote it. The focus on business students, and the use of an instrument that measures a single dimension of transformative learning, presented limitations to the study. Suggestions for future research include replicating the study in different populations, using a more holistic transformative learning instrument, examining specific learning activities and their effect on community of inquiry and transformative learning, and providing further validation for the Reflection Questionnaire in online settings.

Discussion

The purpose of this study is to measure the relationship between a community of inquiry and transformative learning in online, graduate business courses. Two models were used to measure the relationship: the linear combination of the teaching, social, and cognitive presence scales of the community of inquiry, and the reflection scale of transformative learning; and, the linear combination of the teaching, social, and cognitive presence scales of the community of inquiry, and the critical reflection scale of transformative learning. Both models demonstrated a significant relationship between a community of inquiry and transformative learning. Within the models, cognitive presence was significantly related to both factors of transformative learning—

reflection and critical reflection—, while teaching presence was significantly related to the reflection subscale. No significant relationship was found between social presence and the transformative factors of reflection and critical reflection.

Community of Inquiry and Transformative Learning

This study found a significant relationship between a community of inquiry and transformative learning. This finding fits with the suggestions by Guthrie and McCracken (2014), Lee and Nicolaides (2014), and Smith (2012) that, at least conceptually, a community of inquiry can provide the context for perspective transformation. Indeed, the context of learning described by the community of inquiry (Garrison, 2016) and the context required for transformative learning—the transformative holding environment (Kegan, 1982; Kegan & Lahey, 2016)—are obviously similar and thus informative of the relationship this study found between the theories. Specifically, *teaching presence* within a community of inquiry, which has to do with the design of the learning environment, is matched in a transformative learning environment by the *home*, which creates the context for transformation through the establishment of development communities. *Social presence* within a community of inquiry, which has to do with learner-to-learner interaction, is matched in a transformative learning environment by the *groove*, which provides the space for critical discourse within the developmental community. *Cognitive presence* within a community of inquiry, which has to do with the resolution of cognitive challenges, is matched in a transformative learning environment by the *edge*, which is the space where learners grow their epistemic capacities and therein continue in their personal development.

These practical similarities can be traced further back to the philosophical foundations of both theories. Specifically, the concerns of Dewey, Piaget, and Vygotsky are picked up and

carried forward by the founders of each theory. Garrison (2015), in discussing the historical underpinnings of the community of inquiry, spotlighted Dewey's concern for reflective thought, Piaget's notions of assimilation and accommodation in meaning-making, and Vygotsky's commitment to psychosocial development.

> Most individuals stay with existing beliefs unless challenged. Therefore the essential role of discourse is to encourage the critical examination of personal meaning and the reason for thinking collaboratively. Reflective or critical thinking is dependent upon free or open communication and purposeful engagement in collaboratively testing personal meaning and building mutual understanding. (Garrison, 2015, p. 14)

The influences of Dewey, Piaget, and Vygotsky are similarly apparent in Mezirow's (1991) conception of the process of meaning-making.

> Learning always involves making a new experience explicit and schematizing, appropriating, and acting upon it. We seek validation when, in the process of interpreting an experience, we find reason to question the truth, appropriateness, or authenticity of either a newly expressed or implied idea or one acquired through prior learning. It is important to recognize how crucial the validation of knowledge is to the learning process in adults. (Mezirow, 1991, Chapter 1, Section 4, para. 3)

More recently, Brookfield's (1987, 2012) work on critical thinking, critical reflection, and critical theory more generally, has significantly influenced literature on both the community of inquiry and transformative learning. Within the community of inquiry, Brookfield's (1987) five stages of reflection: trigger event, appraisal, exploration developing an alternative perspective, and integration or resolution, inform the Practical Inquiry Model upon which cognitive presence is founded. Within transformative learning, Brookfield's commitment to

critical theory continues to steer the definition of what transformation is and what it entails. For Brookfield (2012) nothing other than "profound metamorphosis" (p. 131) of the learner can be considered transformation.

> [T]he developmental imperative of adulthood is to transform one's meaning schemes (sets of assumptions governing particular situations) and meaning perspectives (broader worldviews) so that they explain the disorienting dilemmas (situations that take us by surprise and cause us to question assumptions) we inevitably encounter as we journey through adulthood. In the process we alter how we see ourselves, our purpose in the world, and the way that purpose can be realized. (Brookfield, 2012, p. 141)

Here, Brookfield's insistence that transformation is always and only about changing how learners know, not simply what learners know (contra Newman, 2012), aligns with Garrison's (2015) vision of how a community of inquiry "transforms knowledge and experience and this becomes material for future inquiries" (p. 56).

In this way, both the community of inquiry framework and transformative learning theory see learning as an iterative process where taken-for-granted assumptions are challenged in and by experiential and social contexts, leading to the construction of modified if not entirely new ways of knowing and being. Overall, then, there are strong practical and conceptual similarities between the community of inquiry and transformative learning. These similarities in theoretical foundation, and the operationalization of those theories through community, discourse, and reflection, help explain the relationship this study found between the community of inquiry and transformative learning.

Cognitive Presence and Transformative Learning

This study found a significant relationship between cognitive presence and the transformative learning factors of reflection and critical reflection. This relationship between cognitive presence and transformative learning is reasonable as cognitive presence and the reflection and critical reflection factors of transformative learning are meant to indicate learner engagement in similar epistemic activities. In both the community of inquiry and transformative learning, engagement in metacognition—reflection on the products, process, and premises of beliefs—is the essence of authentic learning and the goal of education (Cranton, 2016; Garrison, 2016). Both theories suggest that interactions of critical discourse within a community of learners for the purposes of sharing ideas and overcoming confirmation bias promote engagement in and improvement of such metacognitive capacities, and thus serve as the objective of learning within each of the theories (Mezirow, 1991; Garrison, 2016),.

Further, in this study, the Reflection Questionnaire was used to measure transformative learning. Kember et al. (2000) formulated this questionnaire based on Mezirow's (1991) transformative framework, which tends to focus on the rational aspect of transformation (Cranton & Taylor, 2012), drawing heavily from Dewey (Mezirow & Associates, 2000; Taylor & Cranton, 2012). Similarly, the Practical Inquiry Model, which operationalizes cognitive presence in a community of inquiry, is based on Dewey's conception of reflective thought (Garrison, 2015, 2016). Owing considerably to their conceptual ties, the processes of thought and stages involved in the development of it are remarkably similar in each theory. Specifically, Lee and Brett's (2015) suggested four-step process of transformation—disorienting dilemma, critical reflection, rational dialogue, and planning a different action—mirrors the four-step process outlined in the Practical Inquiry Model: triggering event, exploration, integration, and resolution. These

similarities between the means and ends of cognition in a community of inquiry and transformative learning add to the understanding of the relationship this study found between the theories.

Teaching Presence and Transformative Learning

This study found a significant relationship between teaching presence and the transformative factor of reflection, while teaching presence was not significantly related to critical reflection. Guthrie and McCracken (2014), Lee and Nicolaides (2014), and Smith (2012) suggested that a community of inquiry is well-suited to encourage engagement in metacognition, lending to the possibility of eventual perspective transformation. Within a community of inquiry, it is teaching presence that informs the creation of a learning environment conducive to perspective transformation. Through the design, facilitation, and direction of learning, teaching presence foundationally supports and promotes engagement in higher orders of cognition. Rockinson-Szapkiw et al. (2016) found teaching presence to be the most critical of the three presences, while Nickel and Overbaugh (2013) suggested it was the presence most prized by learners within a community of inquiry. More significantly, Hosler and Arend (2012) found that teaching presence explains 47% of variance in cognitive presence. Indeed, the core elements of teaching presence—the construction of learning activities, and choice and execution of pedagogical strategies more generally—have been shown to inform both the community of inquiry (deNoyelles et al., 2014; Garrison, 2016; Rienties et al., 2013; Stein & Wanstree, 2013) and transformative learning (Cranton, 2016; Hammond, 2015; Meijer et al., 2016; Pinchevsky-Font & Dunbar, 2015; Taylor & Cranton, 2012). Thus, understanding that the design of the learning environment is informative of the cognitive outcomes within that environment helps explain the relationship this study found between teaching presence and reflection

However, this study found no relationship between teaching presence and critical reflection. In this study, transformative learning—with critical reflection its immediate precursor—was positioned as the highest, most desired, and most meaningful form of learning, particularly in higher education (Kreber, 2012). Within a community of inquiry, higher levels of cognitive presence are meant also to represent learner engagement in such meaningful learning, again undergirded by teaching presence. However, learners tend to have difficulty engaging in the highest levels of cognition—integration and resolution, according to the Practical Inquiry Model—even when overall community of inquiry scores, including teaching and cognitive presence, are relatively high (Archibald, 2013; Goda & Yamada, 2013; Hosler & Arend, 2013; Lee, 2014; Oskoz, 2013; Richardson, Sadaf, & Ertmer, 2013; Stein & Wanstreet, 2013). Similarly, the practice of critically reflecting on the products, processes, and premises of beliefs is unnatural, and learners tend to need support and practice in it (Ertmer & Koehler, 2015; Oskoz, 2013).

Thus, literature on both the community of inquiry (Archibald, 2013; Cleveland-Innes, 2013; Gašević et al., 2015; Lafuente et al., 2014; Lee, 2014; Stover & Pollack, 2014; Winne, 2015) and transformative learning (Cranton, 2016; Kegan & Lahey, 2016; Smith, 2012; Taylor & Ellias, 2012) underline the importance of scaffolding specific learning activities and the overall learning experience for the achievement of higher order cognition. However, this study did not examine specific learning activities or pedagogical strategies within the courses for which students completed the community of inquiry and transformative learning surveys. So, as teaching presence is essential to learner engagement in higher levels of cognition, particularly critical reflection, it may be the case that by examining the specific learning strategies utilized on the one hand, or operationalizing activities known to support a community of inquiry

(deNoyelles et al., 2014; Gašević et al., 2015) and transformative learning (Cranton, 2016) on the other, teaching presence could present a significant relationship with critical reflection, even if it did not in this study.

Social Presence and Transformative Learning

This study found no significant relationship between social presence and the transformative factors of reflection and critical reflection. According to Garrison (2015) community is essential to the development of higher levels of cognition. Further, social presence is considered the central factor in understanding the creation of effective online learning environments (Whiteside et al., 2017). Recent studies by Akcaoglu and Lee (2016), Lim and Richardson (2016), and Song et al. (2016) have explored the role of social presence in the formation of communities of inquiry, and confirmed its importance to online learning in general. Similarly, social context is regularly cited as critical to transformative learning experiences (Brookfield, 2012; Cranton & Taylor, 2012; Kumi-Yeboah & James, 2014; Lee & Nicolaides, 2014; Smith, 2012; Weinbaum et al., 2015). However, this study found that social presence was not significantly related to the transformative learning factors of reflection or critical reflection.

Attempting to account for more of an individuated presence within the community of inquiry, Shea et al. (2012) have suggested adding *learning presence* to the community of inquiry framework. According to Shea et al., participant roles within a community of inquiry are not identical, and this individuation of contributions demands recognition of the individual in the learning experience if the entirety of the learning experience is to be understood. Similarly, in transformative learning theory, though the social is often seen as the ground for transformation itself or the context in which transformation is operationalized, it is the individual that is always the subject of transformation (Cranton & Taylor, 2012). Further, while intercourse with others

may serve to promote engagement in reflective thought, reflective thought is necessarily an individual activity (Mezirow, 1978).

Thus, there is, in both the community of inquiry framework and transformative learning theory, the inseparable, though somehow distinct actions of public discourse and private reflection. Discourse may indeed lead to reflective thought. However, the actualization of that reflection, no matter how greatly influenced by others it may be, is an activity involving the self, exclusively. This relationship between the other and the self can help explain how social presence may undergird, but not be directly related to the individual cognitive activities of reflection and critical reflection.

Interdependence of Presences and Transformative Learning

While teaching presence was not found to be significantly related to critical reflection, and social presence was not found to be significantly related to either of the transformative learning factors of reflection and critical reflection, this does not mean that there was no actual relationship amongst them. Shea and Bidjerano (2009) suggested that meaningful learning within communities of inquiry emerges as the product of all presences together. "It is through the skillful marshalling of these forms of presence that online faculty and students, in collaboration, develop a productive online learning environment through which knowledge is constructed" (Shea & Bidjerano, 2009, p. 544–545). Archibald (2013) provided that each of the presences in a community of inquiry is both conceptually and statistically interdependent. Conceptually, teaching presence establishes social presence, just as social presence becomes the mediating factor between teaching and cognitive presence within communities of inquiry (Garrison, 2016). Statistically, the findings of Archibald (2013), that teaching and social presence combine to explain 70% of variance in cognitive presence, were matched in this study

where teaching and social presence explain 73% of variance in cognitive presence. Therefore, cognitive presence can be understood as the outcome of teaching and social presence, and as such, teaching and social presence are assumed to be informative, and actively supportive, of cognitive presence within a community of inquiry.

Similarly, within Kegan's (1982) holding environment, as updated by Kegan and Lahey (2016), perspective transformation occurs at the edge—the place where cognitive challenges are resolved. However, this edge experience cannot occur absent engagement with a supportive community (home) and discourse within that community (groove). Thus, again, engagement in reflection and critical reflection, while primarily a cognitive function, assumes the establishment of an environment wherein that reflection can occur—teaching presence—, and interaction with others within that environment where perspectives can be challenged and reaffirmed—social presence.

Implications

These findings reinforce the suggestions of Guthrie and McCracken (2014), Lee and Nicolaides (2014), and Smith (2012) that the community of inquiry framework presents a context for perspective transformation. Considering the absence of research on fostering transformative learning in online environments (Cranton & Hoggan, 2012; Smith, 2012), demonstrating that the community of inquiry can explain a significant amount of variance in factors related to transformative learning is promising. More specifically, this study demonstrates that a community of inquiry can potentially support transformative learning in online environments. As education moves increasingly online (Allen & Seaman, 2016), understanding the affordances of, and possibilities for meaningful learning in, online communities of inquiry become

increasingly important to the development of lifelong learners who have the capacity to interact with and make sense in an increasingly complex world (Garrison, 2016).

More specifically, this study provides a framework in which to begin exploring how specific design and facilitation strategies that are aligned with best practices vis-à-vis a community of inquiry can inform transformative learning in online environments. deNoyelles et al. (2014) have framed learning activities to support and meet the objectives of a community of inquiry, while similar work is largely absent the transformative learning literature (Cranton, 2016; Smith, 2012). Studying how specific activities both lend to a community of inquiry and support perspective transformation will be a fruitful area of study in online education.

The particular relationship between cognitive presence and elements of transformative learning further offers a new method for studying the sorts of meaningful learning that can occur in the context of online education. Within a community of inquiry, meaningful learning is framed by the Practical Inquiry Model. Accordingly, a *triggering event*—exposure to some new perspective, for example—instigates an immediate need within the learner to *explore* possible solutions to the posed cognitive challenge, followed by the *integration* of some new idea or action into the learner's life, finally resulting in the *resolution* of that cognitive challenge leading to a new way of knowing or being (Garrison, 2016). In this model, the final two phases—integration and resolution—represent the apex of learning. In obvious ways, this process is akin to the process of transformative learning. At the same time, there are important differences.

Considering a more incremental understanding of perspective transformation, such as that offered by Nohl (2015), it is not entirely clear that meaningful learning resides only at the integration and resolution phases. Rather, meaningful learning often begins with an nondetermining start, when a learner encounters, but does not overtly notice, some new stimulus.

Accordingly, the triggering event, the first stage of the Practical Inquiry Model, and the lowest level of cognition according to the framework, occurs at the third of Nohl's five stages, when a novel idea wrought by some new stimulus is tested in a social context. At this point, according to Nohl, perspective transformation—meaningful learning—is already taking place. Therefore, while higher levels of thinking according to the Practical Inquiry Model may be unrealized within the confines of a specific course as evidenced by a lack of engagement in the integration and resolution phases, elevated levels of cognitive presence, insofar as they indicate engagement in the actions of reflection and critical reflection, may nevertheless be indicative of significant epistemic transformation, if only not fully realized.

Similarly, failure to achieve resolution, the final and highest phase of the Practical Inquiry Model, does not necessarily indicate failure to engage in high levels of cognition. Lee and Brett (2015) argued for a dialogic process where resolution of cognitive challenges within the public sphere is not necessarily the goal of discourse. Rather, the objective is merely to gain exposure to alternative view points within a community of learners, even if those learners do not finally agree on the meaning of a specific idea. Hammond (2015) remarked similarly, suggesting that discourse can be successful even if it does not end in resolution, so long as learners gain an appreciation for and understanding of the products, processes, and premises of other learners' rationale. Kegan (1982) commented that the ability to recognize and accept contradictions is a better indication of augmented epistemic capacity than the need to achieve "resolution at all costs" (Chapter 8, Section 1, para. 1). In this way, it may be that measures of reflection and critical reflection are valid indicators of engagement in meaningful learning within a community of inquiry, even if the highest levels of cognitive presence as measured by the Practical Inquiry Model are not realized.

Understanding meaningful learning in such a transformative way is important not only conceptually, but also practically. Kreber (2012) highlighted how the inculcation of transformative habits—such as critical reflection—are essential for success in the modern world.

> The ability to reflect critically on the assumptions underlying what is communicated to us, and those informing our own perceptions, thoughts, feelings, and actions, is of fundamental importance in order to address the challenges, responsibilities, and complexities associated with adult life. (p. 323)

Therefore, apart from the important, conceptual finding that a community of inquiry is related to transformative learning in online environments, the ability to further explore this relationship, to create and examine strategies to encourage learner involvement in meaningful learning processes, and to develop curricula and learning experiences that challenge students to overcome confirmation bias and adopt more pliable and permeable habits of mind (Mezirow, 1978) so that those learners can both interact with and positively influence society and culture (Meijer et al., 2016) is the most important implication of this study.

Limitations

This study was limited to online, graduate MBA students at one university in Maryland. While the population of students was reasonably homogenous, the extent of generalizability is nevertheless limited. Further, this study did not control for the modifying effects of discipline, which has been shown to influence community of inquiry scores (Arbaugh et al., 2010; Arbaugh, 2013). An important limitation to the application of this study is due to the use of the Reflection Questionnaire, which focuses primarily on the rational aspect of transformative learning. Taylor and Cranton (2012), recognizing the various representations of transformative learning, including the relational (Baumgartner, 2012; English & Irving, 2012; Lee &

Nicolaides, 2014; Schapiro et al., 2012), conative (MacKeracher, 2012), aesthetic (Cranton, 2016), and spiritual (Charaniya, 2012; Dirkx, 2012), called for a more holistic understanding of transformative learning—a theory that would consider and account for the whole learner. Even while it has been recognized that rational approaches to transformative learning necessarily assume that "cognitive, physical, emotional, and spiritual dimensions are closely interrelated" (Papastamatis & Panitsides, 2014, p. 74), the use of an instrument such as the Outcomes and Processes survey by Stuckey, Taylor, and Cranton (2013), could provide richer insight to the relationship between a community of inquiry and transformative learning.

Recommendations for Future Research

Future research can provide further insight into the relationship between a community of inquiry and transformative learning. The recommendations below have implications for curriculum planners, instructional designers, instructional technologists, and faculty who are tasked with, and are ultimately responsible for the design and delivery of online content. Njiro (2014) suggested that the inculcation of transformative learning principles into curricula across higher education is essential for learner success in the modern world. As the recommendations below are meant to enhance the overall understanding of the principles of, and potential for, creating educative experiences capable of engaging students in meaningful learning, the implications necessarily—and perhaps most importantly—extend to the learners who will be influenced by the applications resulting from this and related research.

First, studying the relationship between a community of inquiry and transformative learning while controlling for discipline can provide greater insight into the potential for engaging students in meaningful learning in both pure and applied disciplines. As Arbaugh (2013) and Arbaugh et al. (2010) indicated, discipline can have moderating effects on

community of inquiry scores. Thus, understanding the ways that discipline can ultimately moderate learner engagement in meaningful learning has implications for the design and delivery of online courses. Second, repeating the study with different student populations, such as undergraduate students, or students studying a discipline other than business, will permit further exploration of the modifying affects these factors might have on the relationship between the theories, and will therefore have implications for the creation of curricula and pedagogical strategies that enable students to adapt to and in a dynamic knowledge society (Garrison, 2016; Lee & Nicolaides, 2014; Njiro, 2014; Watkins et al., 2012; Weimer, 2012; Weinbaum et al., 2012). Third, utilizing a different transformative learning instrument, such as the Outcomes and Processes survey by Stuckey et al. (2013), to investigate how dimensions of transformative learning other than reflection relate to a community of inquiry will present a more robust picture of the kinds of transformative learning possible in online learning environments. By understanding the limitations and affordances of technology in engaging students in a community of inquiry and transformative learning with it (Smith, 2012), these findings can have implications for the design and delivery of online content. Fourth, assessing the influence specific learning activities, such as discussion board protocols intended to promote a community of inquiry (deNoyelles et al., 2014), have on transformative learning using an instrument such as the Learning Activities Survey (King, 1998), will have implications for the selection of pedagogical and scaffolding strategies intended to propel students towards collaborative learning experiences and meaningful learning outcomes (Archibald, 2013; Cleveland-Innes, 2013; Cranton, 2016; Gašević et al., 2015; Kegan & Lahey, 2016; Lafuente et al., 2014; Lee, 2014; Smith, 2012; Stover & Pollack, 2014; Taylor & Ellias, 2012; Weinbaum et al., 2015; Winne, 2015). Fifth, examining the relationship between the 10 community of inquiry sub-subscales and

the four Reflection Questionnaire sub-factors will provide a more complete understanding of how the critical functions of a community of inquiry relate to the core dimensions of transformative learning. These findings will have implications for the study of the community of inquiry in general and the refinement of online course creation around community of inquiry and transformative learning principles specifically. Sixth, future studies can provide further validation of the Reflection Questionnaire in online learning environments. These studies and their findings will have implications for the understanding of the potential to engage learners in transformative learning online (Cranton & Hoggan, 2012; Smith, 2012). Finally, as this was the first study to empirically connect the community of inquiry framework and transformative learning, any range of replicative or similar studies will have implications for understanding both theories individually and corporately, resulting in enhanced knowledge of the elements required for, and the outcomes expected from courses designed on, and delivered by collaborative and transformative learning principles.

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APPENDICES

Appendix A: IRB Approval Letter

Dear Patrick Dempsey,

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under exemption category 46.101(b)(2), which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:101(b):

> (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:
> (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

Please retain this letter for your records. Also, if you are conducting research as part of the requirements for a master's thesis or doctoral dissertation, this approval letter should be included as an appendix to your completed thesis or dissertation.

Your IRB-approved, stamped consent form is also attached. This form should be copied and used to gain the consent of your research participants. If you plan to provide your consent information electronically, the contents of the attached consent document should be made available without alteration.

Please note that this exemption only applies to your current research application, and any changes to your protocol must be reported to the Liberty IRB for verification of continued exemption status. You may report these changes by submitting a change in protocol form or a new application to the IRB and referencing the above IRB Exemption number.

If you have any questions about this exemption or need assistance in determining whether possible changes to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,

G. Michele Baker, MA, CIP
Administrative Chair of Institutional Research
The Graduate School

Appendix B: Recruitment Letter

Hello ,

As a graduate student in the School of Education at Liberty University, I am conducting research as part of the requirements for a doctoral degree. The purpose of my research is to study how community affects meaningful learning in online courses, and I am writing to invite you to participate in my study.

If you are willing to participate, you will be asked to complete a survey through Qualtrics. It should take approximately 3–7 minutes for you to complete the survey. Your participation will be completely anonymous, and no personal, identifying information will be required.

Follow the link below to access the Qualtrics survey.

A consent document is provided as the first page you will see after you click on the survey link attached to this announcement. The consent document contains additional information about my research.

Thanks so much for your participation!

Sincerely,

Patrick Dempsey
Lead Instructional Teaching Specialist
Johns Hopkins Carey Business School

Appendix C: Consent Form

You are invited to be in a research study of how community supports meaningful learning in online courses. You were selected as a possible participant because you are enrolled in at least one online MBA course at Johns Hopkins Carey Business School. Please read this form and ask any questions you may have before agreeing to be in the study.

Patrick Dempsey, a doctoral candidate in the School of Education at Liberty University, is conducting this study.

Background Information: The purpose of this research study is to measure the relationship between communities of inquiry and transformative learning in online, graduate business courses.

Procedures: If you agree to be in this study, I would ask you to do the following things:

1. Complete an anonymous survey in Qualtrics, which will take approximately 5–8 minutes.

Risks and Benefits of Participation: The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

Participants should not expect to receive a direct benefit from taking part in this study.

Benefits to society include increasing understanding of how to create online learning environments that enable to students to engage in meaningful learning.

Compensation: Participants will not be compensated for participating in this study.

Confidentiality: The records of this study will be kept private. In any sort of report I might publish, I will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researcher will have access to the records.

Voluntary Nature of the Study: Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty University or Johns Hopkins University. If you decide to participate, you are free to not answer any question or close the survey at any time prior to submitting it without affecting those relationships.

Contacts and Questions: The researcher conducting this study is Patrick Dempsey. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact him at Patrick.Dempsey@jhu.edu. You may also contact the researcher's faculty advisor, Gary Kuhne, at gwkuhne@liberty.edu

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 1887, Lynchburg, VA 24515 or email at irb@liberty.edu.

Please notify the researcher if you would like a copy of this information for your records.

Statement of Consent: I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.

Click "Take this survey" to participate.

Appendix D: Reflection Questionnaire

Appendix E: Community of Inquiry Survey Instrument