2017

Social Presence in Two Massive Open Online Courses (MOOCs): A Multiple Case Study

Stranach, Matthew

http://hdl.handle.net/11023/4150
doctoral thesis

University of Calgary graduate students retain copyright ownership and moral rights for their thesis. You may use this material in any way that is permitted by the Copyright Act or through licensing that has been assigned to the document. For uses that are not allowable under copyright legislation or licensing, you are required to seek permission.

Downloaded from PRISM: https://prism.ucalgary.ca
UNIVERSITY OF CALGARY

Social Presence in Two Massive Open Online Courses (MOOCs): A Multiple Case Study

by

Matthew Stranach

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES IN

PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE

DEGREE OF DOCTOR OF EDUCATION

GRADUATE PROGRAM IN EDUCATIONAL RESEARCH

CALGARY, ALBERTA

SEPTEMBER, 2017

© Matthew Stranach 2017
Abstract

The purpose of this study was to explore the role social presence plays within two Massive Open Online Courses (MOOCs) offered by two American institutions of higher education through the Canvas and Ed.X learning software consortia. Social presence is one of three presences that comprise Garrison and colleagues’ Community of Inquiry (CoI) conceptual framework (Garrison, Anderson & Archer, 2000; Garrison, 2013). Descriptive multiple case study methodology was used for the study, with data collected through surveys, individual interviews, focus group interviews, and discussion board postings. Findings show that, while participants in MOOCs felt comfortable expressing themselves “as real people” (a key indicator of social presence), the majority did not view themselves as being part of a community of learners within their respective courses. Overall, in both MOOCs, participants experienced social presence least among the three CoI presences. Participants in both MOOCs experienced social presence as it helped them to realize learning objectives (i.e., to successfully complete their respective courses). Social presence played a supportive role to cognitive presence. Factors affecting social presence included participants’ ability and/or willingness to direct their own learning, types of available technology, availability of time, and depth of course content. There were three implications for practice for MOOC designers and facilitators. The first implication is that leveraging students’ personal interests through course activities and content can help enhance social presence. The second implication is that making more varied use of the features and functionality of learning management software can afford students additional and better opportunities for social interaction. The third implication is that encouraging greater amounts and quality of collaboration through the design of assignments and other assessment and evaluation items can lead to improved social presence, and an enhanced educational experience overall. Further MOOC research should address different kinds of MOOCs than were studied as
part of this research, and a greater number of MOOCs, and using different research methodologies, and including greater amounts of MOOC designer and instructor perspectives. Further research on different elements of the CoI model and the areas of overlap among the three CoI presences within MOOCs is also warranted.
Acknowledgements

I am deeply grateful to everyone who helped in any way, shape, or form over the past five plus years, including months when it was uncertain if there would be a doctoral thesis to defend. To participating institutions, instructors, and students who gave me their energy, trust, and time: thank you! I hope that the pages herein accurately reflect your input.

Thanks to my supervisors Dr. Jennifer Lock and Dr. Kimberly Lenters for their patience, good advice, and thoughtful, critical, detailed feedback throughout this endeavor. I am grateful to Dr. Ellen Rose at the University of New Brunswick (UNB) for her feedback on the proposal for this study, and for acting as a reference into the Ed.D program. Thanks to the members of my supervisory committee—Dr. Gale Parchoma, and Dr. Patti Dyjur— and to my examiners, Dr. Norman Vaughan (external) and Dr. Barbara Brown (internal), and Dr. Roswita Dressler (neutral chair).

This study— and my involvement in the Ed.D generally— would not have been successful without interest and support from a number of colleagues at the College of the North Atlantic-Qatar (CNA-Q) and the University of Ontario Institute of Technology (UOIT).

I am indebted to colleagues from the Department of Language Studies and Academics (LSA) at the College of the North Atlantic-Qatar (CNA-Q). Particular thanks to Communications Department leadership at CNA-Q including (but not limited to) Jason Rolls, Terry Keating, and John Little. Also thanks to Dr. Paula Hayden of CNA-Q’s Teaching and Learning Centre for her early interest and support for my involvement in the Ed.D, and to other members of the CNA-Q’s graduate writing support group. Thanks as well to Neal Mannas for proctoring my candidacy exam and for being a great friend.

Thanks to Bridgette Atkins at UOIT for reviewing in-progress versions of this document, and to Dr. Toba Bryant, Michael Guy, and Jeanette Oliviera for helping to facilitate the final
exam. Thanks to Jaymie Koroluk for the great help when I was transitioning from living and working in Qatar to working in Canada. Thanks to Dr. Catherine Drea and Dr. Rupinder Brar for their valuable support in the final months of this project, and to Dr. Michael Rostek of the UOIT Futures Forum for his interest in the practical applications of MOOCs.

Friends, family, and colleagues—too numerous to name individually—in New Brunswick, South Korea, Qatar, Ontario, and elsewhere—thank you!

Finally—this document exists because of and for Moonyea, Ethan, and Kai—who provide and have provided everything of meaning and value in my life—사랑합니다
Table of Contents

Abstract 2
List of Tables 9
List of Figures 10
Chapter One: Introduction 11
   Introductory Statement 11
   Study Focus and Purpose 12
   Context of the Study 12
   Theoretical Perspectives 13
      Connectivism and cognitive-behaviourism 13
      CoI framework 14
   Research Questions 15
   Significance of the Study 15
   Definitions 16
   Chapter Summary 18
Chapter Two: A Review of the Literature 19
   Introduction 19
   Massive Open Online Courses (MOOCs) 19
      MOOCs as e-learning. 21
      MOOC nomenclature. 21
      xMOOCs. 23
      cMOOCs. 23
      Other MOOCs. 24
      Teaching and learning in MOOCs. 25
      Student engagement. 27
      Student completion. 29
      Student success. 31
   Community of Inquiry (CoI) 32
      Collaborative constructivism. 34
      Critiques of CoI. 35
      Social presence. 37
      Social presence and cognitive presence. 40
      Social presence and teaching presence. 41
      CoI in online courses. 42
   CoI and MOOCs 43
      Social presence in MOOCs. 44
   Need for Further Research 47
Chapter Three: Methodology 49
   Introduction 49
   Case Study Methodology 49
      Advantages of case study. 50
      Criticism of case study. 50
   Population and Sampling 52
   Research Questions 54
   Research Context: Description of MOOC #1 55
      Design features. 56
Social media.

Research Context: Description of MOOC #2
  Design features.
  Social media.

Methods of Data Collection
  Individual interviews and focus group interviews.
  Online discussion postings.
  Surveys.

Methods of Data Analysis
  Individual interviews and focus group interviews.
  Online discussion postings.
  Pattern coding of qualitative data.
  Surveys.

Integrity of the Study
  Construct validity.
  Internal validity.
  External validity.
  Reliability.
  Integrity of the instruments.

Limitations

Delimitations

Role and Assumptions of the Researcher
  Biases.

Ethical Considerations

Successes and Challenges
  Successes.
  Challenges.

Summary

Chapter Four: Findings
  Introduction
  MOOC #1
    Demographic survey participants.
    Community of Inquiry survey instrument results.
    Early exit survey.
    Discussion board postings.
    Interview participants.
  MOOC #2
    Demographic survey participants.
    Community of Inquiry survey instrument results.
    Early exit survey.
    Discussion board postings.
    Interview and focus group interview participants.
  Cross-Case Comparison: MOOC #1 and MOOC #2
    Demographic surveys.
    Community of Inquiry surveys.
    Early exit surveys.
### Chapter Five: Discussion

#### Introduction

Social Presence and Teaching and Learning in MOOCs

Factors Contributing to Social Presence in MOOCs

- Self-direction.
- Types of technology.
- Time and depth.

Social Presence and Participants’ Sense of Belonging in MOOCs

- Limits to social presence.
- Optional discussions.
- Personal learning outcomes.
- Overall.

#### Summary

Chapter Six: Implications and Conclusion

#### Introduction

Summary of the Study

Social presence, and teaching and learning in MOOCs.

Factors contributing to social presence in MOOCs.

Participants’ sense of belonging.

#### Implications for Practice

- Personal interest.
- Support for learning.
- Opportunities to collaborate.

#### Suggestions for Further Research

- Further MOOC research.
- Further CoI research.

#### Conclusion

References

List of Appendices

Appendix A: Demographic Survey

Appendix B: Individual Interview Protocol

Appendix C: Community of Inquiry (CoI) Survey Instrument

Appendix D: Early Exit Survey

Appendix E: Focus Group Interview Protocol

Appendix F: Case Study Protocol

Appendix G: Emails of Permission / Copyright
List of Tables

Table 3.1 Social presence coding template ................................................................. 63
Table 3.2 Sample of coding—focus group interview transcript (focus group #2) .................. 64
Table 3.3 Sample of coding—discussion postings (MOOC #1) ...................................... 66
Table 3.4 Pattern codes of qualitative data—examples ..................................................... 68
Table 4.1 Highest level of education: MOOC #1 ............................................................. 81
Table 4.2 Level of experience with online courses (MOOCs and other): MOOC #1 ............. 82
Table 4.3 Social presence: Community of Inquiry survey results ..................................... 83
Table 4.4 MOOC #1: Total number of discussion board postings by all participants ............ 85
Table 4.5 Social presence classification and indicators: MOOC #1 ................................. 86
Table 4.6 Highest level of education: MOOC #2 ........................................................... 95
Table 4.7 Number of MOOCs taken by participants: MOOC #2 .................................... 95
Table 4.8 Primary reasons for participating in MOOC #2 ................................................. 96
Table 4.9 MOOC #2: Social presence: Community of Inquiry survey results .................... 98
Table 4.10 MOOC #2: Total number of discussion board postings by all participants .......... 102
Table 4.11 Social presence classification and indicators: MOOC #2 ................................. 102
Table 4.12 Discussion board posting participants in relation to respective course enrollment ... 120
Table 4.13 Categories and indicators of social presence compared .................................... 123
Table 5.1 Community of Inquiry presences in MOOC #1 and MOOC #2 .......................... 130
List of Figures

Figure 2.1 CoI model ................................................................. 33
CHAPTER ONE: INTRODUCTION

Introductory Statement

This descriptive multiple case study investigates the role social presence plays within two Massive Open Online Courses (MOOCs). I invited participants—students and instructors—within MOOCs offered by two North American institutions of higher education to participate in the study. Since 2008, institutions of higher learning have offered hundreds of MOOCs to thousands of students worldwide. There has been a widespread movement by institutions to offer courses to whoever wishes to take them—free of financial cost and available to anyone with an Internet connection. When I wrote the proposal for this study in August 2014, a basic Google™ search using “MOOC” as a search term yielded 2,570,000 search results. At the time of writing (June 2017) the same Google™ search yielded 12,400,000 results—a more than four-and-a-half fold increase in less than three years. A search in the ERIC EBSCO database of peer-reviewed literature listed 19 results in late 2014; there are now more than 412 results (in mid-2017). Based on these search results, and on the ‘massive’ scales of enrollment, it would appear that public interest in MOOCs is far ahead of the scholarship. Institutions of higher learning are committing significant amounts of financial and human resources to the development and delivery of MOOCs. This warrants a study of teaching and learning within these courses. Despite high enrollments, there have been few studies investigating how social presence—students’ sense of belonging—affects teaching and learning in MOOCs. This research has a bearing on student engagement, as well as completion rates. If a student feels connected in a constructive, meaningful way to other learners, they may choose to finish a course or be more active in their learning. This study of social presence in MOOCs also offers insights into how the design, development, and delivery of these courses might be optimized in order to enhance social
presence and thereby increasing the value of these courses to students who are enrolled (i.e. through potentially increased engagement and completion) in MOOC, and to the institutions offering them.

**Study Focus and Purpose**

The intent of this multiple case study was to investigate how participants’ social presence can affect teaching and learning within MOOCs. I have sought to understand individual participants’ experiences of social presence within these courses. I have also explored how the respective populations of each course— as a whole— perceive social presence. By looking at both individuals’ and groups’ experiences of social presence, I have learned about individuals’ reasons for participating in MOOCs, and the extent to which social presence affects their learning. This study has also provided the opportunity to learn about how institutions of higher learning can design and facilitate MOOCs to enhance social presence, as well as cognitive and teaching presences.

**Context of the Study**

Institutions of higher education are putting significant resources into the design, development, and delivery of MOOCs. In their study of the literature on MOOCs, Liyanagunawardena, Adams, and Williams (2013) found that “most research has investigated the learner perspective” (p. 217). Nevertheless, questions remain regarding the types of social connections created within MOOCs and the quality of learning that takes place within these courses. The Community of Inquiry (CoI) framework, while used widely in blended learning (Garrison & Vaughan, 2008) and e-learning contexts (Garrison, 2011), has been used as the basis for relatively few peer-reviewed studies of MOOCs. While social presence has been referred to in peer-reviewed studies on MOOCs (Kilgour & Lowenthal, 2015; Kop, Fournier & Mak, 2011;
Rodriguez, 2012), few (if any) studies have yet appeared specifically investigating social presence in MOOCs.

Two MOOCs offered by different North American institutions of higher education served as the setting for my doctoral study. English was the language of instruction in both courses, and participants all possessed English as a first language or had a high degree of proficiency with English as a second or other language. “Massiveness” is a defining characteristic of MOOC enrollment numbers (MacAuley, Stewart, Siemens & Cormier, 2010). Therefore, both MOOCs studied had enrollments exceeding 300 students (i.e., “several hundred” students, as per MacAuley et al., 2010). Due to challenges in obtaining permission to study MOOCs and due to personal circumstances, there was a delay of more than a year between the first MOOC (March until May 2015) and the second MOOC (May until August 2016).

Theoretical Perspectives

Theoretical perspectives addressed in MOOC-related literature have tended to focus on connectivist (Daniel, 2012; Rodriguez, 2012; Rodriguez, 2013) and cognitive-behavioural (Anderson, 2013) theories of learning. The constructivist Community of Inquiry (CoI) framework was the main theoretical perspective underpinning this study.

Connectivism and cognitive-behaviourism. MOOCs have been discussed in the literature as they relate to connectivism (Daniel, 2012; Rodriguez, 2012; Rodriguez, 2013), and to cognitivism and behaviourism (Anderson, 2013). Connectivism has been posited as a distinct theory of learning, unique in key respects from behaviourism, cognitivism, and constructivism (Downes, 2012; Siemens, 2005). Writers have referred to MOOCs adhering to principles of connectivism as “cMOOCs” (Daniel, 2012; Rodriguez, 2012; Rodriguez, 2013). cMOOCs have been discussed as distinct from MOOCs aligned with cognitivist-behaviourist models, or
“xMOOCs” (Anderson, 2013; Daniel, 2012; Rodriguez 2013). For the purposes of this study, I considered cognitivism-behaviourism, constructivism, and connectivism as three distinct generations of pedagogy in distance education (Anderson & Dron, 2011). According to Anderson and Dron (2011), behaviourism is “defined as new behaviours or changes in behaviours that are acquired as the result of an individual’s response to stimuli” (p. 82). They went on to describe cognitivism as focused on “changes in knowledge or capacity that are stored and recalled in individual memory” (2011, p. 82). While cognitivism and behaviourism are two distinct concepts, Anderson and Dron (2011) linked cognitivism and behaviourism pedagogically in that learning in these models happens individually. As well, Anderson and Dron (2011) noted, “the locus of control in a CB model is very much the teacher or instructional designer” (p. 82).

This focus on individual learners working in a teacher-centred learning environment is distinct from the collaborative approach underpinning the constructivist CoI model (Garrison, 2011) as well as the connectivist model which places the network of connected learners at the centre (Downes, 2012; Siemens, 2005).

**CoI framework.** A constructivist theory of learning is the basis for the CoI framework (Garrison, Anderson, & Archer, 2000; Garrison, 2013). The CoI model consists of three interdependent presences, including teaching presence, social presence, and cognitive presence (Garrison et al., 2000). At the centre of the model (i.e., where the three presences overlap) is the educational experience. Teaching presence refers to the extent to which participants (learners and instructor) assume responsibility for directing activities supportive of learning. Social presence refers to the extent to which participants feel they can present themselves as “real people” to other participants (Garrison et al., 2000). Cognitive presence is the overall objective of a community of inquiry involving “the exploration, construction, resolution and confirmation of
understanding through collaboration and reflection” (Garrison, 2007, p.65), and is supported by social and teaching presences.

**Research Questions**

The primary research question guiding this inquiry was:

- How does social presence affect teaching and learning within MOOCs?

Sub-questions aligned with the primary research question include:

- What factors contribute to participants’ establishing a social presence in MOOCs?
- How does social presence affect participants’ perceptions of a sense of belonging to a learning community?

It should be noted given the highly interdependent nature of the three presences within the CoI model (Garrison, 2011), an investigation into the phenomenon of social presence in MOOCs involved investigating teaching presence and cognitive presence as these relate to social presence.

**Significance of the Study**

MOOCs are a relatively recent phenomenon in online learning. Since 2008, institutions of higher learning have offered MOOCs to thousands of students (Pappano, 2012). As well, MOOCs have been the subject of considerable public interest and media attention (Pappano, 2012). Significant resources have gone into the design, development, and delivery of MOOCs by a wide range of institutions of higher learning. Despite their characteristics of openness and massiveness of scale, completion rates of MOOCs are extremely low (Jordan, 2014). As well, studies within the MOOC-related literature have found silent, “lurking” behavior characterizing much of the learner engagement within MOOCs (Koutropoulos et al., 2012; Milligan et al., 2013). By studying social presence within two MOOCs, I hoped to gain insights into factors that
cause learners to see the courses through to completion, as well as factors positively and negatively affecting participation in course activities. The findings from this study may in turn have ramifications for future MOOC design, development, and delivery. As mentioned, there are thus far few studies examining MOOCs as they relate to constructivist approaches to teaching and learning. By investigating two MOOCs through the lens of the constructivist CoI, I have had the opportunity to explore how MOOC course format aligns with the CoI conceptual model, thereby contributing to e-learning theory and practice as they pertain to both phenomena (i.e. MOOCs and CoI).

**Definitions**

**Community**: “A group of individuals who are connected and communicate with regard to mutual interests and similar expectations as to process and outcomes” (Garrison, 2013, p. 10).

**Community of Inquiry**: “A learning community where participants collaboratively engage in purposeful critical discourse and reflection (cognitive presence) to construct personal meaning and shared understanding through negotiation” (Garrison, 2013, p.10).

**Connectivism**: A theory of learning that places emphasis on connections between and among networks of learners (Siemens, 2005); learning is described as “actionable knowledge” and may reside within individuals, networks, organizations, as well as databases and/or “non-human appliances” (Siemens, 2005).

**Cognitive Presence**: “The extent to which learners are able to construct and confirm meaning through sustained reflection and discourse in a critical community of inquiry” (Garrison, 2011, p. 24).

**E-learning**: “Electronically mediated asynchronous and synchronous communication for the purpose of constructing and confirming knowledge” (Garrison, 2011, p. 2).
**Learning Management System (LMS):** Infrastructure used for the delivery of instructional content (Watson & Watson, 2007). Has major roles of “recordkeeping for student learning, planning for student learning, instruction for student learning, and assessment for (and of) student learning” (Reigeluth et al., 2008, p. 32) and secondary roles of “communication, general student data, school personnel information, and LMS administration” (Reigeluth, Watson, & Watson, 2008, p. 32).

**Massive Open Online Course (MOOC):** Consisting of several hundred to many thousand learners (i.e. massive in scale), a MOOC is open in that it is generally free of fees, and has no prerequisites beyond Internet access and personal interest (MacAuley et al., 2010). It shares some features with a “typical” online course including facilitation by an acknowledged expert, as well as a timeline, and possibly weekly topics (MacAuley et al., 2010).

**Social Presence:** “The ability of participants in the Community of Inquiry to project their personal characteristics into the community, thereby presenting themselves to the other participants as “real people” (Garrison et al., 2000, p.89). It is associated with categories of indicators including emotional expression, open communication, and group cohesion (Garrison et al., 2000, p.102).

**Teaching Presence:** “The design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes” (Anderson, Rourke, Garrison & Archer, 2001, p. 5).

**Web 2.0:** “Interactive and participatory information sharing, creation, and collaboration by users on the World Wide Web” (Jacobsen, 2013, p. 325). It is characterized by use of Web applications including “social networking sites (e.g., Facebook, Google+, Twitter), blogs, wikis, video and photo sharing sites (e.g., YouTube, Metacafe, Photobucket, Flickr), hosted services,
Web applications (e.g., word processors, spreadsheets, presentation tools, video editing), mash-ups and folksonomies (i.e., collaboratively creating and managing tags to annotate and categorize content)” (Jacobsen, 2013, p. 325).

**Chapter Summary**

This chapter has provided an overview of the study, including focus and purpose, context, and theoretical perspectives, with particular emphasis on CoI and MOOC-related concepts. I have provided the research questions, and discussed the significance of the study. The next chapter presents a review of the literature related to MOOCs and the CoI framework. Chapter Three provides a description of the multiple case study research methodology used for the study. The findings and how they relate to the research questions are provided in Chapter Four. A discussion of the findings appears in Chapter Five. Chapter Six includes a summary of the study, implications for practice, suggestions for further research, and a concluding statement. Appendices include surveys, interview protocols, and case study protocols.
CHAPTER TWO: A REVIEW OF THE LITERATURE

Introduction

This chapter presents a review of the literature related to Massive Open Online Courses (MOOCs) and the Community of Inquiry (CoI) framework. The literature review in this chapter contains four sections. The first section introduces Massive Open Online Courses (MOOCs), and includes a discussion of MOOCs as a type of e-learning. I follow this with a discussion of MOOC nomenclature and MOOC pedagogy, with particular attention to studies dealing with the social elements of MOOCs. The second section includes a review of CoI literature, with a focus on the element of social presence. I discuss the concept of collaborative constructivism, as well as critiques of the CoI model. The third section focuses on how the CoI literature might be relevant to the study of MOOCs. The fourth and final section identifies gaps in the literature, and provides an explanation of how my study can contribute to greater understanding regarding social presence in MOOCs.

Massive Open Online Courses (MOOCs)

A MOOC is massive in that it consists of several hundred to several thousand students (MacAuley et al., 2010). MOOCs are described as open in that, as MacAuley et al. (2010) stated, they “generally carry no fees, no prerequisites other than Internet access and interest, no predefined expectations for participation, and no formal accreditation” (p. 4). MOOCs are similar to other courses delivered online in that they generally involve facilitation by an acknowledged expert, as well as a timeline, and possibly weekly topics (MacAuley et al., 2010). In addition to the definition put forward by MacAuley et al. (2010), I used Garrison’s (2011) definition of e-learning to help conceptualize MOOCs: “electronically mediated asynchronous and synchronous communication for the purpose of constructing and confirming knowledge. The
technological foundation of e-learning is the Internet and associated communication technologies” (p. 2). For the purposes of this study, MOOCs are considered a format for e-learning and a form of fully online distance learning.

MOOCs are a popular, emergent phenomenon in online learning (Daniel, 2012; Kovanovic’, Joksimovic’, Gaševic’, Siemens, & Hatala, 2015; MacAuley et al., 2010; Pappano, 2012), particularly within the sphere of higher education (Johnson et al., 2013; Karsenti, 2013). Scholars have described MOOCs as a “disruptive” innovation in higher education (Jacoby, 2014). The first online course described as a MOOC was offered through the University of Manitoba by George Siemens and Stephen Downes on connectivism and connectivist knowledge (CCK08) (Downes, 2008; Liyanagunawardena et al., 2013). CCK08 included twenty-five students who paid for the course and received academic credit, as well as more than 2000 non-paid, non-credit receiving students (Downes, 2008; Liyanagunawardena et al., 2013). Since 2008, public awareness of MOOCs has steadily increased with as many as 20 million students from over 200 countries having registered as MOOC participants (Karsenti, 2013). Furthermore, as many as 300,000 students have enrolled in a single MOOC (Karsenti, 2013).

In their survey of 45 peer-reviewed publications dealing with MOOCs between the years of 2008 and 2012, Liyanagunawardena et al. (2013) identified a focus on learner perspective by MOOC researchers. Veletsianos and Shepherdson (2016) also noted this focus on learners in their review of 183 peer–reviewed papers dealing with MOOCs published between 2013 and 2015. Liyanagunawardena et al. (2013) pointed out that MOOC studies have tended to rely on discussion postings for qualitative data, and that the sheer volume of data has presented challenges for researchers. Other scholars have pointed out that there are few empirical studies based on MOOCs thus far (Milligan, Littlejohn, & Margaryan, 2013). Assessment (Karsenti,
2013) and student participation (Milligan et al., 2013) have been identified as particularly challenging within the context of MOOCs.

**MOOCs as e-learning.** Scholars have described MOOCs as "cloud-based" (Kop & Carroll, 2011). MOOCs have also been associated with personal learning environments (Kop et al., 2011). MOOC designers and administrators frequently use learning management systems such as Moodle (Karsenti, 2013; MacAuley et al., 2010; Mackness, Mak, & Williams, 2010; Mak, Williams, & Mackness, 2010), online videos, as well as Web 2.0 tools, applications, and websites (Fini, 2009; Mak et al., 2010) as means to deliver content and engage students. The types of technologies, and the ways in which the technologies are used by learners, instructors, and course designers, have an effect on teaching and learning within MOOCs. I will discuss the emergence of distinct pedagogies associated with MOOCs, and the technologies aligned with these, in the next section.

**MOOC nomenclature.** Scholars have identified and discussed two distinct models of these courses; cMOOCs- those associated with connectivism- and xMOOCs- those associated with "elite" learning institutions such as Harvard, Stanford and MIT (Daniel, 2012; Rodriguez 2012; Rodriguez 2013). These models differ significantly in terms of pedagogy (Conole, 2013; Daniel, 2012; Rodriguez 2012; Rodriguez 2013). They also differ in terms of the types of technology used for their delivery (Conole, 2013; Rodriguez, 2012).

According to Anderson (2013), cMOOCs and xMOOCs are each representative of distinct generations of distance education pedagogy. xMOOCs are described as being aligned with a cognitive-behaviorist pedagogy (Anderson, 2013) or “first generation” (Anderson & Dron, 2011) which is focused primarily on the teacher or instructional designer and is characterized by “an almost total absence of social presence” (p. 83). Anderson and Dron (2011)
went on to enumerate two further generations of distance education pedagogy, including “second generation”— aligned with social-constructivist principles of teaching and learning— and “third generation”— aligned with connectivist principles of teaching and learning. cMOOCs, through their alignment with connectivism, can be described as representative of Anderson and Dron’s (2011) “third generation” of distance education pedagogy. According to Anderson and Dron, “Connectivist pedagogy stresses the development of social presence and social capital through the creation and sustenance of networks of current and past learners and of those with knowledge relevant to the learning goals” (2011, p. 88). Ryberg, Glud, Buus, and Georgsen (2010) suggested connectivism focuses primarily on the individual, “and the individual’s capacity to sift through, filter, find and utilize various resources and ideas which can enhance the individuals’ capacity (and thus the whole network)” (p. 947). The emphasis of connectivism would seem to be between “an individual and a resource or idea, possibly acquired and filtered through a complex socio-technical network” (Ryberg et al., 2010, p. 947). This is in contrast to social-constructivist models (such as CoI) in which knowledge is fundamentally social, and created in the minds of individual learners. Anderson and Dron (2011) noted, “Social interaction is a defining feature of constructivist pedagogies” (p. 84). In the collaborative constructivist approach underpinning CoI, an educational experience is “a collaborative communication process for the purpose of constructing meaningful and worthwhile knowledge. Collaboration is seen as an essential aspect of cognitive development since cognition cannot be separated from the social context” (Garrison, et al., 2000, p. 92). According to Anderson and Dron (2011) constructivism is the “second generation” of distance pedagogy, through which “each learner constructs means by which new knowledge is both created and integrated with existing knowledge” (p. 85). While much has been written on MOOCs as they relate to connectivism
(Liyanagunawardena et al., 2013), constructivist approaches to teaching and learning such as those associated with the CoI model (Garrison, 2011) are referenced infrequently within the MOOC literature.

**xMOOCs.** xMOOCs are associated with consortia of online course providers associated with "elite" institutions of higher education (Daniel, 2012; Rodriguez, 2013). In xMOOCs, the instructor is at the centre of the course, effectively transmitting information to learners tested through multiple-choice or similar standardized and/or automated tests (Daniel, 2012; Rodriguez, 2013). The technology employed by xMOOCs generally consists of a centralized web page for the dissemination of course videos and tests (Rodriguez, 2012). Enrollments in xMOOCs tend to be higher than in cMOOCs. One Stanford University MOOC (CS221: Introduction to Artificial Intelligence) saw more than 160,000 participants register for the course (Rodriguez, 2012). Another course, through the provider Udacity, saw enrollment of 300,000 in its “Introduction to Computer Science” MOOC (Karsenti, 2013).

In addition to the characteristics described above, Kizilcec, Piech and Schneider (2013) further delineate the MOOCs offered by Stanford as "virtual, distributed classrooms that exist for six to ten weeks at a time" which are distinct from "the set of learner-directed, open-ended courses that are now known as ‘cMOOCs’" (p. 170). Of studies dealing exclusively with xMOOCs (DeBoer, Ho, Stump & Breslow, 2014; Kizilcec et al., 2013) these scholars refer to student interactions with "the course" and make few references to student-student or student-instructor interactions.

**cMOOCs.** cMOOCs are associated with the concept of connectivism (Daniel, 2012; Rodriguez 2012; Rodriguez 2013). They are characterized by a pedagogy in which the instructor acts as facilitator, and learners are encouraged to use social media and other Web 2.0 tools to
explore a given topic or theme (Rodriguez, 2013). In their study of the Connectivism and Connective Knowledge 2011 (CCK11) MOOC, Skrypnyk, Joksimović, Kovanović, Gašević, and Dawson (2015) noted that in CCK11 “both human and technological actors subsumed the teaching functions, and exerted influence over the network” (p. 209). They stated that in cMOOCs the distinction between instructor and student is less distinct than in other kinds of MOOCs. This ambiguity about roles can potentially be difficult for MOOC participants. In order to be successful in cMOOCs, learners must be autonomous and work well independently, which can be challenging for some (Kop, 2011).

Mak et al. (2010) carried out a study on learner experiences among 90 of the 2200 participants via online survey and email interview within the first MOOC (CCK08). From their study, Mak et al. (2010) identified blogs and discussion forums as being the primary tools used for communication within the MOOC, with users of each communication tool forming distinct communities. Nearly a quarter of respondents (23.9%) indicated they preferred using both blogs and forums. Subsequent research on cMOOCs has explored the ways in which learners interact through social media platforms (Kop et al., 2011).

In an observation and survey-based study across four MOOCs, which involved participation of between 190 and 210 participants, Rodriguez (2012) found that cMOOC participants were mainly professional educators and/or others in the field of education and training, consistent with findings by other cMOOC researchers (Kop et al., 2011). This raises the question of how the cMOOC format can become relevant or useful to those outside the field of education and/or academia generally.

Other MOOCs. In addition to the two primary types of MOOCs, other variants of the MOOC format have emerged, including task-based MOOCs (Lane, 2012), social-media-based
MOOCs (Ostashewski & Reid, 2012), small, private online courses—SPOCs (Combéfis, Bibal, & Van Roy, 2014; Coughlin, 2013), and project-based MOOCs (McAndrew, 2013). As well, new multi-dimensional classification schemes for MOOCs have started to emerge (Conole, 2013; Pilli, & Admiraal, 2016). MOOC classification, in and of itself, is an emergent theme in the literature on these courses, with important ramifications for future research (Major & Blackmon, 2016). While new labels and classification schemes are helpful for descriptive purposes, the focus of this research study is on social presence is within two specific MOOCs. MOOC categorization is of secondary concern, except insofar as this pertains to course design and pedagogy.

**Teaching and learning in MOOCs.** While much of the literature on MOOCs has been written from or about the learner's perspective (Liyanagunawardena et al., 2013), it is unclear how effective MOOCs are as a means of teaching and learning (Daniel, 2012; Karsenti, 2013). In addition to concerns regarding pedagogical issues, MOOCs have been widely discussed in terms of high non-participation and non-completion rates (Anderson, 2013; Daniel, 2012; Irvine, Code, & Richards, 2013; Jordan, 2014; Kizilcec et al., 2013). Many studies have attempted to explore the types of participation taking place within MOOCs, and factors influencing participation (Kop & Carroll, 2011; Kop et al., 2011; Mackness et al., 2010; Mak et al., 2010; Rodriguez, 2012). While each course is unique, it is possible there are similarities in terms of course design and pedagogy, which can affect engagement as well as retention.

DeBoer et al. (2014), in their discussion on xMOOCs, advocated for the reconceptualization of key elements of courses within the context of MOOCs including enrollment, participation, curriculum, and achievement. DeBoer et al. (2014) provided the traditional definitions of these terms— as they are generally used in higher education— and then
envisioned the concepts as changed in such manner as to align with MOOCs’ scale, open registration policy, and individuals' specific interests in topics of study. However, within DeBoer et al.’s (2014) discussion, there is no mention of the roles of student or instructor, nor do they describe student-instructor interactions as being in need of redefinition or reconceptualization. Perna et al. (2014) explored user progress through 16 Coursera courses, differentiating between “registrants” (those who enrolled before, during, or after the end of a course) and “starters” (those who registered within the first week). Knox (2014) argued for a broader reconceptualization of the role of students in MOOCs, which is in keeping with the dynamic, global, and multicultural nature of MOOC enrollment profiles.

In their study of two cMOOCs, Kop et al. (2011) made explicit linkage between the types of learning that occur in cMOOCs and in Personal Learning Environments (PLEs). Dabbagh and Kitsantas (2011) described PLEs as an e-learning construct based on Web 2.0 tools, stating “PLEs can be perceived as a manifestation of a learner's informal learning processes via the Web, or, as a single learner's e-learning platform allowing collaboration with other learners and instructors” (p. 4). Kop et al. (2011) found that in both courses they studied, participants made use of Web 2.0 applications including Facebook™ and Twitter™ to direct their learning, and for connecting and communicating with other students. Kop and Carroll (2011) provided a delineation of the kinds of activities that take place within MOOCs (notably within cMOOCs) including Aggregation (i.e., accessing content), Remixing (i.e., tracking content), Creating (i.e., creating new content), and Feed Forward (i.e., sharing new content with others).

While the two most widely discussed types of MOOCs— cMOOCs and xMOOCs— follow different pedagogical models and employ distinct practices with regards to how they are taught, issues of student engagement, completion, and success are common to both (Daniel,
The following sections discuss these elements, focusing particularly on the challenges presented for learners.

**Student engagement.** Scholars have identified student engagement as being of particular interest within the context of MOOCs (Kop & Carroll, 2011; Milligan et al., 2013; Stewart, 2013). This is relevant for a discussion regarding social presence, given the extent to which MOOC designers and facilitators use features of various social media applications for the purposes of discussions and other course-related interactions (Liyanagunawardena et al., 2013; MacAuley et al., 2010). As Vaughan (2010) observed, there is a wide range of meanings associated with this term. In his description of a course redesign initiative, Vaughan (2010) made use of The National Survey of Student Engagement (NSSE)’s (2007) definition of student engagement. The NSSE (2007), in turn, used a definition posited by Kuh (2003), in his discussion on educational benchmarks, “The time and energy students devote to educationally sound activities inside and outside of the classroom, and the policies and practices that institutions use to induce students to take part in these activities” (p. 25). Inasmuch as Vaughan (2010) used this definition to inform a research initiative which involved blended learning and the CoI model, I have also chosen to use this definition as this research study makes use of the CoI model within the context of higher education teaching and learning (i.e., through MOOCs).

Milligan et al. (2013) identified the following patterns of engagement among 29 cMOOC participants: active participation, passive participation, and lurking. Of these categories, the greatest number of participants (13/29) within this study identified as lurkers, i.e., as "silent" participants not actively involved in social networks or communities within the course. In their study of 536 participants within a mobile-learning focused MOOC, Koutropoulos et al. (2012) offered a similar delineation of levels of participant involvement: lurking participant, moderately
active participant, and memorably active participant. The scholars tied these categories of activity to numbers of posts made on the course discussion board. Results in this study indicated that a significant majority of participants (86.7%) were lurkers and/or dropouts (Koutropoulos et al., 2012).

In their discussion of participation in one MOOC (Personal Learning Environments, Networks and Knowledge), Kop and Carroll (2011) stated:

Not all participants contributed in a visibly active way. There was a high number of people who accessed resources, but who were not engaged in producing blog posts, videos or other digital artifacts. They seemed to be consumers, rather than creative producers on the course (Agency and Active Participation section, para. 2).

Kop and Carroll’s (2011) association between participant engagement and the production of course-related artifacts provides evidence of a connection between social presence (i.e., the projection of the real self in an online setting) and cognitive presence within this MOOC, as cognitive presence is in this case is tied to the production of tangible outputs (i.e., digital artifacts) within the course.

Kizilcec et al. (2013) analyzed subpopulations of learners in three science-based MOOCs offered by Stanford University. They categorized learners as auditing, completing, disengaging, and sampling (2013). Similarly, in their discussion of participation in an Astronomy MOOC offered through the Udemy platform, Impey, Wenger, and Austin (2015) categorized course participants as phantoms (who never engage with the course after registering), dabblers (who engage with some content but do not complete the course), and persisters (those who engage with most of the content and/or complete the course). In their study, Kizilcec et al. (2013) found
that more participants were motivated to participate in MOOCs from intellectual interest and to further lifelong learning than to attain an academic or professional credential. Scholars have spoken to the potential for MOOCs’ global reach (MacAuley et al., 2010). Nevertheless, Kizilcec et al. (2013) found that the participants in three Stanford MOOCs studied "tend to be well-educated professionals from high-HDI [human development index] countries" (p. 178).

In a study of an open online course targeted at business management postgraduates and practitioners, Clow (2013) conceptualized participation within the course as funnel-shaped with numbers of participants decreasing at each stage. This visual model corresponded with the decreases from the website's visits (30,000), unique visitors (15,500), registrations (1,429), and contributors (198).

Students’ interest in professional development is also a motivating factor in MOOCs. In their survey-based study of two science MOOCs, Milligan and Littlejohn (2017) found that of participants who identified as professionals (compared to identifying as students), 55.2% of respondents cited “relevance of current role” or “future career” as their primary reasons for enrolling in the MOOC.

Given that institutions of higher learning continue to commit resources to MOOCs, it is clear that student engagement will need more investigation if these types of courses are to prove sustainable.

**Student completion.** Scholars have described completion rates within MOOCs as being very low (Anderson, 2013; Daniel, 2012; Irvine et al., 2013; Jordan, 2014; Kizilcec et al., 2013). This may be because in MOOCs, learners, more than learners in other kinds of online courses, determine their own learning objectives (Kop, 2011; MacAuley et al., 2010). Participants’ personal, professional, and other kinds of commitments outside their respective courses, as well
as the ability for participants to engage in passive, lurking participation may account for the failure of many to see MOOCs through from beginning to end. In a study of 279 MOOCs, Jordan (2014) found that the majority of courses had completion rates of less than 10% of those who enrolled, with a median average of 6.5%. Jordan (2014) defined MOOC completion according to the extent to which students met formal requirements to earn a certificate:

There are potentially many ways in which MOOC students may participate in and benefit from courses without completing the assessments. The wider range of completion rates (while still remaining quite low overall, with a median of 10%) observed when defining completion as a percentage of active learners in courses is interesting and warrants further work to better understand the reasons why those who become engaged initially do or do not complete courses. (Jordan, 2014, p. 151)

In a follow-up to her initial study, Jordan (2015) described start date, course length and type of assessment as factors affecting course completion. In their study of student completion rates in a Human Physiology MOOC offered through the Coursera platform, Engle, Mankoff, and Carbrey (2015) observed time commitment and level of difficulty were factors which had the potential to affect attrition within MOOCs. Swinnerton, Hotchkiss, and Morris (2016), in their study of nine FutureLearn MOOCs, noted a strong relationship between frequency of discussion area postings and course completion, with “superposters” (participants who posted more than 13 times in a course) being more likely than others to successfully complete MOOCs. In their study of completion rates within a multi-disciplinary MOOC offered through Coursera, Pursel, Zhang, Jablokow, Choi, and Velegol (2016) described the need for more research on social presence and its relationship to completion rates in MOOCs. It is possible that by studying two MOOCs
specifically for social presence, factors positively affecting completion will emerge. Course designers and facilitators may consider these when planning and delivering other MOOCs.

**Student success.** From my review of the literature, there are few studies dealing specifically with success within MOOCs. Given MOOCs are generally free of accreditation, grades, or detailed feedback from instructors (MacAuley et al., 2010), success in MOOCs is largely self-defined by individual learners. This lack of external motivation speaks to the “open” characteristic of MOOCs. A number of MOOC providers offer students the chance to write a final exam (Daniel, 2012; Pappano, 2012; Rodriguez, 2012). Others have introduced incentives to reward participation and completion including certificates and badging systems (Conole, 2013; Cross, 2013; Daniel, 2012; Karsenti, 2011). At the time of writing, there is no single favored approach by institutions offering MOOCs to recognize success or to differentiate between levels of success (i.e., through grading schemes or systems of feedback).

As MOOCs evolve, it is likely that there will be experiments in awarding university credits for the completion of specific MOOCs. Such experiments have already taken place and involve participants paying for the credit and the chance to sit through a final exam (Karsenti, 2013). Institutions of higher learning may be hesitant to endorse accreditation and grading for financial reasons; grading individual students’ work on a “massive” scale would involve significant expenditure of resources beyond the costs of designing, delivering, and facilitating a MOOC. As well, it will be important to address issues of plagiarism and quality control to suit the scale of a MOOC. Furthermore, proponents of cMOOCs may see the networked knowledge-building activities of that format as compromised by such extrinsic motivators as grades, and contravening MOOCs’ characteristic of “openness” by separating students through grades based on academic ability and/or achievement. Nevertheless, it is likely that students as well as
educators will press for greater recognition of success in MOOCs, and this may lead to new forms of accreditation as well as new financial models associated with these courses.

**Community of Inquiry (CoI)**

This section provides an overview of the Community of Inquiry (CoI) framework (Garrison, 2011). I describe the concept of collaborative constructivism underpinning the CoI model, along with critiques of the CoI model. This is followed by a discussion of the element of social presence, and the interrelation between social presence and both cognitive presence and teaching presence. The section ends with a discussion of CoI as it relates to fully online courses, and particularly to emergent types of courses such as MOOCs. While CoI has been widely used to study fully online courses (Garrison, 2011), particularly within the context of higher education, few references to the CoI model appear in the MOOC literature.

For the purposes of this dissertation, I used Garrison’s (2013) definition of community: “a group of individuals who are connected and communicate with regard to mutual interests and similar expectations as to process and outcomes” (p. 10). A key objective of my study was to determine if MOOC participants see themselves connected through their view of process and outcomes. I also used Garrison’s (2013) definition of Community of Inquiry: “A learning community where participants collaboratively engage in purposeful critical discourse and reflection (cognitive presence) to construct personal meaning and shared understanding through negotiation” (p. 10).

The CoI theoretical framework emerged from research in computer conferencing (Garrison et al., 2000). CoI has been widely used to explore teaching and learning which takes place within blended contexts (Garrison & Vaughan, 2008), and in fully online settings (Garrison, 2011). For the purposes of my study, Garrison’s (2011) definition of e-learning was
used: "electronically mediated asynchronous and synchronous communication for the purpose of constructing and confirming knowledge. The technological foundation of e-learning is the Internet and associated communication technologies" (p. 2).

The CoI framework consists of three overlapping presences (see Figure 2.1) which, when taken together, comprise the educational experience (Garrison et al., 2000). There is cognitive presence, “the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse in a critical community of inquiry” (Garrison, 2011, p. 24). There is also teaching presence, “the design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes” (Anderson, Rourke, Garrison & Archer, 2001, p. 5). Social presence is “the ability of participants in the Community of Inquiry to project their personal characteristics into the community, thereby presenting themselves to the other participants as “real people” (Garrison et al., 2000, p. 89).

![Community of Inquiry](https://coi.athabascau.ca/)

*Figure 2.1. CoI model. Communities of Inquiry website (2013). Retrieved from https://coi.athabascau.ca/. Used with permission.*
Each of the three presences is associated with their own categories of indicators. According to Garrison et al., 2000, researchers use categories and indicators for the purposes of coding computer-conferencing transcripts. Garrison (2011) stated, “indicators are key words or phrases that suggest the presence of the three elements and, in total, a quality educational experience” (p. 25).

Swan, Garrison, and Richardson (2009) referred to the dynamic nature of the CoI framework, and the shifting nature of the interactions between the three presences over time in online courses. It is impossible to realize the area of overlap (i.e., the educational experience at the centre of the CoI) without the active engagement of all three presences. The pedagogy underpinning CoI is process-driven, and not focused on any one actor within a given educational setting. Garrison (2011) distinguished between learning-centered education and learner-centered education. According to Garrison (2011), “education is a unified process where teachers and students have important, complementary responsibilities. The focus is on learning, but not just whatever the learner capriciously decides” (p. 54). This emphasis on a process— rather than any individual— separates CoI from other models of teaching and learning.

**Collaborative constructivism.** Garrison and colleagues based the CoI model on a constructivist theory of learning (Garrison et al., 2000; Garrison, 2013). According to this model, constructivism is an individualized effort to create meaning through the integration of new experience with prior knowledge, with collaboration playing an important role in individuals’ efforts to create meaning. Collaboration is essential to the learning experience as it provides an opportunity for knowledge-building discourse. CoI reflects these principles.

Garrison (2013) pointed out a strong connection between collaborative constructivism— integral to the CoI framework— and the social constructivist theories of Vygotsky and Dewey.
Scholars have also discussed the work of Piaget as being important to the development of the CoI framework (Anderson & Dron, 2011; Garrison, 2013). Anderson and Dron (2011) examined three "pedagogical generations" of distance education according to their alignment with the CoI framework, stating that "social interaction is a defining feature of constructivist pedagogies" (p. 86), and suggested that advancements in communications technology will continue to reduce barriers to social presence in distance education. As well, Garrison and Akyol (2009) linked the collaborative constructivist approach to a paradigm shift in distance education brought on by the emergence of Web 2.0 technologies to support teaching and learning.

**Critiques of CoI.** A number of studies have emerged which are critical of the CoI model. Jézégou (2010) criticized a lack of clarity and specificity regarding the CoI model’s theoretical underpinnings. After discussing CoI and reviewing works of socio-constructivist scholars, Jézégou affirmed the model's value for the purposes of carrying out research in e-learning. In a later paper, Jézégou (2012) put forward a new model for e-learning combining elements of CoI, pragmatism, socio-cognitive conflict theory. Jézégou (2012) used similar names for presences (socio-cognitive, socio-affective, and pedagogical) in her reconceptualization of the CoI model—nevertheless, her assertion regarding presences that "each may be present independently of the two others" (Schematic representations of the model and hypotheses section, para. 1) is at odds with the overlapping, interdependent nature of the original CoI model. Jézégou (2012) has described a model fundamentally less integrated than the original CoI. The extent to which this revised model will find usage among e-learning researchers and practitioners remains unclear.

Other authors (Shea & Bidjerano, 2010; Shea et al., 2012; Shea et al., 2014) have advanced a fourth “learning presence” for inclusion within CoI. These scholars have described learning presence as related to online learning self- and co-regulation, and have described it as "evident
where learners are asked to actively collaborate" (Shea et al., 2012, p. 93). Akyol and Garrison (2011) responded to Shea and Bidjerano's (2010) reconceptualization of CoI by noting that metacognition might be a more suitable means to consider functions of self-efficacy and self-regulation within the context of CoI.

Other scholars have criticized specific applications of the CoI model. Xin (2012) argued that the CoI model oversimplifies the complexity of communication in online discussions. While acknowledging the value of the CoI presences, Xin (2012) claimed the descriptions of teaching presence need more specificity. Of social presence, Xin (2012) stated, “the emphasis on affective expression and absence of risk gives the impression that the authors see online classes as tightly knit communities. This is not what is usually observed in online classes” (Critique of the Concept of Social Presence section, para. 2).

Among the most widely cited critiques of CoI is that of Rourke and Kanuka (2009), who criticize CoI research on the basis that it relies heavily on self-reporting measures for data collection. They further claimed that CoI researchers “have not been able to identify clear instances of cognitive presence” (Rourke & Kanuka, 2009, p. 39), and that CoI does not support deep and meaningful learning. In a response, Akyol et al., (2009) pointed out that CoI is a transactional model based on a constructivist view of teaching and learning and add that self-reporting measures are valuable for the purposes of collecting data on learning occurring within online and blended courses. Akyol et al. (2009) also claimed that CoI “remediates a lack of theory development in online distance education” (p. 131).

Despite these criticisms, CoI remains a widely used framework for e-learning research. Reconceptualization of the model, either in part such as put forward by Shea and Bidjerano (2010), Shea et al., (2012), Shea et al., (2014) or as a whole such as put forward by Jézégou
(2012) have attracted few follow-up studies, and have otherwise yet to widely appear in the peer-reviewed literature. It is possible to mitigate concerns that CoI oversimplifies online communication (such as put forward by Xin, 2012) through the categories of indicators associated with each of the three presences (Garrison et al., 2000). Indicators associated with each category and presence are noted as being examples only (Garrison et al., 2000), thereby allowing for the emergence of other context-specific indicators which may further describe the presences in a wide range of settings. I acknowledge that self-reporting measures have informed much of this research study. Nevertheless, a number of measures have been taken in CoI studies (including this study) in order to ensure validity and reliability, which are discussed in Chapter Three.

**Social presence.** Social presence is "the ability of participants in the Community of Inquiry to project their personal characteristics into the community, thereby presenting themselves to the other participants as “real people” (Garrison et al., 2000, p. 89). According to Swan et al. (2009), research into social presence in online learning predates the CoI model. The role of social presence is primarily as a support for cognitive presence (Garrison et al., 2000). Researchers have observed that social presence changes over time; they have also noted a connection between social presence and contextual factors in the learning environment (Akyol & Garrison, 2008). Garrison et al. (2000) identified collaboration among course participants as being key to helping enable critical reflection and discourse to take place stating, "Collaboration must draw learners into a shared experience for the purposes of constructing and confirming meaning. Realizing understanding and creating knowledge is a collaborative process” (p. 95). The construct of social presence helps teaching and learning move beyond information transmission and information exchange (Garrison et al., 2000). Garrison (2011) noted, “There
may be an optimal level of social presence. Too little social presence may not sustain the
community. On the other hand, too much social presence may inhibit disagreement and
encourage surface comments and the distraction of social banter” (p. 40). Garrison and Arbaugh
(2007) claimed that social presence must be purposeful in order for higher-order learning to take
place, adding that "social presence for educational purposes cannot be separated artificially from
the purposeful nature of educational communication (i.e., cognitive and teaching presence)” (p.
161). Garrison (2011) stated, “Social presence must support inquiry and the achievement of
specific learning outcomes” (p. 31). This alignment between social presence and specific
learning outcomes may prove challenging in the context of MOOCs given that outcomes are
largely self-defined within these courses (Fini, 2009; Kop et al., 2011; MacAuley et al., 2010).
There are a number of indicators (appearing in a template) associated with social presence used
by CoI researchers to identify instances of social presence in computer conferencing transcripts
(Rourke, Anderson, Garrison, & Archer, 2001). It is possible that this template could prove
useful when identifying patterns of social presence taking place in MOOCs as well as in other
emergent e-learning formats. In their study of data from one online Master of Science class,
Joksimovic´ et al. (2015) found a positive relationship between social presence and academic
success. As such, when describing directions for future research, the authors recommended
exploring social presence (and other elements of the CoI model) within the context of MOOCs
(Joksimovic´ et al., 2015).

Garrison (2011) described challenges in establishing social presence in e-learning
contexts, given these courses’ reliance on text-based communication. According to Garrison
(2011) “written communication lacks a sense of immediacy described here as communication
(verbal and written) that builds interpersonal relationships” (p. 24). Borup, West and Graham
(2012) observed that the use of asynchronous video within online courses might help to increase immediacy by reducing the absence of visual cues. Their study found that the use of video helped to increase the instructor's social presence in an online course, as well as that of students. Aragon (2003) provided a number of different strategies to enhance the level of social presence in online courses that are applicable to courses based within a learning management system (LMS) as well as Web 2.0 applications. Dunlap and Lowenthal (2009) explored the use of Twitter™ to enhance social presence. They claimed that an LMS could provide barriers to the development of social presence due to the additional expenditure of time required to log in and access the relevant area of the course (Dunlap & Lowenthal, 2009). Social media-based platforms such as Twitter™ can enhance the level of immediacy in discussions and is in closer alignment with natural patterns of discussion than communication facilitated by an LMS (Dunlap & Lowenthal, 2009). Lowenthal and Dunlap (2010) found the use of digital storytelling could enhance instructor and student social presence, and enhance student cognitive presence.

In his review of CoI literature, Annand (2011) asserted that there was no evidence that social presence affects cognitive presence. Additionally, Annand stated that insofar as CoI is effective for teaching and learning, cognitivist principles rather than the precepts of constructivism are responsible. As well, Annand (2011) suggested that “subcategories of social and teaching presences as currently classified in the CoI framework need to be revamped and analysis adjusted to separate those processes that support explicitly group based activities versus individual learning activities” (p. 52). In a response to Annand's (2011) critique of social presence, Garrison (2012) drew a distinction between traditional distance education and e-learning, noting that CoI is the latter- a full generation apart from the cognitivist approach to teaching and learning advocated by Annand (2011).
Social presence is the most-studied of the presences (Swan et al., 2009; Garrison & Arbaugh, 2007). According to Swan et al. (2009), social presence predates the CoI model, and it “arose from concerns among some communications scholars that computer-mediated communication might prevent students from developing the sense of belonging with other students, instructors, and programs of study which social learning theories suggest support learning” (p. 9). Garrison and Arbaugh (2007) pointed out that nearly all research into social presence has neglected to examine its relationship to other presences. In order to address this gap, Kozan and Richardson (2014) examined the relationship among CoI presences in an online graduate studies program. In their discussion, they described a lack of alignment between their findings and with previous research regarding the role which social presence plays in relation to cognitive and teaching presences. Because of these findings, Kozan and Richardson (2014) suggested a re-examination of social presence, as well as updating social presence-related items on the CoI survey. They added that their findings were limited to one particular program of study. More work is needed to determine how social presence affects other presences in a wide range of e-learning situations.

**Social presence and cognitive presence.** Cognitive presence is "the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse in a critical community of inquiry" (Garrison, 2011, p. 24). Furthermore, “cognitive presence is a condition of higher-order thinking and learning” (2011, p. 24). Social presence plays a supportive role to cognitive presence (Garrison et al., 2000), allowing for higher order discourse (Garrison & Arbaugh, 2007). In a study of 189 students enrolled in research methods courses, Archibald (2013) found that “social presence made a very strong unique and significant contribution to explaining cognitive presence" (p. 184). In their study of the interrelationship
between presences carried out among 211 graduate students enrolled in an online MS program, Kozan and Richardson (2014) found a strong relationship between social presence and cognitive presence, but not between teaching presence in relation to cognitive and social presence taken together. In response, Garrison stated that these findings may reflect that social presence is produced as students work towards realizing cognitive presence; namely through realizing common learning objectives (D. Garrison, personal communication, November 13, 2013). It is necessary for social presence to be purposeful; otherwise, as Garrison (2011) suggested, “social presence might undermine cognitive presence” (p. 34).

**Social presence and teaching presence.** Anderson and colleagues defined teaching presence as "the design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes" (2001, p. 5). Teaching presence supports and enhances cognitive presence and social presence (Garrison et al., 2000) and is “essential to establishing social presence” (Garrison, 2011, p. 35). Garrison et al. (2000) observed, "When social presence is combined with appropriate teaching presence, the result can be a high level of cognitive presence leading to fruitful critical inquiry" (p. 96). In his study of cognitive presence among post-secondary students, Archibald (2013) found “social presence and teaching presence made very strong unique contributions to explaining cognitive presence” (p. 179). Kozan and Richardson (2014) suggested, “Instructor efforts to increase cognitive presence may automatically result in increased student social presence to a certain extent” (Conclusions section, para.1). This would imply linkage between teaching presence and social presence, by helping to set a climate through which cognitive presence can emerge; Kozan and Richardson (2014) added “from a social presence perspective, this might also suggest that efforts to increase social presence should not only focus on social
interaction, but also on encouraging cognitive presence through social interaction” (p. 72). This would seem to support teaching presence as a means to help establish purposeful social presence within a community of inquiry.

**CoI in online courses.** CoI originated from research into asynchronous, computer-based discussions (Garrison et al., 2000). A number of researchers have subsequently investigated the nature of online discussions using CoI as the theoretical framework (Richardson & Ice, 2010; Swan & Shih, 2005; Zydney, deNoyelles, & Kyeong-Ju Seo, 2012). Shea and Bidjerano (2009) identified a strong connection between students' comfort level with discussion boards and with cognitive presence, stating, "When students see their instructors taking an active role in focusing online discussions on relevant issues, they also report higher cognitive presence" (p. 551). Swan and Shih (2005) observed a strong connection between social presence and the use of discussion forums. Regarding the use of discussion forums, Garrison (2011) claimed, “It is clear that students must perceive participation in online discussions as a core component of the program of studies. Thus, assessment activities must be integrated within e-learning activities.” (p. 103). Additionally, Garrison (2011) pointed out “students perceive that their participation and resulting learning is related to the grades assigned for participation by the instructor” (p. 103). Regarding the use of social media in online courses, Garrison (2011) predicted “they will become an essential element in creating an institutional environment that welcomes students, strengthens educational values, and grows relationships that support the academic goals of the students and the learning community” (p. 127). Ice and Burgess (2013) discussed the relationship of CoI and emerging technologies and observed “the CoI framework (CoI) has been developed and, with a few exceptions, researched within the context of the LMS” (p. 447). It remains open to question the extent to which social media can enhance teaching and learning in emergent e-learning
formats such as MOOCs, given that these courses are largely free of direct instruction, do not have formal assessment, and are normally taken outside an accredited program of study.

**CoI and MOOCs**

From my review of the literature, there are currently few references to Community of Inquiry (CoI) in the MOOC literature. A notable exception is in Kilgore and Lowenthal’s (2015) study of MOOC specifically designed around the elements of the CoI model, delivered through the Canvas platform. This course was four weeks long, with the first week devoted to introductions, and the remaining three weeks spent on each of the three CoI presences. Of 697 registrants, 137 completed the survey in week one, 91% of respondents held a masters’ degree or higher, and 73% were involved in teaching online. The study found that it is possible to develop social presence over a short period, and that CoI can be a useful model for educators’ professional development. However, given the small sample, and that the majority of participants were educators, further study of CoI within the context of MOOCs in subjects outside education is needed. Another exception is Watson, Watson, Janakiraman, and Richardson’s (2017) study of instructors’ use of social and teaching presences in an animal behaviour and welfare MOOC which found that instructors made efforts to support learning through the use of social presence through such means as “greeting students, addressing them by name, sharing of emotions, and communicating approval” (p. 80). Through these efforts, instructors tried to enhance the sense of community within the course, and the extent to which students felt connected (Watson et al., 2017). Watson et al.’s (2017) study is among a small number to speak to instructor perspectives in MOOCs, as well as exploring instructors’ use of CoI in MOOCs. Both areas, while outside the scope of this doctoral study, should be researched further.
Many MOOC-related articles have explored these courses using the connectivist theory of teaching and learning (Liyanagunawardena et al., 2013). This section will discuss how a constructivist model such as CoI applies to a study of MOOCs, with a specific focus on the element of social presence. My review of the literature suggests that more study is needed on how social presence emerges in learning environments such as MOOCs—through features of learning management software and also through social media (Kop et al., 2011; Koutropoulos et al., 2012; MacAuley et al., 2010; Mak et al., 2010).

**Social presence in MOOCs.** Garrison (2011) noted the alignment between social presence and learning outcomes, stating, “Social presence must support inquiry and the achievement of specific learning outcomes” (p. 31). The relationship of social presence to specific outcomes may prove challenging in certain MOOCs. Many connectivist MOOCs (or cMOOCs) have learning outcomes specific to the individual learner rather than the course (Fini, 2009; Kop et al., 2011; MacAuley et al., 2010). Garrison (2011) added, “From a social presence perspective, the greatest challenge in an e-learning context is to ensure a cognitively stimulating and productive learning environment” (p. 40). Setting the climate for learning is a shared responsibility of social presence and teaching presence (Garrison et al., 2000). In MOOCs, teaching presence may be challenging given the lack of direct contact between the instructor and most students (Kop et al., 2011). As a result, MOOC students share responsibility for teaching presence through such means as finding videos, readings, and other kinds of resources beneficial to the larger group. As Kop et al. (2011) note, educators in MOOCs assume a wide range of roles including curator, facilitator, coach, and others. This would seem to align with Knox’s (2014) argument for a reconceptualization of the role of students in MOOCs, and (more broadly) with DeBoer et al.’s (2014) argument for a reconceptualization of other elements of courses including
enrollment, participation, curriculum, and achievement within the context of MOOCs. Part of the challenge of the study was to determine what level of social presence exists within MOOCs, and whether the level of social presence was supportive of critical discourse.

Kop et al. (2011) examined the social interactions within the Personal Learning Environments, Networks and Knowledge (PLENK 2010) MOOC, and conceptualized interactions among course participants as taking place within a series of networks. Kop et al. observed that throughout the course students left the designated course space and created groups through various social media websites. According to Kop et al. (2011), "Participants also highlighted the need for a sense of trust and feeling comfortable and confident to be able to participate, as well as a sense of presence and community" (pp. 84-85). Kop at al. (2011) also observed "the need of participants for social presence, but in a self-determined way. Learning under MOOCs is an interactive experience best achieved in a climate of relatedness, care, mutual respect, and support" (p. 85). For Kop et al. (2011), social media provided opportunities for MOOC participants "to connect and be perceived as “real” in ways that traditional LMS-contained tools could not" (p. 85). Many participants in this MOOC found making connections with other learners extremely challenging. Kop et al. (2011) also linked a lack of explicit course outcomes and directions from the course instructor to challenges and frustrations faced by many students. Discussing their study of PLENK 2010, Kop and Carroll (2011) stated, "it seems that to bring out the creative potential in people and to inspire them into the production of digital artifacts, they must feel comfortable in their learning environment and have a certain level of trust in fellow-participants" (Discussion and Conclusions section, para. 1). This would seem to be consistent with the idea that social presence helps set the climate which permits cognitive presence to emerge (Garrison et al., 2000; Garrison, 2011).
MOOCs are generally completed without formal assessment (MacAuley et al., 2010; Mackness et al., 2010), and tend to fall outside a formal program of studies (MacAuley et al., 2010). Without extrinsic motivation such as grades for participation, participation in discussion forums may be limited. In lieu of grades, participation might be encouraged in MOOCs by such means as badging systems and/or other forms of extrinsic motivation (Cross, 2013). In her discussion of challenges associated with cMOOCs, Kop (2011) observed that participation in MOOCs may require levels of independence and self-motivation on the part of learners than is the case in other types of courses. As well, Kop (2011) identified “presence” (including social presence) as being potentially challenging, as learners are required to defer to individuals other than the instructor for guidance. Kop’s study involving two MOOCs with enrollments of 377 students and 1610 students (respectively) addressed presence as being a singular entity or quality, as opposed to a multi-dimensional construct. Kop described presence, as a thing created through blogging and discussion participation by the course facilitator. Creation of community throughout the MOOC was challenging, given the amounts of time and energy required to contribute meaningfully (i.e., through reading, writing, and sharing) (Kop, 2011). In the conclusion to her study, Kop noted that social presence of course facilitators and participants “enhanced the “community” forming and the sense of belonging that built confidence and stimulated active participation” (p. 35).

In another paper on the Personal Learning Environments, Networks and Knowledge MOOC, Kop et al. (2011) discussed the integration of the CoI element of presence and learning through open networked environments (such as that which occurs through cMOOCs). According to Kop et al. (2011), “it becomes clear that social presence and cognitive presence could easily form part of the learning experience of a learner in such an environment through the formation
and engagement both in communities and, more loosely, on networks” (p. 78). This is significant in that social presence- a fundamentally constructivist construct- is identified as being important to the success of learning within a connectivist learning environment, given that the significant differences in pedagogy noted between the two (Anderson & Dron, 2011).

**Need for Further Research**

Although the CoI framework has been widely used for studies of online courses, there are few references to CoI within the MOOC literature. Similarly, most peer-reviewed studies of CoI have not yet addressed MOOCs, despite the fact that institutions of higher learning continue to offer increasing numbers of these kinds of courses. As well, although much of the focus on teaching and learning has been through the lens of connectivism (i.e., cMOOCs) or that of cognitivism and/or behaviourism (i.e., xMOOCs), few writers in the educational technology field have discussed MOOCs in relation to constructivist approaches (such as put forward in the CoI model).

According to my review of the literature, two issues emerge: 1. Student engagement is challenging for MOOC designers, administrators, and instructors; 2. Enhancing social presence in MOOCs may lead to improved student engagement, and to lower rates of attrition. In the discussion of engagement within cMOOCs, Milligan et al. (2013) pointed out "there is still a lack of data, drawn from too few courses, with a limited range of methodologies" (p. 151). A study on social presence within a MOOC will address issues of engagement, as researchers have noted that social presence enhances and supports cognitive and teaching presences in online courses (Garrison et al., 2000). With their discussion of emotive vocabulary in MOOCs, Koutropoulos et al. (2012) referred to the model of social presence put forward by Rourke et al. (1999)— i.e., an early work on the CoI model speaking to the element of social presence (see discussion of social...
presence earlier in this chapter)—as having potential benefit for predicting participation in MOOCs. They noted that “looking at overt social interaction between participants, and social cues might be a better indicator of future participation” (Further Research section, para. 3).

Kotropoulos et al. (2012) also referred to the need for examination of platforms outside the course discussion site for evidence of emotive vocabulary. A study that specifically examines social presence in MOOCs provides an opportunity to learn more about the kinds of teaching and learning within these courses. This may help contribute to improved pedagogy and course design in future MOOCs delivered by other institutions. In their review of peer-reviewed MOOC literature published between 2012 and 2015, Veletsianos and Shepherdson (2016) noted that MOOC researchers have relied on quantitative methods such as surveys for data, with few studies making use of qualitative research approaches such as interviews or focus groups. As such, in the following chapter, I establish a research design that sets out to delineate the descriptive multiple case study methodology used in the study that examines social presence in two MOOCs.
CHAPTER THREE: METHODOLOGY

Introduction

This chapter provides an overview of the descriptive multiple case study methodology (Merriam, 1998; Yin, 2009) used in the research. I describe the population and sampling for my study, and the methods of data collection, along with the means of ensuring integrity. Following this, I discuss limitations, and delimitations. I also discuss my role and assumptions as a researcher. The chapter ends with a discussion of ethical considerations and steps taken to comply with the University of Calgary Conjoint Faculties Research Ethics Board requirements.

Case Study Methodology

I used case study methodology (Merriam, 1998; Simons, 2009; Stake, 1995; Yin, 2009) to study social presence in two MOOCs. Case study emerged in the 1960’s and 70’s from efforts by educational researchers in the US and the UK to carry out programs of research “that included participant perspectives, were responsive to audience needs, attentive to the process of dynamics and implementation and interpretation of events in their socio-political contexts” (Simons, 2009, The Move to Qualitative Inquiry section, para. 1). According to Stake (1995), a case is an object of study, it is also an integrated system; elsewhere, Stake (2006) claims “the first objective of a case study is to understand the case” (Single Case section, para.6). For Merriam (1998) a case is “a thing, a single entity around which there are boundaries” (Case Study Defined section, para. 2). Yin (2009) defines a case as a contemporary phenomenon studied in depth “within its real-life context” (Definition of the Case Study as a Research Method section, para. 6). Yin’s emphasis on context, and not just boundaries, for case study is in alignment with the focus of my study. In my study of social presence within two MOOCs, I explored both the MOOCs as wholes
Advantages of case study. For the purpose of this doctoral study, there are four relevant advantages to the case study approach. First, case study is useful for explaining “how” and “why” type questions which deal with “complex social phenomena” (Yin, 2009, Method section, para. 4); this is in close alignment with the phenomenon investigated within my study: social presence within a MOOC. Second, case study can help explain, “A contemporary set of events over which the investigator has little or no control” (Yin, 2009, When to Use Each Method section, para. 16). In this doctoral study, I did not have control over course participants’ behaviour because I was not an active participant in either MOOC. As well, institutions offered each MOOC over a predetermined period. Third, case study can help study “a bounded phenomenon such as a program, an institution, a person, a process, or a social unit” (Merriam, 1998, Overview of the Contents section, para. 3). For my study, the bounded phenomenon was each respective MOOC. Each course may be regarded as a program of study as well as a social unit (i.e., a group of students engaged in study). Time was also a boundary within my study (i.e., the course will last a specific period). Fourth, case study can be useful “for studying educational innovations” (Merriam, 1998, Strengths and Limitations of Case Studies section, para. 2). For my study, the educational innovation is the MOOC format. By studying social presence within two MOOCs in detail, insights might be gained into the social presence and learning within other online courses.

Criticism of case study. Reviewing literature related to case studies, I identified three key criticisms of case study methodology. The first criticism is a perceived lack of rigor. According to Yin (2014), “too many times, a case study researcher has been sloppy, has not
followed systematic procedures, or has allowed equivocal evidence to influence the direction of the findings and conclusions” (Addressing Traditional Concerns About Case Study Research section, para. 2). I addressed rigor within my study using multiple sources of data, and with four tests within the research design: construct validity, internal validity, external validity, and reliability (Yin, 2009). I used these tests throughout the process of data collection, analysis, and reporting. More information on how I used these tests is in the Integrity of the Study section of this chapter.

Second, writers have criticized case study due to concerns over subjectivity (Stake, 1995). I addressed subjectivity within my case study by inviting participants to review transcripts of individual interviews for accuracy. I also sought the advice of academic colleagues and my doctoral supervisors in order to ensure that I considered rival explanations against my interpretation of events taking place within the MOOCs.

Third, scholars have claimed lack of generalizability is problematic in case studies, (Flyvbjerg, 2006; Merriam, 1998; Yin, 2009) as its failure to establish causal relationships between phenomena being studied (Cavaye, 1996; Yin, 2009). Bloomberg and Volpe (2012) observed that the goal of case studies is not generalizability, but rather transferability; i.e., “how (if at all) and in what ways understanding and knowledge can be applied in similar contexts and settings” (Case Study section, para. 1). For the purposes of my study, I sought reader or user generalizability (Merriam, 1998) — that is, I wanted readers of my completed case study report to consider how findings from my study of two MOOCs relate to their respective contexts and settings.

I chose case study because of its ability to provide thick, rich descriptions (Geertz, 1973; Stake, 1995, Merriam, 1998) of complex social phenomena, drawn from multiple sources of
data. According to Merriam (1998), “thick description is a term from anthropology and means the complete, literal description of the incident or entity being investigated” (Case Study Defined section, para. 9). I have found that the richness of the descriptions of complex social phenomena—such as those experienced and created by MOOC participants—has helped to inform my understanding of what was happening within these two courses, and why.

**Population and Sampling**

I used four criteria to select MOOCs for this research: permission, location, enrollment, and design features. First, regarding permission: it was important to obtain permission from the institutions and course instructors involved in both courses in order to study the MOOCs. This required emailing a very large number of instructors listed as part of course descriptions, and then approaching program administrators after obtaining permission from instructors. In addition, one of the two cooperating institutions required me to complete an additional ethics application before granting permission to study their MOOC for this research. Second, regarding location: I chose North American institutions of higher education in order to improve the likelihood of gaining approval from the institutions to study the MOOCs (i.e., I am a graduate student at a Canadian university). Third, regarding enrollment, MOOCs have several hundred to several thousand participants (MacAuley et al., 2010). Some MOOCs have had enrollments exceeding one hundred thousand (Rodriguez, 2012). In order to keep with the “massive” dimension of MOOC, courses for my study were to have a minimum enrollment of 300 students—a higher number of students in the MOOCs enhanced the number of potential participants within my study. Fourth, regarding design features: the MOOCs needed to have a discussion area in which I would be able to observe participants and make notes regarding their social presence throughout the respective courses. I also sought courses with social media
accounts created and maintained by course staff or participants (i.e., including Facebook™, Twitter™ and/or other similar applications) through which I would observe participant behaviour for social presence. Social media sites were also places I could seek participants for my study. After I obtained permission to access the MOOCs for the purpose of my study, I invited students within the MOOCs to participate in my study. I also invited course instructors. I accepted all participants who volunteered to be part of the study in order to get the most robust possible sample. In order to participate in this research, participants were required to have registered for MOOCs. There was therefore alignment between screening procedures for this study and screening procedures for each respective MOOC (i.e., for age, if needed).

Creswell (2012) noted the importance of identifying a unit of analysis when designing a qualitative research study. According to Yin (2009), “the evidence from multiple cases is often considered more compelling” (p.83) and the overall study “more robust” (p.83). A multiple case study dealing with each case as a whole as well as units or subunits within each case conforms to an embedded design (Yin, 2009). The embedded design envisioned for the multiple case study is as follows:

**MOOC #1 (course as a whole):** Unit of analysis focuses on interactions between and among: course facilitators and course participants, as evidenced by discussions in the online course environment (website and/or discussion boards).

**Specific participants (MOOC #1):** Unit of analysis focuses on interactions between and among course participants, as evidenced by discussions in the course environment (website and/or discussion boards).
MOOC #2 (course as a whole): Unit of analysis focuses on interactions between and among course facilitators and course participants, as evidenced by discussions in the online course environment (website and/or discussion boards).

Specific participants (MOOC #2): Unit of analysis focuses on interactions between and among course participants, as evidenced by discussions in the course environment (website and/or discussion boards).

The target population (Creswell, 2012) were those students in each MOOC who responded to the publicly posted requests for participation. Course instructors in both MOOCs placed my recruitment script within the body of an in-course message, which went out to all students in each MOOC. This message contained a link to an online consent form, as well as the project website, which contained further information about my study. Through this messaging, I invited MOOC students to complete the following activities: surveys, individual interviews, and focus group interviews. Participants chose which activities to complete. They could complete one or more than one activity without completing others. I invited course instructors to participate in interviews, as their perspectives on social presence within the courses added richness and depth to the data collected. I also asked for permission to use course-related artifacts such as blog posts and discussion forum posts. I used convenience sampling (Creswell, 2012; Merriam, 1998) for my study, including anyone who responded to the publicly posted request for participation as part of the sample, and invited them to participate in all data collection activities.

**Research Questions**

The primary research question guiding this inquiry was:

- How does social presence affect teaching and learning within MOOCs?

Sub-questions aligned with the primary research question include:
• What factors contribute to participants’ establishing a social presence in MOOCs?

• How does social presence affect participants’ perceptions of a sense of belonging to a learning community?

Research Context: Description of MOOC #1

From September 2014 until early February 2015, I approached 77 MOOC instructors and/or institutions for access to their courses for my study. Of the instructors and institutions who responded positively, the MOOC chosen was Supporting Students with Learning Disabilities in the Writing Classroom offered by an American institution of higher education through the Canvas MOOC platform. I chose this course because it was in best alignment with the criteria noted in the “Population and Sampling” section. This MOOC ran from March 23, 2015 until April 19, 2015. For the purposes of this thesis, I will refer to this MOOC as “MOOC #1”.

• Location: An American college, satisfying the requirement for a post-secondary learning institution based in North America.

• Enrollment: At one point as many as 515 users were considered enrolled in the MOOC (i.e., there were this many contacts on the email list); while well short of the tens of thousands in some MOOCs, this still exceeded the 300 cited by MacAuley et al. (2010) to meet the “massive” criteria (i.e., 300+) needed for the MOOC. Two faculty members from the institution facilitated the course.

• Design: A discussion area was one of the key features for the course. This area provided opportunities for participants to engage with one another and the course staff. I was granted permission from the instructors to observe discussions; furthermore, I posted a message stating that I would leave if anyone objected (no one did).
• MOOC format: This course, through its design features (i.e., residing primarily in proprietary learning management software provided through a consortia of learning institutions) conformed to the xMOOC format discussed in Chapter Two.

**Design features.** Participation in Supporting Students with Learning Disabilities in the Writing Classroom was free, provided through the Canvas educational software provider. Participants created a free account with Canvas, and then enrolled in the MOOC (enrollment was also cost-free). The college offered the course over four weeks, with each week considered a “module” with a corresponding topic or theme. Each module contained an overview with videos, readings, and other resources—largely available through websites such as YouTube™. After reviewing this content, participants engaged in discussions in which they spoke to personal and/or professional experiences in relation to the week’s topic or theme. Participation in discussions were the only assignments. Instructors did not evaluate discussion postings for frequency or quality, or provide other forms of feedback except through responding to participants’ discussion postings—i.e., by asking probing questions, expressing appreciation, or other kinds of comments. Participants who posted at least once in each discussion area received a certificate of completion at the end of the final module.

**Social media.** While the college mentioned the MOOC in their institutional Twitter™ feed, there were no other publicly identifiable signifiers related to the MOOC. There were no “hashtags”, Facebook™ groups, or other social media activity associated with the course.

**Research Context: Description of MOOC #2**

I identified MOOC #2 in early 2016. This course—ENGSCI137x, *Energy within Environmental Constraints* — was offered by an American university through the Ed.X MOOC
platform. It ran from June 8, 2016 until August 29, 2016. For the purposes of this thesis, I will refer to this MOOC as “MOOC #2”.

- Location: An American university, satisfying the requirement for a post-secondary learning institution based in North America.

- Enrollment: At one point as many as 16,023 users were considered enrolled in the MOOC (i.e., as per personal communication from the course administrator); while short of the many tens of thousands in some MOOCs, this reasonably exceeded the 300+ cited by MacAuley et al. (2010) to meet the “massive” criteria needed for the MOOC. One faculty member from the institution facilitated the course. This faculty member received assistance from a research fellow associated with the same faculty as the professor, and from an undisclosed number of teaching assistants.

- Design: The discussion area was one of the key features for the course. The discussion area provided opportunities for participants to engage with one another and the course staff. I was granted permission from the instructors to observe this area; furthermore, I posted a message stating that I would leave if anyone objected (no one did).

- MOOC format: Like MOOC #1, this course largely conformed to the xMOOC format discussed in Chapter Two.

**Design features.** Participation in Energy within Environmental Constraints was free, provided through the Ed.X educational software provider. Participants created a free account with Canvas, and then enrolled in the MOOC (enrollment was also cost-free). While enrollment in the course was free, students had the option to pursue a “verified” certificate of completion for a $99 fee— which entailed the course provider (Ed.X) verifying completers’ identities with government-issued identification. The choice to pursue the free or verified offering did not affect
the content participants were able to access, or the ways in which participants were able otherwise engage with the course. The university offered Energy within Environmental Constraints over 10 weeks, which each week considered a “section” with a corresponding topic or theme. Each section contained a varying number of sub-sections (i.e., subtopics related to the week’s main topic). Each sub-section contained a varying number of “units” of instruction including items such as lectures (through pre-recorded videos), readings, or assignments. Assignment formats included multiple-choice questions, short answer questions, and short peer-reviewed writing tasks. Participants needed to complete these items in order to obtain a certificate of completion. Participation in discussion forums was optional, and not required for course completion.

**Social media.** Ed.X featured the course within its social media feeds, notably Facebook™ and Twitter™. ENGSCI137x also had its own Facebook™ and Twitter™ accounts. Ed.X also posted introductory videos to YouTube™.

**Methods of Data Collection**

The use of multiple sources of evidence is a key feature of case study research (Yin, 2009). By using multiple sources of evidence, a researcher can enhance validity within the case study (Yin, 2009). In my study, I collected data from participants using the following sources: surveys, interviews, and online discussions.

**Individual interviews and focus group interviews.** One-on-one interviews (Creswell, 2012) and focus group interviews (Creswell, 2012) were important means of collecting participants’ perceptions of social presence for my study. I selected individual interviewees through convenience sampling. Arranging interviews proved challenging in MOOC #1. Only three participants responded to requests for interviews, and those who did respond indicated their
preference to complete interviews through email (as opposed to telephone or video conference). I used the same interview questions for all participants—i.e., using an interview protocol (Creswell, 2012). Furthermore, no participants in MOOC #1 agreed to be part of a focus group interview. Seven participants in MOOC #2 completed interviews through an online questionnaire, and two took part in interviews synchronously via the Adobe Connect online conferencing application. There were sufficient numbers of participants to permit two groups taking part in focus group interviews (n=3 for each group). In both MOOC #1 and MOOC #2, individual interviews took place near the end of the course, in order for me to gather participant views of social presence within the respective courses as a whole. MOOC #2 participants took part in focus group interviews two months after the course was over. This allowed participants time to reflect on their experiences after the course ended.

**Online discussion postings.** Participants’ online discussion postings were a key artifact for my study. Other research studies using the Community of Inquiry (CoI) framework have used online discussion postings (Garrison et al., 2000; Richardson & Ice, 2010; Swan & Shih, 2005; Zydney, deNoyelles, & Kyeong-Ju Seo, 2012). I analyzed discussion postings for indicators of social presence. As part of University of Calgary Conjoint Faculties Research Ethics Board requirements, I informed all participants in both MOOCs of my enrollment in the online discussion environment. No participants contacted me to state that they were uncomfortable with my enrollment as a researcher. I copied participants’ discussion postings from the online discussion forums and pasted these into a word processing program for later analysis, leaving out (i.e., not copying) non-participants’ postings.

**Surveys.** I invited student participants in both MOOCs to complete two surveys during my study, at the beginning and at the end of the course. As well, I provided an early exit survey
to participants who chose to leave the MOOCs early. Researchers use survey to describe trends and to “help identify important beliefs and attitudes of individuals” (Creswell, 2012, p. 376). Although survey research is a distinct research approach from case study, Yin (2009) noted that case studies potentially involve multiple methods of data collection including surveys.

The first survey was to obtain basic demographic information (e.g., age, gender, location, and first language) and to provide information needed for the maximal variation sampling strategy (Creswell, 2012) employed when selecting participants for interview and focus group interview. I invited participants to complete the demographic survey at the beginning of each course by providing a link to the survey through messages sent by course administrators, as well as my social media channels and the project website. I pilot tested survey questions (Creswell, 2012) with volunteers before MOOC #1 began. Seven out of 515 participants (1.36%) in MOOC #1 completed the demographic survey. A higher number (but smaller percentage) of participants in MOOC #2 completed the demographic survey (44 out of 16,023 = 0.27%).

The second survey administered was the CoI survey instrument (Arbaugh et al., 2008; Swan et al., 2008). Participants completed CoI surveys near the end of the MOOCs in order to share their perceptions of social presence as well as teaching and cognitive presences. Researchers have helped validate the CoI survey with a wide range of post-secondary learners enrolled in online courses in Canada and in the United States (Arbaugh et al., 2008; Bangert, 2009; Swan et al., 2008). Arbaugh et al. (2008) validated the instrument with 287 online learners across four institutions, and found a Cronbach’s alpha of 0.91 for social presence, 0.94 for teaching presence, and 0.95 for cognitive presence. Bangert’s (2009) study with a sample of 1187 students in online and blended courses yielded Cronbach’s alpha of 0.91 for social presence, 0.95 for cognitive presence, and 0.96 for teaching presence. This indicates a high
degree of internal consistency among survey items. Seven out of 515 participants (1.36%) in MOOC #1 completed the CoI survey. In MOOC #2, 25 out of 16,023 participants (0.16%) completed the CoI survey.

Finally, I invited participants who dropped out of the courses to complete an early exit survey in order to determine what factors contributed to this decision. This survey was in the form of a web-based questionnaire (Creswell, 2012) which contains semi-closed-ended questions (Creswell, 2012). One out of 515 participants (0.19%) in MOOC #1 completed the early exit survey. In MOOC #2, nine out of 16,023 participants (0.06%) completed the early exit survey.

Methods of Data Analysis

Given the four methods of data collection used for my study, I chose a strategy of using both qualitative and quantitative data (Yin, 2009). Qualitative measures address individual participants’ experiences within the MOOC, whereas quantitative measures including descriptive statistics for frequency, median, and mode address the course as a whole. As well, past studies of the CoI framework have used qualitative measures, i.e., through transcript analysis (Garrison et al., 2000) and quantitative measures, i.e., through the CoI survey instrument (Arbaugh et. al, 2008). In my study, I obtained qualitative data through content analysis (Garrison et al., 2000) of online discussion postings, as well as interviews and focus group interviews. I obtained quantitative data through the initial demographic survey at the beginning of the courses, the CoI survey at the end of the courses, and the early exit survey for participants who choose to leave the courses or my study early. I analyzed qualitative data according to themes, and quantitative data using descriptive statistics.

Individual interviews and focus group interviews. Individual interviews were audio recorded and transcribed. I also captured individual interviews via email (which did not require
transcription). Focus group interviews were captured via audio recording and transcribed (focus group interviews only took place for MOOC #2). I analyzed transcripts of individual interviews as well as focus group interviews for themes related to social presence. In vivo coding (Creswell, 2012; Miles et al., 2014) was used for interview and focus group interview transcripts. According to Miles et al. (2014), “In Vivo coding uses words or short phrases from the participant’s own language in the data record as codes” (In Vivo Coding section, para.1). This approach is used to prioritize participants’ voices (Miles et al., 2014), and was useful to capture participants’ views of social presence within the MOOC.

I then coded transcripts using provisional coding (Miles et al., 2014). As I was the single coder of transcripts, it was important to guarantee reliability through the creation of protocols and case study databases (Yin, 2009). My doctoral supervisors had the opportunity to review my data and my application of coding protocols. As well, I reviewed provisional (i.e., first-round) of coding a week after the initial procedure in order to ensure consistency before moving onto pattern (i.e., second-round) coding—these processes helped ensure that as a single researcher my coding procedure was consistent and thereby worked toward alleviating any procedural issues which might arise from lack of inter-rater reliability. According to Miles et al. (2014), provisional coding “begins with a ‘start list’ of researcher-generated codes based on what preparatory investigation suggests might appear in the data before they are collected and analyzed” (Provisional Coding section, para.1). For my study, I used pre-established codes drawn from the theoretical framework (i.e., from CoI literature). Table 3.1 provides examples of the pre-established codes used when analyzing transcripts for CoI-related themes.
### Table 3.1 Social Presence Coding Template

<table>
<thead>
<tr>
<th>Category</th>
<th>Indicator</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affective</td>
<td>Expression of emotions</td>
<td>AF1</td>
</tr>
<tr>
<td></td>
<td>Use of humour</td>
<td>AF2</td>
</tr>
<tr>
<td></td>
<td>Self-disclosure</td>
<td>AF3</td>
</tr>
<tr>
<td>Open Communication</td>
<td>Continuing a thread</td>
<td>OC1</td>
</tr>
<tr>
<td></td>
<td>Quoting from others’ messages</td>
<td>OC2</td>
</tr>
<tr>
<td></td>
<td>Referring explicitly to others’ messages</td>
<td>OC3</td>
</tr>
<tr>
<td></td>
<td>Asking questions</td>
<td>OC4</td>
</tr>
<tr>
<td></td>
<td>Complimenting, expressing appreciation</td>
<td>OC5</td>
</tr>
<tr>
<td></td>
<td>Expressing agreement</td>
<td>OC6</td>
</tr>
<tr>
<td>Vocatives</td>
<td>Expressing or referring to participants by name</td>
<td>VO1</td>
</tr>
<tr>
<td></td>
<td>Addresses the group as we, us, our, group</td>
<td>VO2</td>
</tr>
<tr>
<td></td>
<td>Phatics, salutations</td>
<td>VO3</td>
</tr>
</tbody>
</table>

Adapted from Garrison (2011), used with permission.

Miles et al. (2014) also noted, “Provisional codes can be revised, modified, deleted, or expanded to include new codes” (Provisional Coding section, para.1). This approach allowed me to code transcripts specifically for CoI-related themes. Table 3.2 provides a sample of the coding procedure followed for a segment of Focus Group Interview #1—In Vivo coding and provisional coding (for CoI-related themes).
Table 3.2 Sample of Coding— Focus Group Interview Transcript (Focus Group #2)

<table>
<thead>
<tr>
<th>Transcript</th>
<th>In Vivo Code</th>
<th>Provisional Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>What about you, what was your overall involvement or experience with the course as a whole?</td>
<td>“Fascinating course”</td>
<td>Expresses strong emotions about course (AF1)</td>
</tr>
<tr>
<td>R. Well I was very conscious that I had no professional qualifications or experience in this field of energy or the cost of energy so I started the course with some doubts as to whether I'd be able to make much of it. But I found an absolutely fascinating course. I really loved it. I stayed with it all the way to the end.</td>
<td>“Loved it” “Stayed with it all the way to the end”</td>
<td></td>
</tr>
<tr>
<td>I did all the problems, and I found it extremely interesting, but it was a course that concentrated on pricing and on handling all the different units that are used in energy and in power and then switching from one lot of units to another going from quite small amounts of energy and power up to, you know, national consumption during a year and so forth.</td>
<td>“Extremely interesting”</td>
<td></td>
</tr>
<tr>
<td>So it turned out to be a much more quantitative course with concentrated problem-solving than I had ever done before online and that was a challenge to me but I stayed with it and I enjoyed it.</td>
<td>“A challenge”</td>
<td>Self-disclosure—found content challenging (AF3)</td>
</tr>
<tr>
<td>I: Excellent sir—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R. I would just add that on the social side that wasn't very much going on. In my experience most of the chat, most of the discussion took place when people have had a problem with one of the questions, with one of the quantitative problems, and they were they were asking for help in one way or another. One of the positive points of the course as that we were very good at helping each other without giving the answers away.</td>
<td>“Wasn’t very much going on” “People have had a problem” “Asking for help” “Very good at helping each other”</td>
<td>Asking questions (OC4) Addresses group as “we” (VO2)</td>
</tr>
</tbody>
</table>
**Online discussion postings.** As with interview transcripts, I coded discussion postings twice: first using in vivo coding; and second, using provisional coding (Miles et al., 2014). For discussion postings, I used the CoI coding protocol (Garrison et al. 2000) for provisional codes. The CoI protocol consists of categories of indicators (Garrison et al., 2000) linked to each of the CoI model’s three presences. I used the CoI coding protocol to identify social presence within discussion posts. While I recognize teaching presence and cognitive presence are important within the context of the CoI model, the focus of my study is social presence. In Vivo codes permitted me to present participants’ experiences in their own words. Provisional codes drawn from the CoI coding scheme permitted me to identify instances of social presence. Table 3.3 provides a sample of the coding procedure followed for a segment of MOOC #1 discussion board postings—provisional coding (for CoI-related themes).
### Table 3.3 Sample of Coding—Discussion Postings (MOOC #1)

<table>
<thead>
<tr>
<th>Module 2.1</th>
<th>CoI codes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aliki</strong></td>
<td><strong>VO3</strong></td>
</tr>
<tr>
<td>Mar 31, 2015</td>
<td><strong>OC3</strong></td>
</tr>
<tr>
<td></td>
<td><strong>AF3</strong></td>
</tr>
<tr>
<td>Hello everybody!</td>
<td></td>
</tr>
<tr>
<td>I am not a teacher, I am a parent of LD children. Your ideas are absolutely extraordinary! I noted some of them to apply them at home with my kids and discuss them with other parents. Unfortunately schools in Greece, where we live, are too far away from methods like those proposed. Students number comes up to 30 per each classroom so it can be difficult for the teacher to experiment with redecoration or reordering of the room and to apply new ways of educating the LD students when he must strictly follow the program given by the state (which concerns of course students with normal educational ability). Usually parents with LD children end up to a logotherapist to get some professional help and guidelines.</td>
<td></td>
</tr>
<tr>
<td><strong>Apr 1, 2015</strong></td>
<td><strong>OC1</strong></td>
</tr>
<tr>
<td>I would like to add something to the suggestions. The ideal learning space for the LD students could be the one offering blended educational methods, a system that combines e-learning, listening, experimenting, training, guiding and expressing in multiple ways, so that the student can be motivated to use all his particular skills.</td>
<td></td>
</tr>
<tr>
<td><strong>Catarina</strong></td>
<td></td>
</tr>
<tr>
<td>Apr 6, 2015</td>
<td><strong>AF3</strong></td>
</tr>
<tr>
<td>I don't work in a classroom but have found a few things help my son when he's doing homework so I will focus on those.</td>
<td></td>
</tr>
<tr>
<td>1. Music playing in the background. Even music with lyrics seems to help.</td>
<td></td>
</tr>
<tr>
<td>2. A swivel chair that allows him to twist around as he's thinking or reading questions (I actually find it hard to watch him fidget so much but it seems to help him focus).</td>
<td></td>
</tr>
<tr>
<td>3. A good bright light - I find that a spotlight (it's a bright led light) directly on his books helps him focus.</td>
<td></td>
</tr>
<tr>
<td><strong>Apr 6, 2015</strong></td>
<td><strong>OC3</strong>; <strong>OC5</strong>; <strong>AF3</strong>; <strong>OC4</strong></td>
</tr>
<tr>
<td>I love this idea. I think it would help my son a lot. Any suggestions of specific oils to use?</td>
<td></td>
</tr>
</tbody>
</table>
**Pattern coding of qualitative data.** After initially coding qualitative data from individual interviews, focus group interview, and online discussion postings, I followed a pattern coding procedure (Miles et al., 2014). Miles et al. (2014) stated “first cycle coding is a way to initially summarize segments of data. Pattern coding, as a Second Cycle method, is a way of grouping those summaries into a smaller number of categories, themes, or constructs” (Second Cycle Coding: Pattern Codes section, para. 1). According to Miles et al. (2014), researchers can place in vivo and provisional codes into larger pattern codes according to the following:

- Categories or themes
- Causes or explanations
- Relationships among people
- Theoretical constructs

Researchers use pattern codes in various ways according to the needs of their study (Miles et al., 2014). In my study, I used pattern codes as the basis for narrative description (Miles et al., 2014) within the case study report. I have presented pattern codes in a matrix display (Miles et al., 2014) and organized them according to categories (see Table 3.4). I derived the categories from the interview and focus group interview protocols, which are in alignment with the research questions. I have also included themes and descriptors that emerged from analysis of discussion board postings. Categories of patterns and descriptors formed the basis of the narrative descriptions. Narrative descriptions appear in Chapter Four. This approach is in alignment with case study’s mandate to present thick, rich descriptions (Geertz, 1973; Stake, 1995, Merriam, 1998) of the phenomena studied (i.e., social presence within a MOOC).
### Table 3.4 Pattern Codes of Qualitative Data—Examples

<table>
<thead>
<tr>
<th>Category of Pattern</th>
<th>MOOC #1</th>
<th>MOOC #2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Course Usage</strong></td>
<td>Compelling topic</td>
<td>Compelling topic</td>
</tr>
<tr>
<td></td>
<td>Professional development</td>
<td>Professional development</td>
</tr>
<tr>
<td></td>
<td>General interest</td>
<td>Interest in MOOCs</td>
</tr>
<tr>
<td></td>
<td>Frequent / Regular participation</td>
<td>Frequent / Regular participation</td>
</tr>
<tr>
<td></td>
<td>Website / LMS</td>
<td>No participation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No participation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Website / LMS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No social media</td>
</tr>
<tr>
<td><strong>Social Presence</strong></td>
<td>Supportive dialogue</td>
<td>No contribution (discussions)</td>
</tr>
<tr>
<td></td>
<td>Honest representation</td>
<td>No connection (participants)</td>
</tr>
<tr>
<td></td>
<td>Personal disclosure</td>
<td>Minimal social activity</td>
</tr>
<tr>
<td></td>
<td>Relevant discussions</td>
<td>Moderate social activity</td>
</tr>
<tr>
<td></td>
<td>Frequent / Regular participation</td>
<td>Somewhat comfortable</td>
</tr>
<tr>
<td></td>
<td>Personal connection (content)</td>
<td>Honest representation</td>
</tr>
<tr>
<td></td>
<td>No connection (participants)</td>
<td></td>
</tr>
<tr>
<td><strong>Course Structure and Design</strong></td>
<td>Enriches thinking</td>
<td>Helpful / positive discussions</td>
</tr>
<tr>
<td></td>
<td>Helpful / positive discussions</td>
<td>Neutral / ambivalent discussions</td>
</tr>
<tr>
<td></td>
<td>Rich discussions</td>
<td>Negative discussions</td>
</tr>
<tr>
<td></td>
<td>Multiple perspectives</td>
<td>High quality resources</td>
</tr>
<tr>
<td></td>
<td>High quality resources</td>
<td>Many resources</td>
</tr>
<tr>
<td></td>
<td>Personal meaning (content)</td>
<td>Challenging content</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Questionable pedagogy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Task-focused discussions</td>
</tr>
<tr>
<td><strong>Types of Participation</strong></td>
<td>Regular communication</td>
<td>Discussions not required</td>
</tr>
<tr>
<td></td>
<td>Time constraints (user)</td>
<td>Time constraints (user)</td>
</tr>
<tr>
<td></td>
<td>Positive discussions</td>
<td>Challenging evaluation</td>
</tr>
<tr>
<td></td>
<td>Lack of depth (content)</td>
<td>Challenging content</td>
</tr>
<tr>
<td></td>
<td>Positive learning experience</td>
<td>User-friendly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Positive learning experience</td>
</tr>
</tbody>
</table>

### Surveys. I used an online survey tool to administer the demographic survey at the beginning of my study for each MOOC, and early exit surveys for participants leaving my study and/or the MOOCs. I used descriptive statistics to analyze survey response data. According to Creswell (2012) “descriptive statistics present information that helps a researcher describe
responses to each question in a database as well as determine overall trends and the distribution of the data” (p. 619). I calculated measures of central tendency including mean, median, and mode (Creswell, 2012) based on the frequency of responses to survey questions, which helped me describe the composition of the course as a whole, which is the first unit of analysis within the embedded, multiple case design which I used for my study. Participant responses to open-ended questions on surveys were analyzed using thematic analysis.

**Demographic survey.** I analyzed responses from the demographic survey using descriptive statistics to determine the frequency, mean and mode for each question.

**Early exit survey.** As with the demographic survey, I analyzed responses from the early exit survey using descriptive statistics to determine the frequency, mean and mode for each question.

**CoI survey.** I administered the Community of Inquiry (CoI) survey (Arbaugh et al., 2008) through an online survey tool at the end of each MOOC. I calculated frequency and mean based on responses to each question. This information helped me describe the attitudes of participants within each course as a whole. As with the demographic survey, this addressed the first unit of analysis within the embedded multiple case design (i.e., the MOOCs as wholes).

**Integrity of the Study**

In order for a study to be trustworthy, it must possess integrity and reliability. There are four tests used to help confirm validity and reliability within case study research: construct validity, internal validity, external validity, and reliability (Yin, 2009).

**Construct validity.** Construct validity deals with using the correct operational measures for the concepts being studied (Yin, 2009). For the purpose of my study, the construct tested is the CoI framework, with a particular emphasis on social presence. Yin (2009) recommended
using multiple sources of evidence as tactic towards testing construct validity. In my study, I gathered evidence related to CoI through interview and focus group interview, discussion posts, and surveys. I analyzed textual data from interviews discussion posts according to the CoI coding protocol (Garrison et al., 2000). I also used the CoI survey (Arbaugh et al., 2008) as part of this research. By using multiple sources of data, I was better able to learn the extent to which individuals within the courses created social presence, and the extent to which social presence existed within the courses as (respective) wholes.

**Internal validity.** According to Yin (2009), internal validity refers to the extent to which researchers can establish causal relationships within a case study. By following the analytic technique of explanation building, researchers can enhance internal validity within a case study (Yin, 2009). I examined data obtained throughout my study against the research questions in order to generate explanations for the data. Merriam (1998) claimed that in qualitative research studies, “internal validity deals with the question of how research findings match reality” (Internal Validity section, para.1). Merriam (1998) further noted that in qualitative studies, “what is being observed is people’s constructions of reality- how they understand the world” (Internal Validity section, para.3). In order to enhance internal validity, I carried out member checks (Bloomberg & Volpe, 2012; Creswell, 2012; Merriam, 1998; Stake, 1995) during the course of my study. Participants carried out interviews via email—effectively bypassing the need for member checks—thereby helping ensure the internal validity of my study.

**External validity.** External validity deals with the ability to generalize my study’s findings beyond the bounds of a single case (Yin, 2009). Merriam (1998) described reader or user generalizability as a means to address external validity in qualitative studies, “by leaving the extent to which a study’s findings apply to other situations up to the people in those situations”
This can be accomplished by following a strategy of presenting thick, rich descriptions (Geertz, 1973; Stake, 1995, Merriam, 1998) which provide readers the ability “to determine how closely their situations match the research situation and, hence, whether findings can be transferred” (Merriam, 1998, External Validity section, para. 13). In my study, I created thick descriptions through multiple data sources, including interviews with students within the course. These descriptions help to capture the complexity of the phenomena studied, and help readers determine the extent to which findings are relevant to their respective contexts and settings.

**Reliability.** Reliability addresses the ability of other investigators to use the same methods and arrive at similar conclusions (Yin, 2009). Case study protocols and case study databases enhance reliability (Yin, 2009). For my study, the case study protocol consisted of:

- Recruitment procedures, including scripts inviting participation and informed consent.
- An overview of the project as well as research questions (provided to potential participants), including timeline for research.
- Complete set of data collection instruments (demographic survey, CoI survey, interview protocol, exit / drop out survey).
- CoI coding protocol (Garrison et al., 2000).
- Forms granting permission for specific data collection activities.

The case study database served as a repository for data collected in my study. In my study, I uploaded all data generated from interviews, focus group interview, and discussion posts to desktop office software. I administered surveys through an online survey application. I exported data from the survey application to electronic folders, keeping these data along with
original files from interviews and discussion posts. By reviewing folders, electronic files, and the online survey application, another researcher would be able to follow the “chain of evidence” (Yin, 2009) and procedures leading to the completed case study, thereby helping to guarantee that my findings are reliable.

**Triangulation.** According to Creswell (2012), triangulation “is the process of corroborating evidence from different individuals… types of data… or methods of data collection… in descriptions and themes in qualitative research” (p. 259), and can enhance reliability of findings. In my research triangulation was achieved by comparing evidence from different individuals (e.g., MOOC students and a MOOC #1 instructor), types of data (e.g., individual interviews and focus group interviews), and methods of data collection (e.g., discussion postings, and interviews).

**Integrity of instruments.** This section speaks to integrity of interview protocols and surveys used when collecting data for my study.

**Interview protocols.** Protocols are essential when recording qualitative data (Creswell, 2012). For my study, I used protocols when carrying out individual interviews. I initially developed this protocol based on samples from an educational research text (Creswell, 2012). This was modified to suit the research setting (i.e., the online course environment), and the phenomenon being studied (i.e., social presence). I relied on input from my supervisors, as well as other academic and professional colleagues to refine the protocol and help ensure its integrity.

**Surveys.** I administered an initial survey consisting of demographic questions (Creswell, 2012) at the beginning of the courses. In addition to obtaining such information as age, gender, and location, questions also sought general information regarding participants’ previous experiences with online learning and with MOOCs. I piloted the demographic survey with
academic and professional colleagues in order to obtain feedback and refine questions ahead of the instrument’s use with study participants. I used the same piloting process for the early exit survey. Questions on the early exit survey were primarily attitudinal (Creswell, 2012), in order to gain insight into why participants had chosen to discontinue involvement with my study and/or with the MOOC.

I administered the CoI survey instrument (Arbaugh et al., 2008; Swan et al., 2008) near the end of each course. As mentioned in the Methods of Data Collection section, researchers have validated the CoI survey through a wide range of post-secondary contexts (Arbaugh et al., 2009; Bangert, 2009; Swan et al., 2008). In the conclusion of his study, Bangert (2009) claimed “there is adequate evidence to date to support the use of the CoI survey in its present form as a formative assessment that can be used by faculty to improve the design and delivery of their online courses” (p. 111). In their respective studies, Arbaugh et al. (2008) and Bangert (2009) each found Cronbach’s alpha higher than 0.9 for survey items related to all three presences, which is indicative of a high degree of internal consistency among survey items, and of instrument reliability.

**Limitations**

There were two limitations affecting my study: the first was the number of participants, and the second was types of MOOC. First, regarding the number of participants: a low number of participants in MOOC # 1 completed the demographic, CoI, and early exit surveys. Administered online, it was easy for course participants to ignore surveys in both MOOC #1 and MOOC #2. To encourage as many participants as possible to complete these surveys, I requested permission from the course administrator to notify participants through the course environment and/or through course-wide email. While the smaller number of students enrolled in MOOC #1 yielded
a correspondingly small number of participants in my study, MOOC #2 had a significantly higher number of students. As a result, a higher number of MOOC #2 participants agreed to take part in the research study. Second, regarding types of MOOCs: both MOOCs conformed to an xMOOC format (see “MOOC Nomenclature” section in Chapter Two). It would have been preferable for the purposes of this research to study two courses representative of differing MOOC formats. Were the two courses of differing MOOC formats, I would have been able to draw comparisons between the ways in which course participants demonstrated social presence that were more distinct, as the underlying course designs and pedagogies would have been more varied. While seeking courses I could study for this research, I found there were very few cMOOCs scheduled during the period that met the requirements for my Ed.D program. While I received approval from one cMOOC facilitator for permission to carry out research in his course, ultimately this course did not go forward.

**Delimitations**

Delimitations for this research study included: 1) language, and 2) time. Regarding language, participants needed to speak English, either with English as their first language or with an intermediate to high level of proficiency with English as a second or other language. North American educational institutions delivered the MOOCs in English. As well, the researcher is a unilingual English speaker. Evidence of social presence communicated in languages other than English was not included in my study. Regarding time, I delimited my study to the beginning and ending dates described in the course offering information (i.e., through syllabi and course management software).
Role and Assumptions of the Researcher

I was an observer (Merriam, 1998) within both MOOCs. I registered as a student participant in order to gain easier access to publicly accessible course information such as user profiles and contact information. According to Merriam (1998) when the researcher acts as an observer “the researcher is either hidden from the group (for example behind a one-way mirror) or in a completely public setting” (Relationship between Observer and Observed section, para. 5). Course administrators in MOOC #1 and MOOC #2 announced my presence within the MOOCs through emails, notices, and social media posts. I remained hidden, in that I refrained from posting in discussion areas and from completing assignments for the course. My activities within the MOOCs were strictly to collect data related to social presence.

Biases. I came to my study with three biases: 1) efficacy of online learning; 2) MOOCs as a means of course delivery; and 3) CoI theoretical framework. These biases were countered by using multiple sources of data (Creswell, 2012; Yin, 2009); by allowing participants the opportunity to carry out member checks of transcripts (Bloomberg & Volpe, 2012; Creswell, 2012; Merriam, 1998; Stake, 1995); and by being open to contrary findings and alternate explanations (Yin, 2009).

First, as to the efficacy of online learning: I have had positive experiences as a learner in graduate-level education programs making use of online technologies as part of their course delivery. This bias in favour of online learning also influenced my decision to study MOOCs, to the extent that I saw many positives in terms of the potential these types of courses held for teaching and learning. However, it was possible that many participants in my study were less experienced with online learning, or held ambivalent or negative views towards online learning. By using multiple sources of data, I was able to minimize the effects of my bias by providing
participants the opportunity to express their views towards online learning through surveys, interviews, focus group interview, as well as through their discussion postings.

Second, as to MOOCs as a means of course delivery: I have spent more than five years studying educational technology, and I have been studying MOOCs since 2013. I have also helped develop MOOC curriculum for a Canadian community college, and created a MOOC for use in my professional role as an educational developer. I believe that MOOCs have strong potential to provide greater access to quality higher education to a potentially global audience. Study participants may have had differing views of MOOCs. Yin (2009) noted the importance of being open to contrary findings. For this reason, I was sure to report all data within the case study, including that which might be contrary to my personal beliefs regarding the potential benefits of MOOCs.

Third, as to the CoI theoretical framework: I am in favour of CoI as a framework describing and informing e-learning theory and practice. As a doctoral student, I have used the CoI framework for all major assignments completed within the program. I have also used the CoI framework for a number of academic and professional presentations, and professional development initiatives at my workplace. While in my pre-doctoral studies and professional work I have explored and used other theoretical models and instructional design standards—such as the Analyze, Design, Develop, Implement, and Evaluate (ADDIE) model—I used CoI for this research because it was well-known and academically tested—and recommended by my course instructors. Yin (2009) recommended that researchers be open to alternate explanations when carrying out case studies in order to avoid substantiating a preconceived position. One means of finding contrary findings and alternate explanations is to check with critical colleagues with preliminary findings and data (Yin, 2009). For this reason, I found it helpful to consult with
my supervisors, as well as other academic and professional colleagues to find out their explanations for certain events or MOOC participant behaviours that I had not otherwise considered, particularly with regards to the applicability (or lack of applicability) of CoI and social presence within the MOOC. It was then possible to test these alternate explanations for validity against the data.

**Ethical Considerations**

I took steps to ensure compliance with University of Calgary Conjoint Faculties Research Ethics Board requirements. It was necessary to obtain permission from MOOC-providing institutions. Course administrators informed participants about the types of research conducted. There was no form of remuneration provided. There was also no deception within my study regarding the purpose of participants’ activity. Given my study was entirely online, physical risks were minimal. As there was a significant chance that psychological stress and/or discomfort could occur, particularly as the phenomenon studied included social interactions in public settings, I took steps to minimize psychological stresses by anonymizing data collected and used within the report. As well, I provided participants the opportunity to choose which activities within my study they completed. I invited participants who dropped out from the course, or who were no longer actively participating of the course to complete an early exit survey seeking information regarding their decision to leave the course. I informed participants that they could withdraw from my study at any time, but that I would use any data collected to that point.

**Successes and Challenges**

**Successes.** Two aspects of the research design were particularly effective for my study—cooperation from MOOC staff, and benefits of the CoI model. First, in both MOOCs instructional staff helped in recruitment efforts by placing the recruitment script and link to the
project website (which contained informed consent documentation and links to the surveys) within the body of course-wide announcements, followed by subsequent email reminders partway through. As well, one of the instructional staff for MOOC#2 posted the recruitment script to the course’s official Facebook™ page. Second, my study benefitted from using the CoI framework for the survey, coding protocols, and as a conceptual model—CoI is, generally, easily explained and understood by educators and those in other professional and academic areas.

**Challenges.** There were the following four challenges when carrying out this study—1) access to MOOCs; 2) low amounts of social media associated with MOOCs; 3) low response rate to calls for participation; and 4) personal reasons causing delays. First, it took longer than anticipated to find institutions and course instructors willing to grant me permission to use their MOOCs for the case study. Second, it would have been helpful were there greater amounts of social media usage associated with both MOOCs. Were there more course-related social media channels, I may have had additional opportunities to promote my study and engage with participants outside the discussion areas of courses’ respective Learning Management Systems (LMS), thereby potentially leading to higher numbers of study participants. Third, a very limited number (n=7) participants provided qualitative data for MOOC#1; a similarly small (less than 10) completed the Demographic and/or CoI surveys. The low participation necessitated my study of a second MOOC. Finally, due to personal reasons, data analysis and writing of the dissertation only began in the winter 2016 semester—this challenge was overcome by making adjustments to my professional schedule, seeking advice frequently from my academic supervisors, and establishing a detailed, realistic timeline for completion of analysis and writing activities.
Summary

My study employed descriptive multiple case study methodology to investigate social presence within two MOOCs. Qualitative techniques included discussion posts, and interviews. Quantitative techniques included a demographic survey and the Community of Inquiry (CoI) survey. I analyzed interview transcripts and discussion posts thematically, and using the CoI protocol to find evidence of social presence within each MOOC. In Chapter Four the research findings are presented.
CHAPTER FOUR: FINDINGS

Introduction

This chapter presents analysis of all data and findings. I provide data from quantitative measures for MOOC #1 and MOOC #2 including demographic survey, Community of Inquiry (CoI) survey instrument and early exit survey. I then provide and discuss data from qualitative measures for both MOOCs including discussion postings, and individual interview and focus group interviews. After presentation of these data, MOOC #1 and MOOC #2 are compared as cases. The findings suggest that although participants engaged with both courses for a wide range of personal reasons, there are similarities in terms of how and why participants engaged in the ways that they did. These similarities are most apparent when looking at the findings from the CoI survey instrument and the discussion postings.

A note on completion rates: in MOOC #1 and MOOC #2 individual students’ completion was tracked by respective institutions and/or learning software providers (i.e., Canvas and Ed.X). As such, completion rates were considered proprietary information on the part of the institutions and fell outside the scope of what I, as an outside researcher, could reasonably expect to request.

MOOC #1

Demographic survey participants. Seven out of 515 course participants responded to the Demographic Survey. I collected data through an online form linked to the project website. Six of the seven participants were female. All participants were in their thirties or forties (n=5 and 2, respectively). The majority of participants (6/7) were native English speakers; one participant had English as second language with moderate proficiency. The majority of participants held university degrees. Table 4.1 provides information on participants’ levels of education. The percentage refers to the number of respondents for each question. The information indicated that all respondents had completed some level of higher education, with
more than half having completed a master’s degree. No participants had only K-12 education; as well, no respondents stated that they had a doctoral degree. This is not surprising given that the MOOC was on a topic related to educational practice, and therefore likely to attract a high number of educators or others of a professional background requiring some level of higher education.

Table 4.1. Highest Level of Education: MOOC #1

<table>
<thead>
<tr>
<th>Level</th>
<th>N=</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>College: Technical / Vocational</td>
<td>1</td>
<td>14.29</td>
</tr>
<tr>
<td>University: Undergraduate</td>
<td>2</td>
<td>28.57</td>
</tr>
<tr>
<td>University: Master's</td>
<td>4</td>
<td>57.14</td>
</tr>
</tbody>
</table>

The majority of participants (4/7) indicated that they did not have employment outside the home (i.e., with no job, homemaker, or mother). One participant stated his/her job title was “City Councilmen” (sic) and another stated he/she was a “writer / translator”, while one participant did not answer this question.

There was a wide range of experience with online courses among MOOC #1 participants— see Table 4.2. The majority of participants expressed having no experience at all or having minimal experience with online learning. Four of seven stated that this was their first MOOC. Of those who had participated in MOOCs in the past (3/7), two had participated in six-to-ten other MOOCs, and one had participated in 11 or more MOOCs. The majority of participants identified “personal interest in topic” as their primary reason for participating in the MOOC. One participant identified “academic development” as his/her primary reason, and one participant identified “professional development” as the main reason. One participant identified
“personal use” under “other” as primary reason; it is unclear how this response differs from “personal interest in topic”.

Table 4.2. Level of Experience with Online Courses (MOOCs and other): MOOC #1

<table>
<thead>
<tr>
<th>Level</th>
<th>N=</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not experienced at all</td>
<td>1</td>
<td>14.29</td>
</tr>
<tr>
<td>Minimally experienced</td>
<td>3</td>
<td>42.86</td>
</tr>
<tr>
<td>Highly experienced</td>
<td>3</td>
<td>42.86</td>
</tr>
</tbody>
</table>

As per the demographic survey results, participants in MOOC #1 were most frequently university-educated English-speaking females in their thirties with some amount of experience in online learning. Given the limited number of responses for this survey, it is difficult to draw generalizations for future MOOC designs. Conversely, it suggests that more study into measures for exploring MOOC demographics would help to improve data collection measures in future studies, which could then help inform further MOOC design, development, and facilitation.

**Community of Inquiry survey instrument results.** Participants in MOOC #1 accessed the Community of Inquiry survey instrument through a link on the project website. Course staff provided a link to the survey in a course announcement in week 4. Seven out of 515 course participants (1.36%) completed the survey. I have provided the results in three categories: teaching presence, social presence, and cognitive presence.

**Teaching presence.** Data from these questions showed that participants experienced a strong teaching presence within the course. Average scores on questions associated with Design and Organization scored highest on the 5 point Likert-type scale of responses (4.32); those associated with Facilitation scored second-highest (4.08); and those associated with Direct Instruction lowest (3.67). Responses to the question “Instructor actions reinforced the
development of a sense of community among participants” produced high results with 3 out of 7 students strongly agreeing with the statement, two students agreeing, and two students responding “neutral” to the statement.

**Social presence.** Data from these questions show that participants experienced strong social presence within the course. Average scores on questions associated with Affective Expression (AE) and Open Communication (OC) were both 4.0; those associated with Group Cohesion (GC) were slightly lower, with an average of 3.76. Complete results for these questions appear in Table 4.3.

Table 4.3: MOOC #1: Social Presence: Community of Inquiry survey results.

<table>
<thead>
<tr>
<th>CoI Category</th>
<th>Survey Question</th>
<th>Strongly Agree + Agree</th>
<th>Strongly Agree</th>
<th>+Agree</th>
<th>Neutral</th>
</tr>
</thead>
<tbody>
<tr>
<td>AE</td>
<td>Getting to know other participants gave me a sense of belonging in this course.</td>
<td>5</td>
<td>71</td>
<td>2</td>
<td>29</td>
</tr>
<tr>
<td>AE</td>
<td>I was able to form distinct impressions of some participants.</td>
<td>4</td>
<td>57</td>
<td>3</td>
<td>49</td>
</tr>
<tr>
<td>AE</td>
<td>Online or web-based communication is an excellent medium for social interaction.</td>
<td>6</td>
<td>86</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>OC</td>
<td>I felt comfortable conversing through the online medium.</td>
<td>4</td>
<td>57</td>
<td>3</td>
<td>42</td>
</tr>
<tr>
<td>OC</td>
<td>I felt comfortable participating in the course discussions.</td>
<td>4</td>
<td>57</td>
<td>3</td>
<td>42</td>
</tr>
<tr>
<td>OC</td>
<td>I felt comfortable interacting with other participants.</td>
<td>5</td>
<td>71</td>
<td>2</td>
<td>28</td>
</tr>
<tr>
<td>GC</td>
<td>I felt comfortable disagreeing with other participants while still maintaining a sense of trust.</td>
<td>5</td>
<td>71</td>
<td>2</td>
<td>28</td>
</tr>
<tr>
<td>GC</td>
<td>I felt that my point of view was acknowledged by other participants.</td>
<td>4</td>
<td>57</td>
<td>3</td>
<td>42</td>
</tr>
<tr>
<td>GC</td>
<td>Online discussions help me to develop a sense of collaboration.</td>
<td>4</td>
<td>57</td>
<td>3</td>
<td>42</td>
</tr>
</tbody>
</table>
Cognitive presence. Data from these questions show participants experienced strong cognitive presence. Average scores on questions associated with Triggering Event scored highest (4.05); those associated with Integration and Resolution (respectively) scored second-highest—both items shared an average score of 4.0; and those associated with Exploration lowest (3.9). Course structure may help explain these findings. MOOC #1 instructors placed a strong emphasis on discussion board participation—students were required to engage through postings in order to receive a certificate of completion. Each discussion board began with a question or task to which students needed to respond. Once students made their initial posts, there were varying degrees of subsequent engagement by other students and the instructors through follow-up questions or comments.

Overall. As per the CoI survey results, participants in MOOC #1 experienced high teaching presence (averaging 4.08 on a five-point Likert-type scale), nearly as much cognitive presence (3.98), and slightly less social presence (3.92). These results suggest that the course staff were successful in establishing a learning environment conducive to the realization of learning outcomes. Social presence, effectively mandated through instructors’ requirements that students participate in discussions in order to successfully complete the course, appears to have played a strong role in supporting cognitive presence in MOOC #1. This finding would seem to be in alignment with Garrison and colleagues’ (2000) positing of social presence as a support to cognitive presence, as well as findings by Archibald (2013) and Kozan and Richardson (2014) which speak to this relationship within the context of specific online courses and programs of study in higher education.

Early exit survey. One participant in MOOC #1 responded to the early exit survey. The respondent identified “time constraints” as the primary factor affecting his or her decision to
leave the course. It is important to note that the question allowed respondents to choose from seven different options, requesting respondents to choose all that apply—the fact that the respondent chose only this factor indicates the extent to which the respondent felt that time was a motivating factor in the decision to end involvement in the MOOC. Furthermore, the respondent stated that that the course met his/her initial expectations. He/she stopped actively participating in the MOOC after two weeks. During this period, the respondent claimed to have logged into the course “occasionally”. The respondent described his/her overall experience in the MOOC as “positive”. This respondent found media as being a feature of the course which was “most conducive” to his/her learning within the MOOC, whereas readings were found to be “less conducive”. This individual stated that he/she would take another MOOC in the future.

Discussion board postings. Eight out of 515 participants in MOOC #1 gave permission to use their discussion board postings for analysis. Table 4.8 provides details regarding the number of postings for each participant and the percentage this number of postings represents in relation to the total number of posts by all participants over a four-week period. All posts by participants (in table 4.4) were coded using the Community of Inquiry (CoI) coding scheme (Garrison, 2003) for social presence.

Table 4.4: MOOC #1: Total number of discussion board postings by all participants

<table>
<thead>
<tr>
<th>Name / pseudonym</th>
<th>Total posts</th>
</tr>
</thead>
<tbody>
<tr>
<td>A2 Santosh</td>
<td>12</td>
</tr>
<tr>
<td>A3 Caroline*</td>
<td>18</td>
</tr>
<tr>
<td>A4 Aliki</td>
<td>16</td>
</tr>
<tr>
<td>A5 Catarina</td>
<td>15</td>
</tr>
<tr>
<td>A6 Dayna</td>
<td>6</td>
</tr>
<tr>
<td>A7 Amnah</td>
<td>15</td>
</tr>
<tr>
<td>A8 Sophia</td>
<td>13</td>
</tr>
<tr>
<td>A9 Gustavo</td>
<td>10</td>
</tr>
</tbody>
</table>

*Course instructor
**CoI: Social Presence.** Table 4.5 provides categories and indicators of social presence, as well as the code for discussion transcripts. The table identifies the number of instances for each indicator as they appeared. An indicator could only be used a maximum of once per post. The table also shows the frequency with which each indicator appeared relative to the total number of posts by all participants—expressed as a percentage of all posts.

Table 4.5: Social presence classification and indicators: MOOC #1

<table>
<thead>
<tr>
<th>Category</th>
<th>Indicator</th>
<th>Code*</th>
<th>Instances: MOOC #1</th>
<th>% of posts (total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affective</td>
<td>Expression of emotions</td>
<td>AF1</td>
<td>12</td>
<td>11.43</td>
</tr>
<tr>
<td></td>
<td>Use of humour</td>
<td>AF2</td>
<td>0</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Self-disclosure</td>
<td>AF3</td>
<td>42</td>
<td>40</td>
</tr>
<tr>
<td>Open Communication</td>
<td>Continuing a thread</td>
<td>OC1</td>
<td>36</td>
<td>34.29</td>
</tr>
<tr>
<td></td>
<td>Quoting from others’ messages</td>
<td>OC2</td>
<td>0</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Referring explicitly to others’ messages</td>
<td>OC3</td>
<td>14</td>
<td>13.33</td>
</tr>
<tr>
<td></td>
<td>Asking questions</td>
<td>OC4</td>
<td>4</td>
<td>3.81</td>
</tr>
<tr>
<td></td>
<td>Complimenting, expressing appreciation</td>
<td>OC5</td>
<td>17</td>
<td>16.19</td>
</tr>
<tr>
<td></td>
<td>Expressing agreement</td>
<td>OC6</td>
<td>6</td>
<td>5.71</td>
</tr>
<tr>
<td>Vocatives</td>
<td>Expressing or referring to participants by name</td>
<td>VO1</td>
<td>12</td>
<td>11.43</td>
</tr>
<tr>
<td></td>
<td>Addresses the group as we, us, our, group</td>
<td>VO2</td>
<td>10</td>
<td>9.52</td>
</tr>
<tr>
<td></td>
<td>Phatics, salutations</td>
<td>VO3</td>
<td>6</td>
<td>5.71</td>
</tr>
</tbody>
</table>

(Adapted from Garrison, E-learning in the 21st Century, 2003; used with permission)

**Trends related to social presence.** Participants demonstrated more instances of Open Communication than other categories. However, the Affective: Self-disclosure was the most common specific indicator noted in discussion posts. The second-most common indicator was Open Communication: Continuing a thread. This speaks to the nature of the tasks posed by instructors, namely for students to respond to course media and questions through their
experiences as educators and/or students. To the extent that the Affective: Self-disclosure was the most common specific indicator, it is of interest that the instructor participant did not present details of her life outside of course, or speak to her experience as an educator with LD students. However, the instructor participant “complimented others or contents of others’ messages” in 10/18 (55.55%) of her messages. Furthermore, the instructor demonstrated this indicator the majority of times it appeared among all participants (i.e., 10 of the 17 times). The instructor clearly used compliments as a strategy to reward engagement demonstrated through discussion posts, and to encourage further discussion. It appears that the Open Communication: Continuing a thread indicator was as prevalent as it was due in part to the course design and Learning Management Software (LMS). The course appeared to students in the Canvas LMS as a series of weekly modules. Each module had a “home page” which provided videos, readings, and other resources and information. After reviewing the course content, students then responded to discussion questions. Each question had its own discussion forum; there were typically between two and five discussion forums per module. As well, both course instructors posted in the discussion forums. One instructor presented the discussion questions and responded to students who posted. The other instructor, Caroline, who was part of the research study, did not create original posts in the discussions area, but responded frequently to students’ posts in the forums. Although tracking the number of posts over time was not part of this study, anecdotally (as with other participants), the instructor tended to post more frequently early in the course with her frequency dropping off as the course progressed. Finally, as a requirement for completing the course (i.e., for obtaining a certificate of completion), participation in weekly discussions was required. Some students responded frequently to others’ posts, whereas other participants
(notably Amnah and Santosh) tended to make a single post in each discussion area, while providing only a small number of replies to other students’ postings.

**Overall.** Discussions were required in MOOC #1 for those who wished to obtain a certificate of completion. The instructor participant posted most frequently, but only by two posts more than the next highest poster (a student participant). The two most common indicators of social presence in discussion postings were continuing a thread—necessitated by course design, and by learning management software—and self-disclosure, which was in keeping with the directions provided to students by instructors. For the subject of this course—education—requesting students share experiences relative to the weekly module content proved an effective strategy for helping students explore the course topic and realize self-defined learning goals. Social presence, as evidenced through discussion posts, was an important part of this course. If the course was longer or if instructors employed a wider range of assessment and/or types of evaluation, then there might not be as clearly an aligned relationship between course completion (and learning objectives) and social presence. Insofar as participants engaged in discussions in the interests of obtaining a certificate of completion, this finding would seem to align with Garrison’s (2011) connection between students’ perception of their participation as related to grades for participation—despite there being no grades as such in the MOOC. In the case of MOOC #1, it is possible to substitute “grades” for “certificate of completion”.

**Interview participants.** Three participants completed interviews through email. One of the three interview participants was a course instructor. Two of the interview participants—Santosh (student) and Caroline (instructor)—allowed me use their discussion board postings as well. The interviews provided a “first-hand” view of how these individuals perceived social presence within the course.
Relating to general course usage. Among the two student participants—Sondra and Santosh—there was a qualitative difference as to why they chose to sign up for MOOC #1. For Sondra, involvement was for general interest. She stated, “I just like learning about different things”. Whereas Santosh was involved specifically to further his career. Santosh reported, “Because it helps to enhance existing skills set in available time-resource along with existing job responsibilities”. Santosh described accessing the course “weekly twice or thrice”, whereas Sondra engaged “almost every day”. It should be note that Sondra did not participate in online discussions—a key feature of the course. Implicit in her response is the view that passive participation (i.e., “lurking” or “peripheral” behavior within the course) is a legitimate means of engagement.

Caroline, as one of two instructors, described her general pattern of engagement with the course in terms of how she would best serve the interest of her students, stating,

I sign in every day, but wait until close to the end of the week to comment. Because I am an instructor, I want the students to engage with one another without much interference from myself. I write a weekly email update to let students know how things are progressing and what they can expect for the next week.

Caroline also added that all course communications occurred using Canvas, the learning management system. She did not interact with students outside the LMS platform “because that is not the nature or purpose of this course”.

Relating specifically to social presence. Despite not participating in discussion boards, Sondra found that she related to the course content. She stated, “I related with the course because I have at least 2 LD’s myself and I saw myself in the videos”. Santosh, who posted twelve times during the four weeks, noted that his decision to participate was determined “on the basis of
availability of time as well as interest areas”. He went on to describe the importance of presenting himself as a “real person” among fellow participants stating, “It is important to share ideas- [this] should proceed in a real and authentic manner. It improves interest and trust among peers”. Santosh was the only interview or focus group interview participant who mentioned the concept of “trust” between or among participants. Sondra described an absence of social presence, stating, “I don’t really feel that I actually got to know anyone, but I did learn about how they see the subject of LD’s”. It would appear that the emphasis for Sondra was on learning through course resources, including videos, readings, and other media, with discussions as an additional resource among these.

Caroline found the discussion forums were key to engaging with students, and to facilitating connections between and among students. She noted:

I try to support students’ answers and expand on what they have said in order to create a positive rapport. For a course like this, students come from all walks of life with a wide range of experiences. They have much to teach each other. I am not so much an absolute expert as a facilitator. Therefore, I don’t want to engage too much, but I want to let them know that I am available.

In this response, Caroline articulated a constructivist concept of her instructional role (i.e., facilitator rather than one who “transmits” information within the educational setting). She attached importance to the life experience upon the variety of students who enter her online classroom and attempts to leverage those experiences in the interest of enhancing the quality of learning for all participants— a stated objective of the Community of Inquiry (CoI) framework.

**Relating to course structure and design.** Santosh had a positive view of course discussions and the role they played in his learning. He stated, “It [discussions; sic] enriches
existing thinking process. I believe multiple brains are better than a single brain during a discussion session. It helps every individual to understand the same question/solution over a broader horizon. Where Santosh referred to the value of discussions to the larger group (i.e., the MOOC cohort), Sondra referred to the value of the course (including course discussions) in helping her as an individual. She stated, “The course helped me to understand some things about myself and why I have difficulty in some areas of my education”. Sondra went on to note that while her overall impression of the course (including discussion element) was positive, “something was missing. It didn’t discuss all the LD’s I have heard about”. This desire for further or deeper coverage of the course subject (Supporting Students with Learning Disabilities in the Writing Classroom) would seem to be in keeping with Sondra’s personal reasons for participating in MOOC #1 (i.e., exploring her own learning disabilities). Santosh took issue with the formulation of the question asking him to characterize his impression of discussion in the course, stating, “I am unable to answer this question, because this answer is situational”. Santosh’s response reveals his view of course discussions as complex, multi-dimensional, and subject to a wide range of variables. This view would seem to be in keeping with his generally active profile within the discussion forums (i.e., twelve posts within a four-week course).

As an instructor, Caroline also had a positive view of the discussions. Among participants in the study, she was the most active in the discussion forums with 18 posts over the four weeks (in addition to sending weekly notifications and course-wide emails). She stated, “I would say the discussions are primarily very positive and supportive. Students are encouraging one another, and praising each other for teaching strategies”. Caroline felt that the discussions were the most valuable component of the course “by far”, adding, “They allow self-reflection”. Caroline was the only interview or focus group interview participant in either MOOC to speak to the
discussions as a means or an opportunity for reflection. This speaks to her role as an educator, and suggests an underlying constructivist pedagogy in the course design; i.e., by creating emphasis, spaces, and opportunities for student reflection within the course.

**Relating to types of participation.** When describing factors that influenced his decision to participate in course discussions, Santosh was very specific, stating,

(a.) Is this discussion important for me! (b.) Do I understand the importance of the discussion! ...etc. Because, it depends over, whether my time constraints allowing me to participate and what I am learning/improving in my existing skill-sets.

While there are some language issues in this statement, it is clear that Santosh’s stated desire to enhance his professional and academic standing (i.e., “improving existing skill-sets”) strongly influenced his participation in discussions. Sondra spoke to a lack of participation in social media because she “saw no reason to”. This would seem to reinforce her previously stated interest in course content rather than social interactions through the course environment. Neither Santosh nor Sondra discussed, or other otherwise engaged with, the course among friends or family or others not involved in the course. Speaking to the course design and facilitation, both Santosh and Sondra were generally positive as to the role discussions played in the course, and as to the quality of the course overall. Santosh felt strongly about the value of the discussions, stating, “Discussions with peers helped me a lot to understand the subject matter better”. It is worth noting that he did not have any specific suggestions for changes to the course design or facilitation. Sondra was generally positive about her experience in the course but qualified her answer adding, “It could have been a bit better”. Sondra wanted further and/or deeper coverage of the course topic—Supporting Students with Learning Disabilities in the Writing Classroom—stating that she would “talk more learning disabilities or specific ones by name”.

Caroline engaged in daily communication with her co-instructor in relation to the course off-line. Both instructors played direct, active roles in facilitation and administration of the course. Caroline perceived the students “enjoying their discussions with one another” but could not speak for them. In terms of changes to the delivery or facilitation of the course, Caroline stated, “As this is the first time we have offered the course, we will assess any changes upon its completion”. As of March 2017, the course had yet to be offered a second time.

**Overall.** As per the three interviews, participants expressed varied views about how they engaged with the course and how they perceived social presence. The instructor participant and one of the students engaged with the course daily, whereas the other participant (a student) signed in two or three times per week. One student registered for the course out of general interest, whereas the other student did so for a professional development opportunity. Students identified availability of time, as well as relevance of resources as factors affecting how they engaged with the course. One student and the instructor described discussions as valuable for learning. None of the interview participants engaged with the course through social media, or settings outside of the learning management software. The instructor met with her co-instructor regularly in person to discuss the course, but otherwise participants did not discuss the course with others outside the MOOC. These findings would seem to give evidence to the view that MOOC participants largely define their own learning outcomes and have unique expectations and ways of engaging with others within the context of these courses, in keeping with similar findings by Kop (2011) in a cMOOC.

**MOOC #2**

**Demographic survey participants.** Forty-four participants responded to the Demographic Survey out of a course with 16,023 enrolled. I collected data using an online form
that was included in an email to MOOC students from course administrators. More than half of participants identified as male. One participant did not wish to disclose their gender. Participants ranged in ages from “more than 10 and less than 20 years old” to 60+, with one participant who did not wish to disclose their age. The majority of participants identified as being in their 20s and 30s (n=13 and n=10, respectively). The majority of participants (35/44) stated that English was a second or other language, with 16 declaring a high level of proficiency in English, 17 declaring moderate proficiency, and 2 declaring minimal proficiency. Only 9/44 (20.5%) claimed to be native speakers of English. Of 32 respondents, ten were located in South American countries; nine were located in European countries; six were located in North American countries; four were located in Asia; two were located in Africa, and was located in Australia. Most students in the MOOC held university degrees. Table 4.6 provides information on participants’ levels of education. The percentage refers to the number of respondents for each question.

The information indicated that nearly all respondents had completed some level of higher education, with nearly half having completed a master’s degree. Participants in MOOC #2 represented a wide range of professional backgrounds. Responses to this question tended to indicate higher numbers of respondents participating in “white collar” (i.e., professional and/or academic) as opposed to “blue collar” (i.e., service and/or trade) kinds of work. Job titles included student, engineer (chemical, mechanical, electrical, drilling), professor, psychotherapist, counsellor, university librarian, project manager, real estate sales, director, teacher, lawyer, cost analyst, oceanographer, and flight attendant. Five respondents declared “student” as their job title, and four respondents claimed to be unemployed, without a job, or retired.
Table 4.6. Highest Level of Education: MOOC #2

<table>
<thead>
<tr>
<th>Level</th>
<th>N=</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>K-12</td>
<td>3</td>
<td>6.8</td>
</tr>
<tr>
<td>College: Technical / Vocational</td>
<td>1</td>
<td>2.3</td>
</tr>
<tr>
<td>University: Undergraduate</td>
<td>16</td>
<td>36.4</td>
</tr>
<tr>
<td>University: Master's</td>
<td>21</td>
<td>47.7</td>
</tr>
<tr>
<td>University: Doctorate</td>
<td>3</td>
<td>6.8</td>
</tr>
</tbody>
</table>

Equal numbers of participants responded yes and no (n= 22 / 22) to the question asking if this was their first MOOC course. Of those who participated in MOOCs in the past, 16 participated in 1-to-5 MOOCs, five had participated in 6-to-10 MOOCs, and two had participated in 11 or more (one respondent claimed to have participated in 100 MOOCs). Table 4.7 provides details on the numbers of MOOCs taken by MOOC #2 participants.

Table 4.7. Number of MOOCs Taken by Participants: MOOC #2

<table>
<thead>
<tr>
<th>Number of MOOCs</th>
<th>N=</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5</td>
<td>16</td>
<td>69.6</td>
</tr>
<tr>
<td>6-10</td>
<td>5</td>
<td>21.7</td>
</tr>
<tr>
<td>11+</td>
<td>1</td>
<td>8.7</td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>100</td>
</tr>
</tbody>
</table>

Reasons for participating in the MOOC appear in Table 4.8 along with numbers of participants, including percentages of total respondents. No respondents indicated their primary motivation for joining the course as being for social networking. Of those who claimed “other” as their primary reason, respondents claimed “professional interest in topic” and “learn a new thing that I can’t get in my country” as reasons. This last response is in keeping with responses to
the question related to geographic question; i.e., 27/32 (84.38%) claimed to be in countries other than Canada or the United States.

Table 4.8. Primary reasons for participating in MOOC #2

<table>
<thead>
<tr>
<th>Reason</th>
<th>N=</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal interest in topic</td>
<td>21</td>
<td>47.7</td>
</tr>
<tr>
<td>Professional development opportunity</td>
<td>13</td>
<td>29.5</td>
</tr>
<tr>
<td>Academic development and/or upgrading</td>
<td>6</td>
<td>13.6</td>
</tr>
<tr>
<td>Obtaining credential / certificate of completion</td>
<td>2</td>
<td>4.5</td>
</tr>
<tr>
<td>Social networking opportunity</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>4.5</td>
</tr>
</tbody>
</table>

As per the demographic survey results, participants in MOOC #2 were most frequently university-educated males in their twenties, who were speakers of a language other than English, with some amount of experience in online learning, and participating primarily due to personal interest in the topic. This is important as a point of comparison to other MOOCs. These data could also potentially inform future designs of the MOOC, as well as recruitment (advertising) and facilitation.

**Community of Inquiry survey instrument results.** Participants in MOOC #2 accessed the Community of Inquiry survey instrument through a link on the project website that was included in an email to MOOC students from course administrators. Twenty-five out of 16,023 course participants (0.16%) completed the survey. The results are in three categories: teaching presence, social presence, and cognitive presence.
**Teaching presence.** Data from these questions show that participants felt strong teaching presence. Average scores on questions associated with Design and Organization scored (4.56); those associated with Facilitation scored second-highest (3.97) and those associated with Direct Instruction scored lowest (3.47). Responses to the item, “Instructor actions reinforced the development of a sense of community among participants” produced mixed results with 15/25 respondents (60%) strongly agreeing or agreeing with the statement; 6 responding “neutral” to the statement, and 4 respondents disagreeing or strongly disagreeing.

**Social presence.** Data from these questions show that participants held contrasting views of social presence within the course. Average scores on questions associated with Affective Expression (AE) were low (2.93). This was below “neutral” on the Likert scale. Scores associated with Open Communication (OC) and with Group Cohesion (GC) were both slightly higher (3.47 and 3.44, respectively); both still closer to “neutral” than to “agree” on the Likert scale. Complete results for these questions appear in Table 4.9.
Table 4.9: MOOC #2: Social Presence: Community of Inquiry survey results.

<table>
<thead>
<tr>
<th>CoI Category</th>
<th>Survey Question</th>
<th>Strongly Agree + Agree</th>
<th>Neutral</th>
<th>Strongly Disagree + Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td>AE</td>
<td>Getting to know other participants gave me a sense of belonging in this course.</td>
<td>11</td>
<td>44</td>
<td>4</td>
</tr>
<tr>
<td>AE</td>
<td>I was able to form distinct impressions of some participants.</td>
<td>6</td>
<td>24</td>
<td>7</td>
</tr>
<tr>
<td>AE</td>
<td>Online or web-based communication is an excellent medium for social interaction.</td>
<td>11</td>
<td>44</td>
<td>7</td>
</tr>
<tr>
<td>OC</td>
<td>I felt comfortable conversing through the online medium.</td>
<td>11</td>
<td>44</td>
<td>8</td>
</tr>
<tr>
<td>OC</td>
<td>I felt comfortable participating in the course discussions.</td>
<td>11</td>
<td>44</td>
<td>11</td>
</tr>
<tr>
<td>OC</td>
<td>I felt comfortable interacting with other participants.</td>
<td>13</td>
<td>52</td>
<td>9</td>
</tr>
<tr>
<td>GC</td>
<td>I felt comfortable disagreeing with other participants while still maintaining a</td>
<td>13</td>
<td>52</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>sense of trust.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GC</td>
<td>I felt that my point of view was acknowledged by other participants.</td>
<td>10</td>
<td>40</td>
<td>11</td>
</tr>
<tr>
<td>GC</td>
<td>Online discussions help me to develop a sense of collaboration.</td>
<td>10</td>
<td>40</td>
<td>4</td>
</tr>
</tbody>
</table>

**Cognitive presence.** Data from these questions show that participants experienced strong cognitive presence within the course. Average scores on questions associated with Triggering Event scored highest (4.07); those associated with Resolution scored second-highest (4.01); statements associated with Integration scored third (3.97); and those associated with Exploration scored lowest (3.83). These responses suggest that course design played a strong role in the learning experience. Insofar as students were required to complete problems to complete the course, the relatively high score associated with the Triggering Event indicator speaks to the success of this approach. The lower score associated with Exploration suggests limits to the problem-focused approach within the course, with few incentives to apply or create new knowledge outside the problem sets.
Overall. As per the CoI survey results, participants in MOOC #2 experienced high amounts teaching presence (averaging 4 on a five-point Likert-type scale), nearly as much cognitive presence (3.97), and significantly less social presence (3.28). These results suggest that the course staff were successful in establishing a learning environment conducive to the realization of learning outcomes. Students were not required to create a social presence when completing the course. Discussions were optional, while nevertheless serving as a means through which students could seek assistance with scientific and mathematical problems necessary for course completion. These findings suggest social presence appears to have helped support cognitive presence in MOOC #2 and—as in MOOC #1—align with findings from previous CoI research on cognitive and social presences (Archibald, 2013; Garrison et al., 2000; Kozan & Richardson, 2014).

Early exit survey. Nine participants responded to the early exit survey. In response to the question about factors that influenced their decision to discontinue with the MOOC, respondents noted the following factors: six noted time constraints, four identified other commitments, three cited the course content, and one referred to the course facilitation. Eight of the nine respondents stated that the course met their initial expectations, whereas one stated that it did not. One respondent cited several of the factors previously noted and added that there were inaccuracies in the problems, solutions, and formulae students were required to use. He/she added, “The lectures content did not help much in solving the problems or show clear steps to do it”. Social presence did not help this student with his problems with teaching presence, or difficulties with the content (or the cognitive aspects of the course) causing him to exit the course early.

Respondents stated that they remained in the course from between one week to seven weeks. One respondent stated that s/he accessed the course “once”, and another stated that s/he
accessed the course for “two hours”. There was also a wide range of responses to frequency of engagement with the course, with respondents stating that they logged into the course occasionally (n=4), almost never (n=2), often (n=1), and very often (n=2). Six respondents declared a positive overall experience within the MOOC, two claimed an “ambivalent / neutral” experience, and one claimed a negative experience. An additional comment related to this question included “After feeling snowed by the technical language and the density of information I went back and did the pretest. Results told me that I was unqualified for this course”.

Participants identified video lectures (n=4) and readings (n=3) as features of the MOOC most conducive to their learning. Course features identified as less conducive to respondents’ learning included social media (n=3) and discussions (n=2). Suggestions for improvement to future iterations of the course included free tuition for university credit based on interest and/or achievement, later due dates for problems and other tasks, more help with problems, and better online resources (related to content information). One participant noted that he/she would like to see “more structure for interaction between participants. It looks like there were some really interesting people with related backgrounds taking the course. But all the information was flowing from the teachers to the students. Very little flow between students”.

Seven of the nine respondents stated they would take another MOOC. One stated “maybe”; another stated that he or she would take another MOOC, with the following qualification:

I would take another MOOC either if I needed a credit for a course that I could not take face to face (although I'm not sure about brick and mortar universities granting credits for them); or I would take one as non-credit if I was really interested in a topic for which I
couldn't find enough info in personal research using google and related tools. One of the really important collateral reasons for me to take courses is to build networks with other people: networks of learning and similar interests for inquiry, for professional and personal.... This MOOC and the other one I sampled were next to useless in this regard.

**Overall.** As per the early exit survey results, participants in MOOC #2 left the course early primarily due to time constraints. Respondents to the survey were generally interested in the topic, and found the course design and facilitation by instructors conducive to learning. In addition to time constraints, respondents cited challenging content and lack of social interaction among course participants as factors affecting their leaving the course early. These results suggest that the course staff were successful in establishing a learning environment helpful to the realization of learning outcomes. Nevertheless, due to factors largely outside instructors’ control, many participants in the study chose to leave the course early. Data regarding the numbers of participants across the entire course who successfully completed (i.e., by achieving a certificate) in relation to those who did not, were not available. While this doctoral study did not focus on MOOC attrition rates per se, the findings from the early exit survey would seem to align with findings by Engle et al. (2015) identifying time commitment and level of difficulty as being factors’ in participants’ decision to leave a Human Physiology MOOC.

**Data from discussion board postings.** Four out of 16,023 participants in MOOC #2 gave consent for their discussion board postings to be used in my research study. Table 4.10 provides details regarding the number of postings for each participant over a twelve-week period. All posts by participants (in table 4.10) were coded using the Community of Inquiry (CoI) coding scheme (Garrison, 2003) for social presence.
Table 4.10: MOOC #2: Total number of discussion board postings by all participants

<table>
<thead>
<tr>
<th>Name / pseudonym</th>
<th>Total posts</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1 Diana</td>
<td>46</td>
</tr>
<tr>
<td>B3 Ricardo</td>
<td>37</td>
</tr>
<tr>
<td>B7 Asha</td>
<td>13</td>
</tr>
<tr>
<td>B8 Carlos</td>
<td>3</td>
</tr>
</tbody>
</table>

**Col:** Social Presence. Table 4.11 provides categories and indicators of social presence, as well as the code for discussion transcripts. The table identifies the number of instances for each indicator as they appeared in MOOC #2. Note: an indicator could only be used a maximum of once per post.

Table 4.11: Social presence classification and indicators: MOOC #2

<table>
<thead>
<tr>
<th>Category</th>
<th>Indicator</th>
<th>Code*</th>
<th>Instances: MOOC #2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affective</td>
<td>Expression of emotions</td>
<td>AF1</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Use of humour</td>
<td>AF2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Self-disclosure</td>
<td>AF3</td>
<td>10</td>
</tr>
<tr>
<td>Open Communication</td>
<td>Continuing a thread</td>
<td>OC1</td>
<td>59</td>
</tr>
<tr>
<td></td>
<td>Quoting from others’ messages</td>
<td>OC2</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Referring explicitly to others’ messages</td>
<td>OC3</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Asking questions</td>
<td>OC4</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Complimenting, expressing appreciation</td>
<td>OC5</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Expressing agreement</td>
<td>OC6</td>
<td>6</td>
</tr>
<tr>
<td>Vocatives</td>
<td>Expressing or referring to participants by name</td>
<td>VO1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Addresses the group as we, us, our, group</td>
<td>VO2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Phatics, salutations</td>
<td>VO3</td>
<td>3</td>
</tr>
</tbody>
</table>

(Adapted from Garrison, E-learning in the 21st Century, 2003; used with permission)

**Trends related to social presence.** As in MOOC #1, participants demonstrated more instances of Open Communication than other categories. The most common indicator was Open Communication: Continuing a thread. The second-most common indicator was Open
Communication: Asking questions. As with MOOC #1, this speaks to the nature of the tasks posed by instructors, namely to solve mathematical and scientific problems. Participants posed questions when they were unclear on how to complete these problems. Participants had a number of possible pathways through the Ed.X platform while completing the course. The course appeared to students as a series of modules to be completed, each with readings, videos, and other resources as well as quizzes and/or problems for assessment. Discussions were an optional part of the course, not required for credit. This may explain why, given that a number of study participants completed surveys and/or interviews, a relatively smaller number allowed their discussion posts as part of the study. Inasmuch as participants used threads as a space for sharing their learning and their approaches to problem-solving, participants used others’ threads to further their enquiries on certain topics, problems, and issues, and to assist their fellow students with the same. Problems and questions were important parts of the course for those who sought completion and the certificate at the course’s end. Participants used discussion forums throughout MOOC #2 as a space to share their ideas, information, and respective approaches to topics and problems. Students posed content-related questions, as well as questions pertaining to course administration, evaluation, pedagogy, and technical issues (i.e., learning software). These questions were answered by course staff (teaching assistants who monitored forums), as well as peers (i.e., fellow students). The third-most prevalent indicator was Open communication: Complimenting, expressing appreciation. In keeping with the “Asking questions” indicator, many participants expressed appreciation for fellow students and for course staff who helped answer questions. As well, a thread entitled “Community TA Thank-you Thread” garnered a number of posts.
Overall. Discussions were not required in MOOC #2. The two most common indicators of social presence in discussion postings were continuing a thread—necessitated by course design, and by learning management software—and asking questions, which was in keeping with the directions provided to students by instructors. For the subject of this course—energy science— instructors provided discussion forums for students to request and provide help as they explored the course topic and realized self-defined learning goals. Social presence, as evidenced through discussion posts, was an important part of this course inasmuch as it helped students solve scientific and mathematical problems required for course completion. If the course was of a different length, or if instructors employed a wider range of assessment and/or types of evaluation, then there might not be as clearly an aligned relationship between course completion (and learning objectives) and social presence. As in MOOC #1, social presence appeared to be valued in helping students successfully complete evaluated learning tasks, and as such aligns with Garrison’s (2011) connection between evaluation and students’ perception of discussions as being related to evaluation.

Interview and focus group interview participants. Ten participants in MOOC #2 participated in individual and/or focus group interviews in MOOC #2. These data allowed me to address general (i.e., course-wide) themes, and to explore individuals’ specific, unique experiences as participants within this MOOC, thereby fulfilling one of the main objectives of this research study.

Relating to general course usage. Among participants, there was a wide range of reasons for registering for and participating in MOOC #2 (e.g., love of science, interest in MOOCs, importance of topic, professional and/or academic interest). There were nearly as many responses—and types of responses—to this question as there were respondents. Several
interview participants elaborated on their reasons. For example, Colleen stated, “The topic is something everyone should know something about, as crucial decisions on energy sources need to be made by all in the coming years”. Asha participated in MOOC #2 out of personal interest, and because she wanted to advance academically. She stated that she had registered for the MOOC because of interest in energy systems, and to further her career stating, “I'm starting my Master's degree in Energy from this fall semester. So this course acts as a great refresher of some of the basic concepts of Energy”.

In terms of how frequently participants engaged with the course, there was a clear difference between those individual interview and/or focus group participants (n=10) who participated in discussion board postings (n=5) and those who did not (n=5). Three of the participants who posted in the discussions area, Pat, Ricardo, and Asha, engaged with the course on a regular basis. Asha described spending “almost 6-7 hours weekly with the course”. Ricardo estimated that he engaged with the course “probably about 5 days in every 7”. Participants who did not post in the discussions tended to describe their involvement in terms of a total number of times. For example, Bob engaged with the course “approximately 3 times”. Peter engaged with the course “just once”. Sarah stated that she engaged with the course “several times to check out the course; once to do a longer study session (40 or 50 minutes)”.

Of the 10 MOOC participants who completed the individual and/or focus group interviews, only Carlos stated that he engaged with social media associated with the course. The others all stated that their engagement with the course was entirely through the course environment/website. It should be noted that this same participant (Carlos) had the fewest number of discussion board postings (among those who posted).
**Relating specifically to social presence.** Participants’ assessments of their respective involvement in the discussion forums were primarily of interest in that a number of participants explained why or otherwise justified their involvement (or lack of involvement), with the majority of participants stating that they did not participate in discussions or only participated in this way minimally. Colleen reflected on her own learning preferences in regards to the discussions stating “I didn’t [use the discussion forums]. It’s not how I learn best”. Asha stated that she “engaged moderately in various discussions with other participants”. Diana described her involvement in the discussion boards as primarily seeking answers to questions, stating, “I mostly asked questions. I didn't feel knowledgeable enough about this subject to do much answering of other people's questions. In other courses, I try to respond as well”.

Participants did not feel strongly that they presented themselves as real people, nor did they get a strong sense of other MOOC participants as real people. From the interviews, it was evident that, taken as a whole, the attitude towards this aspect of the course (i.e., “presenting as real”) was generally ambivalent. Terminology associated with this question was not immediately clear to some participants, Diana stating “Not sure what you mean, but I asked what I wanted to ask and said what I wanted to say”. She added further detail regarding her perception of this (social) aspect of the course, “I felt people were being honest about their questions and concerns. It wasn't a get-to-know-you-personally course, although people did (and were encouraged to) express opinions different from those of the teachers and other participants”.

Asha described the boundaries she felt when presenting herself to other participants:

In my opinion, when you are taking an online course there's a limit for presenting yourself as a "real person" because you don't know the other participants personally. The
only thing in common is that we are pursuing the same course. So if you keep that point in mind, you can easily adapt to the course environment.

This statement indicates a willingness to communicate openly within the course, but also caution in terms of how deeply engagement through the discussion boards could go. This suggests that her presentation of self through the discussions was purposeful. Participants revealed through interviews awareness of themselves as learners, in terms of how they learned and how those preferences shaped the kinds of ways they engaged in the course. In Colleen’s individual interview she stated, “I felt free to engage in the course to the degree that I wanted”. For her, this constituted engaging with course resources such as videos and readings, but not participating in discussions or otherwise engaging with other students except through this research study (i.e., as a focus group participant). Liz, an experienced MOOC participant stated, “I have taken a few online courses like this, and found this one as comfortable as the rest”.

None of the interview or focus group participants (n = 10) stated that they interacted with other MOOC participants in person, over the phone, or in other “off-line settings” (i.e., outside the context of the course environment). According to Bob, the social experience of discussing the course in the focus group interview helped alleviate a lack of self-efficacy that he felt while engaged with the course material:

I’m finding having this conversation with the three of you this afternoon is the most social aspect I’ve had of this course. It’s like we’ve gone out for coffee after the lecture and are talking about it so it’s been really helpful for me and kind of normalized this for me because I felt like perhaps my technological and scientific background is somewhat limited.
Overall, the participants described social activity and/or social presence as being extremely limited within the course. Participants described social activity and/or social presence using the following terms: “Unknown”, “Pretty non-existent”, “Minimalist”, and “Very low”.

Participants who posted in the discussion forums tended to elaborate on the topic more than those who did not post in the forums. For Ricardo, an experienced MOOC participant, the relatively low emphasis on social interactions was different from other online courses that he had taken. He stated,

This course has been an exception. Its emphasis is on quantitative problem-solving and such discussion as has taken place has centred on the various difficulties that we have with those problems. There have so far been only a couple of more general discussions, e.g., of tidal energy or the cost of solar energy.

In Ricardo’s view, much of the social presence emerged from discussions related to problems and course-related assessment. Sarah (who did not post in the forums, and ultimately left the course early) did not enjoy the problem-centred nature of many of the discussions. She stated, “There were many entries in the Introduction section, not necessarily giving more than the basic information about the writers. There was a lot of complaining in the section about correct answers to quizzes”. On the other hand, Diana (who was the most prolific discussion board poster among study participants) took a more positive view, saying “There was a lot of activity (there were a lot of assignments, and a scoring system that encouraged getting them done), and people really like the topic”.

**Relating to course structure and design.** The extent to which participants perceived course-related discussions and/or social media helped them learn divided sharply between those who participated in discussion forums (n=4) and those who did not (n=5). According to Diana,
who actively posted in the forums, “Discussions were essential for my learning online”. Ricardo stated, “Other participants have been very helpful in giving permissible hints about the problems we strive to complete”. Carlos claimed, “They [course-related discussions] help me to solve some questions”. Asha—who had a professional and academic interest in the topic (Energy within Environmental Constraints)—stated, “Course related discussions helped me a lot throughout the course. If I'm stuck in a particular problem the various discussions helped me arrive in the correct solution”.

Impressions among study participants of course discussions as a whole were, for the most part positive (n=5) with a small number (n=2) indicating a negative impression, with two participants providing “unknown” or “other” as responses. Peter, one of the “negative” respondents to this question, elaborated that “the one [discussion] that seemed most active was the one that was the introductions but they were just one-liners”. This suggests a concern with a perceived lack of substance or depth to the discussion forums. Similarly, Sarah, another who responded that her perceptions of the course discussions were negative, reiterated her response that introductions were very basic. Furthermore, she saw “complaining” in forums dealing with quizzes and assessment as off-putting. Ricardo, in contrast, expressed a positive view of the “task oriented” nature of the discussion boards stating, “We didn’t get to know each other. We didn’t talk very much about where we came from or why we were taking the course. The chat was very focused on how the hell do you get this question right”.

Among all the interview and focus group interview participants, Ricardo, who posted frequently in the discussion forums, made the most explicit connection between course content and features of course delivery (i.e., readings / other media, discussion boards, social media, or other). In the following quote, Ricardo offered his assessment of the course resources:
It's a good course, with lots of issues to think about. The economics of energy are complex and important. So, readings have been important and many links to other sources of information. Social media, however, have not featured strongly on this course. The video lectures and assignments have been at the heart of the course.

Diana, the most frequent discussion poster among study participants, reported that all course features served a larger purpose or a whole. She stated, “It was a package. Discussion boards were essential. Readings were useful and interesting. I didn't use social media”.

Other participants were more specific regarding the one or few features most conducive to their learning. Furthermore, no clear consensus emerged between interview and focus group interview participants as to which features were most helpful. The following responses included such items as “without doubt the discussion boards”, “I accessed only related readings, which I found helpful”, “videos and lectures are very good for this purpose”, “readings - this is the same for me in almost any course”, “the videos were best for me, perhaps because of my age”.

**Relating to types of participation.** Participants who were involved in discussion board posts spoke to the need to help with scientific and mathematical problems and questions (i.e., as part of course assessment) which tested knowledge and application of course content when describing factors and conditions influencing their decision to participate or not participate in discussions. Ricardo observed, “Generally I look for help with problems that are giving me difficulties. Where possible I am trying to broaden the discussions here and there”. Similarly, Diana stated, “I participated when I had a question, and often I perused other responses for the same topic”. Yet Carlos noted, “Because a good proportion of the questions are tricky, and that pushes you to spend too much time to solve them, participation is essential and helpful”. It was evident from participants’ statements that those who used discussion boards found them valuable
for tasks related to course content. This leads to questions of how course completion and engagement would exist if A) discussion boards were more prominent in assessment, and for credit or B) discussion boards were less prominent, and/or not monitored by instructional staff.

There was less consensus among participants who were not involved in discussion board posts regarding factors and conditions influencing their decision to participate or not participate in discussions. Bob stated, “As noted, I was responding to an invitation to participate in a time-limited sampling of this course. Accordingly, and as explained above, I chose to limit my active participation in the course”. In contrast, Sarah claimed, “I might still participate in course discussions, if there isn't a lot of complaining”. Colleen noted, “This type of interaction just did not interest me. I was more interested in the factual content”. These comments led to questions of how instructors might redesign the course structure and/or assessment to make participants more interested, willing, or otherwise motivated to participate in discussions.

Five of the 10 interview and focus group interview participants discussed or otherwise engaged with the course offline (i.e., discussions with friends / family or others not involved in the course). Carlos referred to sharing his course experiences with family members, stating he discussed the course “mainly with my two children who are engineering students, one in chemist [sic] and the other in mechanic-electrical like me”. Ricardo, feeling strongly about the topic (Energy within Environmental Constraints) noted, “I am talking more with family and friends about energy-related issues. I have not mentioned specifically that I am taking a course”. Given participants take courses individually and outside a formal program of study, it speaks to the participants’ strong interest in the topic that they would engage in discussions related to the course and/or course ideas and content. It suggests these individuals feel strongly about their
MOOC study, and can serve as catalysts to conversations about course ideas and themes in their wider communities beyond the immediate context of the MOOC.

When it came to suggesting possible changes to the design or facilitation of MOOC #2, four participants provided ideas and/or suggestions. For Carlos, the course design did not adequately consider participants’ time constraints. He suggested instructors “have the help of a pedagogist [sic] focused in adult’s education”. It is worth noting that Carlos was the only participant to speak specifically to a need for a specialist in education to assist with course design or delivery.

Sarah noted what appeared to be technical issues with the course and, like Carlos, saw room for improvement with the pedagogical approach practiced by some instructors. She stated, “I noticed that if anyone posted introductions outside the Introduction thread, they were reprimanded by one of the TAs”. The implicit suggestion is that TAs and other staff receive better training or guidelines to inform their practice moderating discussion forums.

Ricardo, an experienced MOOC participant, felt other or additional venues for discussion would add to the course experience. He stated,

Well, on other 'Futurelearn' courses, there has been broader discussion of the issues and more interaction with other participants. I'm not sure quite why this hasn't happened on this course. I think it is simply because the content of the course, and the staff, are centered on the assignments set. These take up most of our time and energy.

The suggestion here would seem to be that instructors could enhance the quality of the course by adding opportunities for engagement on topics beyond those related directly to assignments. Peter was also interested in additional or other spaces within the course for discussion stating that he would like to see “more structured discussion / interaction between
participants”. He expanded on this thought during the focus group interview, stating, “We build our knowledge by direct involvement with source material, yes, but we also build our knowledge by testing and discussing it with other people”. This statement would seem to suggest that having structured opportunity for live and/or synchronous discussions or meetings within the course could potentially be of value for those who might be having difficulty with course concepts or other content.

There was a wide range of opinion expressed among ten interview and focus group interview participants when asked to describe their (respective) experiences within MOOC #2. Three (of ten) participants described their experience in MOOC #2 as positive, three “qualified”, one “negative”, and two “other”. In addition to calling the experience “excellent”, Diana added “I would take a course from these people again, and I'm about to sign up for a certificate – not because I need one (I don't), but to support the course”. It is worth noting that Diana, the most prolific poster in the study, was the only participant to mention this concept of “supporting the course” through her involvement. Colleen also approved of the course format, stating, “I think this is a great way to learn, and will take more courses like this in the future”. Carlos was also positive but found the content challenging. He stated, “This has been a very good course, but would be better if they avoid to complicate [sic] too much the questions”. Like Carlos, Ricardo expressed concern with a challenging— or overly technical— approach to the subject (Energy within Environmental Constraints). He said,

I've found it both challenging and interesting, but there has been somewhat more emphasis on quantitative problem-solving than I had expected or wanted. I see the point of this and I think I have learned from it as a result. However, broader political and social
issues to do with climate change and energy have not featured as much as I would have liked.

Not all views of the course were positive. Sarah expressed a “cautious” view of her experience with MOOC #2. Unlike Carlos and Ricardo, her concerns were to do with the discussion boards rather than course content. Speaking to the discussion boards, Sarah stated, “I'm taking the course to learn. Previous experience has taught me to avoid discussion threads if they contain negativity”. This would seem to be in keeping with her previous statement that she perceived discussion threads containing “complaining”. Sarah did not choose to see the course to completion, nor did she make any posts in the discussions area. Peter provided the one “negative” response regarding overall impression of the course stating, “I really didn't take this course. Only sampled it briefly. Found out quickly that the technical level was beyond my capacity”. He elaborated on this during the focus group interview stating (when describing viewing an online lecture):

It was kind of like one of those nightmare experiences when you end up in a course and you go and you’re sitting down and you’re listening to somebody and you’re going I don’t really understand what this is; I’m in the wrong place; I’m stupid. I didn’t understand and things got really complex for me with the numbers…

As with other participants, Peter found the content and approach beyond his abilities. Rather than continue forward, he chose to leave the course after a relatively short amount of time.

**Overall.** As per the 10 interviewees, participants expressed varying views about how they engaged with the course and how they perceived social presence. Three students (who posted frequently in the discussions area) engaged with the course regularly, whereas the other
participants engaged only a specific number of times or on an irregular basis. There were nearly as many reasons for participating in the course as there were participants in the study. The most common statements concerning motivation for registering had to do with an interest in the subject matter (i.e., energy science). The majority of interviewees did not engage with discussions or did so minimally. Most participants, however, felt they presented themselves as “real people” within the course, and that other participants were doing the same. Almost none of the interview participants engaged with the course through social media, or settings outside of the learning management software. Many participants, however, discussed either the course or ideas related to the course with others outside the MOOC (i.e., family, friends, and colleagues). These findings would seem to suggest that MOOC participants largely define their own learning outcomes, and have unique expectations and ways of engaging with others within the context of these courses— thereby aligning with findings and discussions by Kop (2011) and MacAuley at al. (2010).

Cross-Case Comparison: MOOC #1 and MOOC #2

When analyzing quantitative and qualitative data, I identified similarities and differences in the two MOOCs. In the following section, I compare results of quantitative and qualitative measures and discuss how these relate to social presence within the MOOCs.

Demographic surveys. A higher number of enrollees completed Demographic surveys for MOOC #1 (n=7/515 participants = 1.36% of the total course population) than for MOOC #2 (n= 44/16,023 participants = 0.27% of the total course population). The majority of respondents in MOOC #1 identified as female, whereas in MOOC #2, slightly more than half of the participants were male. Perhaps one of the most pronounced differences was in the percentage of respondents who identified English as a second or other language, at 14.29% and 79.54%,
respectively. Respondents in MOOC #1 tended to skew older, with the majority being in their 30’s, as compared to MOOC #2 in which the highest percentage of respondents identified as being in their 20’s. The majority of participants in both courses completed some level of post-secondary education. According to survey data, the highest level of achievement for the majority of respondents in both MOOC #1 and MOOC #2 was at the University: Master’s level, at 57.14% and 47.7% respectively. The highest level of achievement for the second-greatest number of respondents was also the same in both MOOCs, at the University: Undergraduate level, at 28.57% and 36.4% respectively. The highest level of achievement for the lowest number of respondents was also the same, at the College: Technical / Vocational level at 14.29% and 6.8%, respectively. A higher percentage of participants in MOOC #1 had experience with online compared to MOOC #2. In MOOC #1, 42.86% of respondents were “highly experienced” with online courses. In MOOC #2, only 11.4% claimed a high level of experience. When describing their reasons for participating in the MOOCs, the highest percentage of respondents in both courses cited “personal interest” as their primary motivator, at 57.14% and 47.7% respectively. It is also worth noting that of respondents to surveys in MOOC #1 and MOOC #2, zero participants stated that their primary reason for enrolling in the MOOC was for “social networking opportunities”.

**Overall.** Students in both MOOCs tended to be well educated (i.e., with the majority holding college, undergraduate, and/or graduate degrees), comfortable with online learning, and motivated to participate in the MOOCs due to personal interest in the topic. These demographics in both courses would seem to align broadly with findings by Kizilcec et al. (2013) that participants in three Stanford MOOCs were “well-educated professionals” (p. 178). Other aspects of the respective demographic profiles were further apart. Further study could be made of
the difference in gender composition relative to subject matter, for example; i.e. do education-focused MOOCs attract more females than males, and if so for what reasons? The demographic questions and results are useful insofar as they suggest a wide range of future inquiries concerning the kinds of learners attracted to MOOCs, as well as how to help those learners realize their personal learning goals within the context of these kinds of courses.

**Community of Inquiry surveys.** When taken as representative of their respective course populations, MOOC #1 had 7/515 participants respond to the CoI survey compared to 25/16,023 participants responding from MOOC #2.

**Teaching presence.** Participants in both MOOC #1 and MOOC #2 experienced a high level of teaching presence. Across all categories of indicators, teaching presence averaged at 4.08 on a five-point Likert-type scale in MOOC #1, as compared to 4 in MOOC #2. In both MOOCs, the highest CoI category of indicator for teaching presence was Design and Organization, with average responses of 4.32 and 4.56 respectively. In both MOOCs, the second highest category of indicator was Facilitation (4.08; 3.97), followed by Direct Instruction (3.67; 3.47). This suggests that despite differences in enrollment (i.e., MOOC #2 had many more students than MOOC #1) and subject matter (i.e., writing instruction in MOOC #1 and energy science in MOOC #2) participants in both courses experienced similarities in terms of how the course was taught, and how they related to instructors and course content (i.e., readings, video, and web).

**Social presence.** In both MOOCs respondents indicated that social presence was experienced at the least, relative to the teaching presence and cognitive presence. In MOOC #1, social presence averaged at 3.92 on a five-point Likert-type scale. In MOOC #2, social presence averaged at 3.28, a difference of 0.64 points (average) — the widest gap between the two MOOCs when comparing all three presences. Rankings of indicators in the Teaching Presence
and Cognitive Presence categories were in a similar order for both MOOCs. However, rankings of indicators were different when it came to social presence; in MOOC #1 the highest ranked indicators were Affective Expression and Open communication (tied at 4.0 average), whereas in MOOC #2 the highest was Open Communication (3.47 average), and the lowest was Affective Expression (2.93). The single greatest point of difference between the MOOC #1 and MOOC #2 when it came to social presence was in participants’ responses to the CoI category of Affective Expression and the statement, “Online or web-based communication is an excellent medium for social interaction”. Eighty-six percent of survey respondents in MOOC #1 strongly agreed or agreed with this statement, whereas only 44% of respondents in MOOC #2 felt the same way. While this difference speaks to participants’ perceptions of online communication generally, it is worth noting that MOOC #1 placed significant emphasis on discussion board communications (required for completion) than MOOC #2 (in which discussions were optional).

**Cognitive presence.** Participants in both MOOC #1 and MOOC #2 experienced high levels of cognitive presence. Across all categories of indicators, cognitive presence averaged at 3.98 on a five-point Likert-type scale in MOOC #1, as compared to 3.97 in MOOC #2. In both MOOCs, the highest CoI category of indicator for cognitive presence was Triggering Event, with average responses of 4.32 and 4.56 respectively. In both MOOCs, the lowest category of indicator was Exploration (3.9; 3.83). As with teaching presence, the fact that the highest and lowest CoI indicators corresponded despite differing enrollments and subject matter suggests that the teaching methods and the xMOOC format (i.e., asynchronous, through learning management software) were conducive to similar kinds of learning experiences among participants.

**Overall.** As per the CoI survey results participants in MOOC #1 and MOOC #2 experienced high amounts of teaching presence and cognitive presence. The difference between
these measures across the two MOOCs was relatively small. Participants in MOOC #1 experienced a significantly greater degree of social presence compared to MOOC #2. This may be due to the kinds of learning tasks students were required to complete in the respective courses: MOOC #1 emphasized participation in discussions, whereas MOOC #2 emphasized completing scientific and mathematical problems. It is possible that the subject matter of the courses—education in MOOC #1, compared to energy science in MOOC #2—helped inform instructors’ decisions as to which learning activities were most appropriate. The CoI survey findings would seem to suggest that social presence was important in supporting cognitive presence in MOOC #1, and less so MOOC #2. These findings align with findings and discussion on social and cognitive presences by Archibald (2013), Garrison et al. (2000), and Kozan and Richardson (2014).

**Early exit surveys.** There were not enough respondents to the early exit survey for MOOC #1 to provide a meaningful comparison between the two courses. The single respondent to this survey in MOOC #1 cited “time constraints” as the primary reason for ending involvement in the course. This was the same as a majority of respondents (6/9 or 66.67%) in MOOC #2. The MOOC #1 participant stated his/her overall impression of the course was, nevertheless, positive, as did the same number of respondents to this question in MOOC #2 (6/9 or 66.67%) who also left the MOOC due to time constraints.

**Discussion board postings.** In terms of whole numbers, there is a difference between the number of respondents to the demographic surveys for MOOC #1 (n= 8) and MOOC #2 (n= 4). Table 4.12 shows these as percentages of total course enrollment. With that said, the total numbers of posts produced by these respective groups was very close (105 postings among
participants in MOOC #1 compared to 99 in MOOC #2); this may be due to the fact that MOOC #2—at twelve weeks—was much longer than MOOC #1 (at four weeks).

Table 4.12 Discussion board posting participants in relation to respective course enrollment

<table>
<thead>
<tr>
<th>MOOC</th>
<th>Discussion board posting participants</th>
<th>MOOC enrollment*</th>
<th>% of course enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOOC #1</td>
<td>8</td>
<td>515</td>
<td>1.55</td>
</tr>
<tr>
<td>MOOC #2</td>
<td>4</td>
<td>16,023</td>
<td>0.025</td>
</tr>
</tbody>
</table>

In terms of frequency of posting—expressed as a percentage of all posts by participants in each respective course—there is a difference between the two courses. In MOOC #1, there was a significant emphasis on the role of discussions. The two most prolific study participants in the MOOC #1 discussions area—Caroline and Aliki—posted, in total 32.38% of posts among study participants. In MOOC #2, discussions were not required for course completion. The two most prolific study participants in the MOOC #2 discussion area were Diana and Ricardo—who posted, in total, 83.83% of posts among study participants. This may be because in MOOC #2, discussion board postings tended to consist of student-posed inquiries related to (math and science) problems required for course completion. Participants who struggled with math and science problems within the course posted questions seeking input from instructors and students on how to solve problems, or to find out if there were instructor errors in the information or questions posted. There was a practical need (i.e., succeeding on quizzes and problem sets) which the discussions in MOOC #2 helped to fulfill. Thus, while there was a lower percentage of MOOC #2 participants who engaged in the discussions overall (relative to MOOC #1, wherein students were successful simply by creating discussion posts) there was a trend in MOOC #2 of higher use per person among the study participants who used the discussions.
Discussion postings and social presence. Eight participants in MOOC #1 demonstrated 159 instances of social presence (all categories of indicators) across 105 posts and 1.51 instances of social presence per post (on average). Four participants in MOOC #2 demonstrated 171 instances of social presence (all categories of indicators) across 99 posts and 1.72 instances of social presence per post (on average). If the Open Communication indicator of “continuing a thread” is bracketed, then the difference is less pronounced with 1.17 instances of social presence per post (on average) in MOOC #1 and 1.13 instances of social presence per post (on average) in MOOC #2. Although in MOOC #1 discussions were a required component of the course, the average number of posts demonstrating social presence was close to that of a smaller number of participants posting in MOOC #2—despite the fact that discussions were not required in MOOC #2. Effectively, a larger number of participants engaged socially through MOOC #1 to a similar extent as a smaller number of participants in MOOC #2. Both groups were very close to each other in terms of social presence in their discussion postings, despite differences in course structure, content, duration, and enrollment.

When reviewing the ranking of categories of indicators for social presence as they appear in each MOOC, they fell into the same order (although with differing percentages within their respective courses):

1. Open Communication (77 instances / 105 posts = 58.09% (MOOC #1) and 136 instances / 99 posts = 137% (MOOC #2), respectively);
2. Affective Expression (54 instances / 105 posts = 51.43% (MOOC #1) and 30 instances / 99 posts = 30.30% (MOOC #2), respectively); and
3. Vocatives (28 instances / 105 posts = 26.67% (MOOC #1) and 5 instances / 99 posts = 5.05% (MOOC #2), respectively).
*Note: the percentage for Open Communication in MOOC #2 exceeds 100% largely due to the fact that, as a function of the Ed.X learning software, participants frequently “continued a thread” (one of the social presence indicators) with the same post in which they demonstrated another instance of social presence (i.e., asking questions, etc.).

It is useful when looking at MOOC #1 and MOOC #2 to compare the three most predominant indicators in each MOOC (see Table 4.13). It is noteworthy that two out of three of the most prevalent indicators are the same for MOOC #1 and MOOC #2. If the indicator “Open Communication: Continuing a thread” is bracketed (i.e., as a function of course design and/or a feature of learning management software), the difference between the two is in alignment with the curricular and/or pedagogical purpose of the courses. The learning tasks in MOOC #1 required sharing experiences of the subject matter (Learning Disabilities in the Writing Classroom) and impressions of videos and course related media. Therefore, it is appropriate that the “Affective: Self-disclosure” indicator appeared near the top of the rankings for social presence in MOOC #1 discussion posts. In MOOC #2, participation in discussion forums was not required for course completion; learning tasks focused on solving problems using mathematical and scientific reasoning. Discussions in MOOC #2 therefore focused on solving course-required problems, without overtly giving away the answers to evaluation items. Therefore, it is appropriate that the “Open Communication: Asking questions” indicator appeared near the top of the rankings for social presence in MOOC #2 discussion posts.
### Table 4.1 Categories and indicators of social presence compared

<table>
<thead>
<tr>
<th></th>
<th>MOOC #1</th>
<th></th>
<th>MOOC #2</th>
<th></th>
<th>Instances / total posts</th>
<th>Instances / total posts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affective: Self-disclosure</td>
<td>44 / 105</td>
<td>Open Communication: Continuing a thread</td>
<td>59 / 99</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open Communication: Continuing a thread</td>
<td>36 / 105</td>
<td>Open Communication: Asking questions</td>
<td>30 / 99</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open Communication: Complimenting, appreciation</td>
<td>17 / 105</td>
<td>Open Communication: Complimenting, appreciation</td>
<td>21 / 99</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Overall.** Discussions were required in MOOC #1, but not in MOOC #2. While in both MOOCs, one of the highest-ranking indicators of social presence in discussion postings was continuing a thread—due to course design and as a function of the learning management software—the other highest-ranking indicators were self-disclosure (in MOOC #1) and asking questions (in MOOC #2). These indicators closely aligned with the directions provided to students by instructors. In MOOC #1, students needed to share their experiences as students and educators. In MOOC #2, they were required to solve mathematical and scientific problems related to energy science. Social presence, as evidenced through discussion posts, was an important part of both courses insofar as it helped students realize both explicit (i.e., course described) and implicit (i.e., self-defined) learning objectives. These findings would seem to suggest that in both MOOCs, social presence helped some of the students realize higher levels of cognitive presence (i.e., by helping some students realize personal and/or course-related learning objectives). By way of contrast, a greater number of participants in MOOC #1 demonstrated social presence through discussion postings and indicated they felt social presence was important (through the CoI survey) than did participants in MOOC #2. For participants in MOOC #2, social presence was important for a smaller number of participants relative to MOOC #1, but for
those participants it was still important inasmuch as it helped them achieve higher levels of cognitive presence.

**Interview and focus group interviews.** Three individuals participated in individual interviews for MOOC #1, and ten participated in individual and/or focus group interviews in MOOC#2. Both sets of interviewees provided insights into their respective experiences as part of their courses.

**Relating to general course usage.** Participants’ reasons for enrolling in the MOOCs were nearly as varied as there were respondents. In MOOC #1, participants did not share any pattern in terms of how frequently they engaged with the course. In MOOC #2, participants who posted in the discussions area were more likely to engage with the course on a regular basis than those who participated without using the discussion boards. One area in which both sets of respondents (i.e., in MOOC #1 and in MOOC #2) agreed was on an emphatic lack of interest in social media or the use of technologies outside the course learning management software.

**Relating specifically to social presence.** The three interview respondents in MOOC #1 occupied different areas of the course ecosystem. One participant was a student who did not engage in the discussion forums at all; another participant was a student who engaged in the discussions on a regular basis; and the final participant was an instructor who engaged frequently throughout the course. The student participant active in the discussions (Santosh) created 12 posts in total, of which six demonstrated evidence of CoI indicators “Expressions of emotion” (3 instances) and “Self-disclosure” (3 instances). The instructor participant (Caroline) created 18 posts, of which only two demonstrated “expressions of emotion” and none demonstrated “self-disclosure”; the most common indicators for her (apart from “continuing a thread”) were, by far, “referring explicitly to others’ messages” (9 instances) and “complimenting, expressing
appreciation” (10 instances). In the interviews, Santosh emphasized that his commitments to the course were time-sensitive. Caroline was concerned with supporting students while giving them room to discuss course content without exercising influence over the discussions.

Participants in MOOC #2 took a limited view of social presence within the course. They were, as a group, generally ambivalent regarding the concept of presenting themselves or perceiving others as “real people”. Most responses—positive and negative—to these questions of “participants as real people” were qualified in some way. According to Asha, “when you are taking an online course there’s a limit for presenting yourself as a real person. The only thing in common is that we are pursuing the same course”. Colleen—who did not use the discussion areas—stated, “I felt free to engage in the course to the degree I wanted”. Her lack of engagement with other participants “as real people” was intentional, part of a strategy through the course to use course resources to learn in a way she felt most comfortable. Diana struggled to understand the distinction of describing herself and others “as real people”, ultimately describing a course design in which discussions were secondary to other learning tasks, stating, “I felt people were being honest about their questions and concerns. It wasn’t a get-to-know-you-personally course, although people did (and were encouraged to) express options different from those of the teachers and other participants”. Bob, Peter, and Ricardo agreed that it would be potentially desirable to have more opportunities for social engagement built into the course, through synchronous conferencing sessions online and/or through meeting in person with participants who lived within the same area. When speaking to possibilities for an improved course experience, Ricardo noted,
They (the course designers and facilitators) could have perhaps helped us to get in touch with each other to talk about what’s going on in our particular neck of the woods, but the impression I got was that that wasn’t what the course was about.

Thus, while the opportunity to engage with other participants about the topic as it related to their respective local communities was considered potentially desirable, it was recognized that this may not have fit into the scope of the course or the intentions of the instructor.

**Relating to course structure and design.** Participants in both MOOC #1 and MOOC #2 described their impressions of course structure and design in generally positive terms. Out of all participants in both courses, only Peter and Sarah expressed negative views about the way the course was set up. Peter felt a strong antipathy towards the course content and disengaged after a very short period; he also felt that discussions were both overly technical and largely superficial. Sarah also disengaged from the course after only a few attempts, citing concern over negativity within the discussion threads as being detrimental to her learning. Participants in both courses described appreciation for the value of the course content and the content’s presentation (i.e., through videos and other multimedia); this is particularly true of MOOC #2.

**Relating to types of participation.** Of participants in MOOC #1 and MOOC #2, only one expressed any interest in engaging with the course through social media. In MOOC #1, Caroline— the course instructor— described engaging with the other course instructor “off-line” (i.e., in person) on a daily basis. Approximately half interview and/or focus group interview participants in MOOC #2 described discussing the course with friends, family or others in “off-line” settings. This suggests that participants found the course topic (Energy within Environmental Constraints) and its presentation through the Ed.X platform sufficiently engaging to spark discussions outside the primary course environment. Participants in MOOC #1
described being generally satisfied with the design and delivery of the course and did not provide suggestions for changes to future iterations of the course. Participants in MOOC #2 provided suggestions how to improve the course in the future. High among these suggestions were for content which was less technical (or a less technical pathway through the course which would nevertheless reward completion); as well as having more opportunities for personal, synchronous engagement with course instructors and other participants, and more general discussions regarding the subject matter (Energy within Environmental Constraints).

Overall. As per the interviewees in both MOOCs, there was a wide range of view as to how participants engaged with the courses, and how they perceived social presence. Some participants in both courses felt discussions were valuable, but many did not participate in this way. Most participants felt comfortable presenting themselves as “real people” within the courses, and expressed confidence that others did as well. It is noteworthy that despite claims in the literature as to the prevalence of social media use in MOOCs, almost none of the interview participants in MOOC #1 or MOOC #2 engaged with the course through social media, or settings outside of the learning management software. Given that general interest was a motivating factor for many to enroll in the courses, it is not surprising that some participants discussed concepts, themes, and ideas from the MOOC with others (i.e., family, friends, and colleagues). As mentioned in the discussions regarding interview findings from both MOOCs, it would seem that MOOC participants largely define their own learning outcomes, and have unique expectations and ways of engaging with others within the context of these courses.

Summary

This chapter presented the findings from the quantitative and qualitative measures. It described data indicating that in both courses studied, participants experienced and valued social
presence the least among the three presences comprising the CoI model. Social presence appeared in both courses, supporting learning tasks needed for participants to see courses through to successful completion. A cross-case analysis revealed similarities in terms of educational attainment in the respective MOOCs, as well as reasons for participating. The majority of participants in both MOOCs completed some level of higher education. As well, a high percentage in both courses described “personal interest” as their primary reason for enrolling in the MOOCs. According to responses to CoI surveys, participants in both MOOCs experienced similar levels of teaching presence, and nearly identical levels of cognitive presence. There was a sharper distinction between the courses concerning social presence— with participants in MOOC #2 reporting a response which (on average) was closer to “neutral” on a five point Likert-type scale than a positive. Overall, participants in both MOOCs reported experiencing social presence the least among the three CoI presences. Discussion board postings in both MOOCs showed social presence in alignment with the directions of instructional staff for course completion: posts in MOOC #1 revealed high amounts of personal disclosure as participants posted experiences in response to instructor queries. Posts in MOOC #2 showed participants asking for questions with evaluation items such as problem sets and quizzes. Interview and focus group interviews in both MOOCs revealed that participants were comfortable in the courses and used social presence to further their individual learning goals— which, for many, did not include actively engaging through discussion boards. Chapter Five will discuss these findings in response to the research questions as well as the literature.
CHAPTER FIVE: DISCUSSION

Introduction

In this chapter, I discuss findings of the study in response to the primary research question: How does social presence affect teaching and learning within a MOOC? In exploring this question, I have also used data and literature to address the following sub questions:

- What factors contribute to participants’ establishing a social presence in a MOOC?
- How does social presence affect participants’ perceptions of a sense of belonging to a learning community?

According to my findings, despite wide variance in the number of enrollees in the MOOCs (hundreds in MOOC #1 versus thousands in MOOC #2) and significant difference in subject matter (writing instruction and energy science, respectively), specific CoI indicators were reported as being very close in terms of the extent to which they were experienced by participants. Furthermore, learners’ ability and/or willingness to direct their own learning, types of available technology, availability of time, and depth of course content, all played roles in helping to determine how participants engaged with the MOOCs.

Social Presence and Teaching and Learning in MOOCs

As part of responding to these questions through the findings and relevant literature, I address the wide range of reasons participants expressed for participating in MOOCs, the factors affecting how they chose to engage with these courses, and themes associated with their participation. According to the findings, social presence can have an effect on teaching and learning in MOOCs, potentially playing a supporting role to cognitive presence. The data suggests that teaching presence may have had an influence on social presence for some participants in the study. Table 5.1 presents averages across all indicators for respective
Community of Inquiry (CoI) presences (Garrison, 2011) as they appeared in each MOOC, as per Likert-style responses to the CoI survey (i.e., on a five-point scale), with 1 being lowest possible value and 5 being highest possible value.

Table 5.1 Community of Inquiry presences in MOOC #1 and MOOC #2.

<table>
<thead>
<tr>
<th></th>
<th>MOOC #1</th>
<th>MOOC #2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching presence (average)</td>
<td>4.08</td>
<td>4</td>
</tr>
<tr>
<td>Cognitive presence (average)</td>
<td>3.98</td>
<td>3.97</td>
</tr>
<tr>
<td>Social presence (average)</td>
<td>3.92</td>
<td>3.28</td>
</tr>
</tbody>
</table>

From these survey results, it is evident that MOOC participants experienced social presence the least among all three presences within the CoI model. In MOOC #1, the perception of social presence was .64 points on a Likert-type scale higher than in MOOC #2. This may be because MOOC #1 course design and pedagogy emphasized the need for students to disclose experiences with the subject matter and to share (subjective) impressions of course materials. In MOOC #2, discussions were optional—nevertheless, some participants made high numbers of posts relative to others in the course—which may have helped these students realize personal and/or course learning objectives. Participants in both MOOCs experienced teaching presence the most among the three presences—with participants in both MOOCs experiencing the indicator of Design and Organization most highly (with ratings of 4.32 and 4.56, respectively). This indicator (Design and Organization) is closely aligned with the establishment of course outcomes, syllabi, and criteria for evaluation and assessment. In both MOOCs Design and Organization was rated the highest indicator in the highest ranking presence (i.e., teaching presence). If the indicator of “continuing a thread” is bracketed from the social presence results, the highest-ranking social presence indicator in MOOC #1 is “Affective: Self-disclosure” (44
instances across 105 posts) and the highest-ranking social presence indicator in MOOC #2 is “Open Communication: Asking questions” (30 instances across 99 posts). It is possible to align the highest-ranking social presence indicator in MOOC #1 (“Affective: Self-disclosure”) to the highest overall indicator (Teaching Presence: Design and Organization). Course designers in MOOC #1 created curricula and learning activities valued students disclosing personal experiences vis-à-vis the discussion boards— to the point where this was considered mandatory. Thus, a social presence indicator in MOOC #1 (i.e., self-disclosure through discussion threads) aligned with teaching presence (i.e., the requirement to contribute) in order to support cognitive presence (i.e., by having students use discussions as a means through which they could exchange information, connect ideas, and apply new ideas related to course content). Similarly, course designers in MOOC #2 created curricula and learning activities (i.e., the Teaching Presence: Design and Organization indicator) which valued student autonomy. The highest-ranking social presence indicator in MOOC #2 (apart from “continuing a thread”) was “asking questions”. By asking questions in the discussions area, participants had the opportunity to engage with other learners in such a manner as to help one another exchange information, connect ideas, and apply new ideas related to course content and thereby achieve success on the evaluation items (quizzes, and other assignments) necessary for course completion. In such manner, social presence can be said to work with teaching presence to support cognitive presence.

The study’s qualitative findings— specifically the discussion board findings— provided additional evidence of social presence supporting cognitive presence in both MOOCs. Postings coded using the CoI coding scheme showed that the most frequently occurring social presence indicator for MOOC #1 was “Affective: Self-disclosure”, with the second-most frequently occurring social indicator for MOOC #2 (after “Open Communication: Continuing a thread”)
being “Open Communication: Asking questions”). Outputs in MOOC #1 and MOOC #2 (required discussions, and required problem-sets) are closely aligned with cognitive presence, defined as “the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse in a critical community of inquiry” (Garrison, 2011, p. 24). Cognitive presence was the object of the learning experience in a course or program of study. The ways in which participants chose to engage with other learners within course communities varied widely, according to individuals’ personal learning goals. This interest in pursuing individual learning goals would seem to be at odds with Garrison’s (2013) definition of community: “a group of individuals who are connected and communicate with regard to mutual interests and similar expectations as to process and outcomes” (p. 10). While participants indicated that personal interest in MOOC content and subject matter was a strong motivating factor for enrolling and participating in the MOOCs, the wide variance in individuals’ “expectations as to process and outcomes” (Garrison, 2013, p. 10) in relation to their involvement in the MOOCs would seem to be at odds with Garrison’s (2013) definition of community. Therefore, it is unclear if research study participants experienced a sense of community—such as described by Garrison (2013) in relation to the CoI model—within the context of MOOC #1 or MOOC #2.

In this study, teaching presence was the most strongly experienced of the three CoI presences. This finding would seem to be at odds with findings by other scholars who have explored teaching presence in MOOCs. For example, according to Kop et al. (2011), teaching presence may be challenging in MOOCs due to the lack of direct contact between instructors and students such as afforded in face-to-face courses. It is possible to attribute the differing experience of teaching presence experienced in my study, as compared to that found in Kop et al.
(2011) to differences in course format. Unlike the MOOCs studied by Kop et al.’s (2011), MOOC #1 and MOOC #2 both followed an xMOOC format—offered by consortia of institutions of higher learning through a common learning management software—with course staff, instructors, or students making little use of social media. This minimal use of social media is the opposite of practice by students in the PLENK2010 cMOOC, as described by Kop et al. (2011), in which students actively used social media to further their learning and to share course-related ideas and content. This differing behavior raises questions regarding how decisions related to MOOC design, structure, and facilitation affect the ways in which students engage in learning, and the ways in which they use various kinds of technology to personalize their learning. Based on students’ responses from MOOC #1 and MOOC #2, students in these xMOOCs were largely satisfied with the technology provided by the institutions’ learning management platforms (i.e., Canvas and Ed.X, respectively).

In my research, participants in the two MOOCs did not report experiencing a sense of community. As with teaching presence, this did not align with previous findings from reviewed literature. For example, Kop et al. (2011) described participants in the PLENK2010 MOOC as expressing a need for community, which helped inform their decisions to create course-related groups within various social media sites. Participants in MOOC #1 and MOOC #2 largely stayed within the learning management software, and expressed little interest in actively participating in a learning community. Participants in both MOOCs created communities through their participation in discussions; this was a function of completing (mandatory) learning tasks. However, it is unclear the extent to which MOOC participants participated in discussions for their own sake in addition to wanting to realize learning outcomes.
Findings in my study suggest that social presence can support cognitive presence in MOOCs both directly and indirectly. Past studies of MOOCs have expressed an implicit relationship between social and cognitive presences— for example, Kop and Carrol (2011) described the need for MOOC participants to feel comfort and trust in order to produce digital artifacts representative of their learning. Implicit in this delineation is a linkage between social presence (as implied by “comfort and trust” with other course participants) and cognitive presence (as implied by the production of digital artifacts). Participants in MOOC #1 and MOOC #2 were not required to produce digital artifacts, nor did they choose to as optional learning activities. This may speak to the difference between the cMOOC and xMOOC formats. However, the relationship between course activities aligned with social presence relative (as expressed by CoI indicators) and cognitive presence (completing tasks needed for course completion) in MOOC #1 and MOOC #2 is similar to the relationship described by Kop and Carrol (2011).

Particpants in both MOOCs reported experiencing high, and nearly equal, levels of cognitive presence (averaging 3.98 and 3.97 respectively). This would seem to suggest that, despite being different in terms of subject matter (i.e., writing instruction in MOOC #1, and energy science in MOOC #2), participants in both courses felt successful in realizing their self-defined learning goals. MacAuley et al. (2010) noted that MOOCs are generally without formal assessment and take place outside a program of studies. In MOOC #1, instructors did not formally evaluate any learning activities. In MOOC #2, participants completed online (i.e., automated) tests and quizzes. They also participated in a short peer-evaluated writing assignment. Both MOOCs provided certificates of completion and both were “standalone” courses, which did not fit into larger programs of study with their institutions. Another
difference was the extent to which participants engaged in the discussion forums. MOOC #1 was a shorter course of only four weeks, with fewer participants, and in which discussion posts were mandatory for completion. This resulted in wider participation by students, but with fewer posts per student than in MOOC #2. MOOC #2 was a longer course, of approximately 14 weeks, with more participants, and in which discussion posts were optional. This led to fewer students participating in discussions, but with those participants contributing posts with greater frequency than in MOOC #1.

In her discussion of challenges associated with cMOOCs, Kop (2011) identified “presence” as potentially challenging in MOOCs, as the massive scale required students to rely more on one another for guidance through courses and less on the instructor. As per her usage of the term, presence included several elements including social presence. In amalgamating several concepts into a singular term, there is a risk of simplifying a potentially complex group of phenomena. Participants in MOOC #1 and MOOC #2 consistently stated that they presented themselves as “real” within the context of their learning environments, and expressed the expectation that other participants were doing the same. This would seem to be contrary to Kop’s (2011) concern with presence in MOOCs. Presence, including social presence, was a complex, dynamic, and multi-faceted construct as experienced by participants in MOOC #1 and MOOC #2. Exploring presence through the CoI conceptual framework and its attendant categories of indicators has permitted me a more detailed perspective on teaching and learning within MOOCs than might otherwise have been available.

**Factors Contributing to Social Presence in MOOCs**

Participants in both MOOCs established social presence by engaging with other students and the course instructor as they completed course-related tasks. There were few examples of
purely social activity within either MOOC. Factors contributing to social presence in both courses included:

- Ability and/or willingness to direct their own learning
- Types of available technology
- Availability of time
- Depth of course content

This section addresses the ways these factors affected—both positively and negatively—students’ perceptions of social presence within these courses.

**Self-direction.** Collaboration is an important part of the CoI’s constructivist approach (Garrison, 2013). There is little evidence of collaboration in either MOOC studied, except insofar as some MOOC #2 participants helped one another solve problems related to course content through the discussion boards. Learning tasks requiring group work were absent in both MOOCs. Discussion areas permitted students to post autonomously, without needing to reference other students’ participation or posts. Students in both MOOCs participated in discussions (or did not participate) in accordance with their own learning goals, as evidenced by the wide range of responses to the interview question “What factors / conditions influenced your decision to participate or not participate in course discussions and/or social media”. The wide range of responses among participants is supportive of other writers’ findings that learners in MOOCs pursue self-defined learning outcomes (Fini, 2009; Kop et al., 2011; MacAuley et al., 2010).

**Types of technology.** MOOC #1 and MOOC #2 relied on the same basic configuration of technology in the delivery of course content: namely, learning management software with video content, files, and hyperlinks embedded and areas for discussions. In both courses, learners
contributed primarily through text (i.e., through discussion board posts). Anderson and Dron (2011) suggested that advances in communications technology continue to reduce barriers to social presence in online courses. In the six years since the publication of their work, this is still in progress, as evidenced by the data found in MOOC #1 and MOOC #2. As technologies continue to advance, especially social networking sites (e.g., Facebook™, Twitter™, and others) the potential for reduced barriers to social presence remains (Dunlap & Lowenthal, 2009). Peter, a MOOC #2 participant, stated in one of the focus group interviews that he felt other students were “a huge untapped resource in the course. People were not structured in a way to connect with each other to problem solve, or discuss certain issues”. Insofar as some student-participants in MOOC #1 and MOOC #2 had an interest in completing their respective courses, they appear to have used discussions to help realize this goal. It would seem from the data that social presence, in both MOOCs, might have helped support inquiry and achievement of specific learning goals for some student-participants. This is consistent with Garrison’s (2011) discussion of the purpose of social presence. It is unclear the extent to which students’ means of accessing the course—i.e., through computer, or mobile device—had on their choice to engage with certain aspects of the course (including discussion forums).

Time and depth. Participants in both MOOCs identified time constraints as well as the depth and/or difficulty of course content as affecting participation, and by extension, social presence. Student participants in both MOOCs spoke favorably of learning resources (i.e., videos, readings, and others). This would seem to provide evidence of teaching presence playing a role in allowing social presence to develop, inasmuch as instructors created and selected resources and learning activities, which led to discussions. It also aligns well with Anderson et al.’s (2001) description of teaching presence as designing, facilitating, and directing social and
cognitive processes to help realize learning outcomes. Nevertheless, it is unclear the extent to which discussion postings in either MOOC demonstrated “fruitful critical inquiry” (Garrison et al., 2000, p.96). In MOOC #1, a wider range of participants contributed to discussions than in MOOC #2. Nevertheless, the depth of the responses—the extent to which responses demonstrated learning or critical inquiry—is unclear, as this fell outside the scope of this inquiry. The concern is that by mandating participation, the quality may not be as high as it is in courses where discussions are optional. Conversely, in courses with optional discussions (such as MOOC #2), it is possible that participants will not create social presence to sufficient extent that it is supportive of robust cognitive presence, or that cognitive presence will not be as strong as it could be in the absence of robust social presence. More research into the critical qualities of discussion posts (and the prompts requesting students to participate in discussions) will help enhance MOOC design and facilitation to help participants realize higher-order learning outcomes. This would be consistent with Kozan and Richardson’s (2014) suggestion that efforts to increase cognitive presence in online courses may lead to gains in social presence. Given the design of the MOOCs studied, it would be difficult to measure social presence apart from self-reports (i.e., surveys and questionnaires) and analysis of discussion posts. Respective patterns of engagement as evidenced through discussion posts (MOOC #1: more participants who post, but fewer posts per participant as compared to MOOC #2: fewer participants who post, but more posts per participant) are consistent with Garrison’s (2011) assertion that participants in online courses must perceive discussions as core components of the study.

Overall, the four factors described (i.e., self-direction, types of technology, availability of time, and depth of content) affected the extent to which students were involved in MOOCs. Each student came to the course for his or her own reasons, and participated in ways supportive
of those reasons. While many participants felt motivated by completion, others were satisfied with more discrete and implicit types of involvement, as suited their interests, sense of self-direction, and comfort within the course environment.

**Social Presence and Participants’ Sense of Belonging in MOOCs**

From the evidence, three themes emerged related to social presence and participants’ sense of belonging in MOOCs:

- Social presence was limited in relation to other CoI presences;
- The extent to which discussions were optional affected how participants perceived themselves belonging to a learning community; and
- Participants contributed to MOOCs to further personal learning outcomes.

This section addresses each of these themes in relation to the findings and the literature.

**Limits to social presence.** As per this research, a sense of belonging was not highly valued by participants in either MOOC #1 or MOOC #2. While participants engaged with one another and collaborated in the interest of completing the courses (for a wide variety of reasons) — and expressed gratitude and pleasure with interactions— there was no indication through quantitative or qualitative data that participants enrolled in courses specifically or intentionally to join a learning community. In both MOOC #1 and MOOC #2, social presence ranked the lowest of the three CoI presences as per the CoI survey instrument, with average Likert-like scores of 3.92 and 3.28 (respectively). Furthermore, the lowest-ranking social presence indicator in both courses was Group Cohesion— which can be viewed as closely aligned with participants’ sense of belonging (i.e., belonging to a group)— with average Likert-like scores of 3.76 and 3.44 (respectively). Group Cohesion, in both MOOCs, constituted the lowest-scoring indicator in the lowest-scoring CoI presence. Effectively, participants perceived social presence as a by-product
that accumulated through course interactions over a given period, and/or a means to an end, i.e. to aid in completing the course successfully (as per the terms which each individual established for his or herself). Diana, one of the most prolific posters in MOOC #2 stated, “I participated when I had a question, and often perused other responses for the same topic”. Her primary motivation to participate in discussions was seeking answers to questions, which in turn would help her complete course assessments such as problem-sets. Ricardo, another prolific poster in MOOC #2, echoed Diana’s response to the same question, “Generally I look for help with problems that are giving me difficulties. Where possible I am trying to broaden the discussions here and there”. Participants were motivated to become involved in discussions to the extent that discussions were helpful to their personal learning objectives (i.e., solving problems of course content).

Optional discussions. Participation in discussions was required in MOOC #1, but not in MOOC #2. Most participants in both MOOCs did not perceive social presence or a sense of belonging as being important to their involvement in their respective learning communities. For example, question 14 on the CoI survey addressed participants’ sense of belonging: “Getting to know other course participants gave me a sense of belonging in the course”. MOOC #1 required participation in discussion boards for course completion—thereby requiring some amount of social presence from those who wished to obtain a certificate of completion. The majority (71%) of respondents among MOOC #1 participants strongly agreed or agreed with this statement, whereas there were no negative responses. Participants in MOOC #1 needed to disclose personal experiences in relation to the course content through the discussion boards. Therefore, they tended to feel they knew other participants as participants shared their experiences.
MOOC #2 did not require participation in discussion boards for course completion. This resulted in no social presence from those who wished to obtain a certificate of completion. The trend in response to this question among MOOC #2 participants tended to skew negatively; those who disagreed or strongly disagreed with the statement made up the second highest set of negative responses among social presence categories. As well, respondents to this question who claimed a “neutral” response tied for the lowest position among neutral responses among social presence categories. Respondents who provided a positive response met with the mode for positive responses relating to social presence. While positive responses outnumbered negative responses by one, positives were three responses (12%) behind negative responses coupled with neutral responses. Overall, these findings indicate participants’ ambivalence towards learning community within the context of MOOC #2.

To the extent that responses were generally positive in MOOC #1 towards the CoI survey item associated with a sense of belonging, these findings were due to the required nature of discussion board participation. Responses to this survey item were generally negative and/or neutral in MOOC #2; these findings may be due to the optional nature of discussion board participation insofar as course completion was concerned. These findings in MOOC #2 (i.e., 44% of positive responses) are consistent with discussion posts, as well as interview and focus group interview findings, that a small but active minority of study participants found discussions useful for the purpose of posing questions related to course quizzes, problems, and other required evaluation items. Ricardo and Diana, for example, both found discussions helpful when seeking answers to content-related questions. Other participants did not feel discussions helped them to realize their personal learning outcomes. For example, when describing factors affecting
discussion participation, Colleen stated, “This type of interaction just did not interest me. I was more interested in the factual content”.

**Personal learning outcomes.** Learning outcomes are challenging within the context of MOOCs, inasmuch as participants enroll in these courses free of charge, and are free to participate in a wide range of ways as suits their personal interest. According to Garrison (2013), a community is “a group of individuals who are connected and communicate with regard to mutual interests and similar expectations as to process and outcomes” (p.10). At first glance, this definition would seem to be problematic within the context of MOOCs given the extent to which learners in these courses are motivated by self-defined learning objectives (Kop, 2011; MacAuley et al., 2010). Garrison’s (2013) definition of community aligns closely with the “Social Presence—Group Cohesion” section of the CoI survey instrument (Arbaugh et al., 2008; Swan et al., 2008), to the extent that the definition speaks to “a group of individuals” (p.10). In MOOC #1, 13 out of 21 agreed or strongly agreed with the statements associated with the Group Cohesion category, whereas eight out of 21 indicated neutrality. In MOOC #2, 37 out of 75 agreed or strongly agreed with the statements associated with this category, whereas 38 out of 75 indicated neutrality, disagreement, or strong disagreement. These data would suggest that participants in MOOC #1 were more likely to see themselves as part of a cohesive group. This may be in keeping with the fact that these participants in MOOC #1 were required to participate in discussions in order to complete the course, whereas participants in MOOC #2 used discussions to seek help with mathematical and scientific problems required for course completion. Therefore, when looking at the data from this section of the CoI survey, it is possible to see the results supporting Garrison’s (2013) definition— and it’s emphasis on shared process and outcomes— group cohesion in MOOC #1 and MOOC #2 effectively serves the purpose of
reinforcing students’ interest in realizing the outcome of course completion. As per these data, discussions were a means to an end (i.e., course completion). This would seem to provide further evidence of the supporting relationship between social presence and cognitive presence, and further Garrison’s (2011) assertion that social presence needs to be purposeful.

Insofar as participants in MOOC #1 and MOOC #2 pursued their own learning outcomes, social presence helped to support these. Garrison (2011) noted that one of the challenges for social presence is to ensure a productive learning environment. In MOOC #1 and MOOC #2, individuals were productive to the extent that they realized their own learning goals—through externally observable means such as discussion boards, or through means which were implicit such as accessing course materials and discussing course concepts and other content with individuals outside the course environment (such as friends, family, and colleagues).

**Overall.** Participants in both MOOCs contributed in a wide range of ways. One of the challenges inherent with social presence is that it is difficult to quantify outside discussion posts and self-reporting measures such as surveys. In both MOOCs, participants expressed a willingness to contribute to discussions—thereby contributing to a community with shared learning outcomes—to the extent that discussions helped them realize the goal of course completion. Participants’ self-defined learning objectives helped determine if or how much they used discussion boards. As discussed by Deboer et al. (2014), it may be worthwhile to re-conceptualize what the concepts of enrollment, participation, curriculum, and achievement—as well as other “traditional” concepts from education—mean within the context of MOOCs. A shared set of concepts common to MOOC’s massive and open characteristics could lead to greater consensus regarding what constitutes good design and teaching and learning practices in these types of courses.
Summary

This chapter has discussed findings from the study in relation to themes from the literature. Participants reported experiencing high amounts of cognitive and teaching presences, but less social presence. Moreover, participants did not generally report seeing themselves as part of a learning community within their respective MOOCs—although social presence was acknowledged to have a positive effect on participants’ achieving their self-defined learning objectives. Chapter Six will provide a summary of the study, implications for practice, direction for future research, and a conclusion to the dissertation.
CHAPTER SIX: IMPLICATIONS AND CONCLUSION

Introduction

This chapter includes a summary of the study, three implications for practice, suggestions for further research, and a concluding statement. I discuss my original research questions in light of the findings and themes drawn out from the discussion chapter. Implications for practice focus on how to improve future MOOCs for student learning and success. Future research within MOOCs and within CoI should address a greater number of MOOCs, employ a wider range of research methodologies, and include instructor and designer perspectives more widely. Students and institutions of higher education will benefit from further study and wider range of instructional approaches within the context of these kinds of courses.

Summary of the Study

Since 2008, thousands of students worldwide have participated in Massive Open Online Courses (MOOCs) (Pappano, 2012). Nevertheless, there is relatively little in the literature speaking to these courses’ effectiveness in terms of student engagement, completion, or success. My study of social presence in two MOOCs addresses these areas, as well as MOOC design, development, and pedagogy generally.

The research questions guiding this study were:

- How does social presence affect teaching and learning within MOOCs?
- What factors contribute to participants’ establishing a social presence in MOOCs?
- How does social presence affect participants’ perceptions of a sense of belonging to a learning community?

Social presence, and teaching and learning in MOOCs. There are three presences comprising the CoI model: teaching presence, cognitive presence, and social presence (Garrison
et al., 2000). There appeared to be some evidence of social presence in MOOC #1 and MOOC #2. However, in both MOOCs, there was less evidence of social presence than of teaching presence, or cognitive presence. The data would seem to suggest that social presence may have assisted some student-participants in both MOOCs realize learning goals, and potentially also supporting cognitive presence. This finding tends to be consistent with other studies of online courses offered by institutions of higher education.

**Factors contributing to social presence in MOOCs.** The main factor contributing to social presence in MOOC #1 was students’ interest in completing the course. This required participants to engage in discussion board postings. Instructors initiated discussions through questions addressing students’ experiences as teachers and learners in relation to weekly topic, and in relation to each week’s readings and videos. Participants were required to disclose personal and professional experiences in order to participate meaningfully in discussions. By implication, participants needed to demonstrate trust in order to speak to their experiences among a large group of individuals they did not know. Participants in MOOC #1 generally did not ask questions to further the discussions. There were, however, some instances of participants speaking of the group as “we” or with other singular pronouns, suggesting some sense of group cohesion.

The main factor contributing to social presence in MOOC #2 was also students’ desire to complete the course. Participants engaged in discussion board postings voluntarily, largely as a way to find and provide help while solving scientific and mathematical problems required for course completion. Participants asked questions while seeking help, while others responded with suggestions on how to solve problems without giving away answers. A level of trust was required for participants to ask questions, insofar as they expected answers to their questions
from fellow students or from instructors. There were very few instances of self-disclosure or of individuals otherwise sharing details about their lives outside the course. There were numerous instances of participants expressing appreciation when others helped solve scientific and mathematical problems.

**Participants’ sense of belonging.** MOOC participants did not experience a sense of belonging in either MOOC. Participants had a wide range of reasons for enrolling in the MOOCs, and wide range of participation strategies. Participants engaged, or did not engage, in discussion postings as per their personal learning goals. Some participants in MOOC #2 experienced negative perception of discussions. Others found the course content challenging, and did not feel sufficiently engaged or comfortable with the course to seek assistance through the discussions. There was almost no interest in exploring course content further through social media, or in venues (online or otherwise) outside the main course environment. Some participants in MOOC #2 expressed interest in the possibility of engaging with course content and other participants through online conferencing and/or other synchronous measures. There was a strong sense among participants in both MOOCs that students were presenting themselves as real people through the online medium, although there were multiple interpretations of what this meant. It should be noted that according to this research a community— as per Garrison’s (2013) definition— failed to emerge in MOOC #1 and MOOC #2, particularly inasmuch as participants did not share “similar expectations as to process and outcomes” (p.10). Individuals’ expectations of the courses varied widely and their pathways through the courses reflected this variance.
Implications for Practice

This study explored social presence in MOOCs offered by two American institutions of higher learning through two different online learning platforms. While there are similarities between how the two MOOCs were delivered through the learning software, the courses had very different subjects, and the MOOC instructors, designers, and other staff employed very different approaches to teaching and learning. This section will address three implications for the practice of future MOOC design and delivery including leveraging students’ personal interest; providing students greater support for learning; and providing students with opportunities for collaboration.

Personal interest. Participants generally registered for MOOCs due to an interest in the topic or subject matter. Ed.X has been effective in recruiting large numbers of participants to courses, with more than 16,000 participants enrolled in MOOC #2. It is unclear the extent to which the reputation of the institution (i.e., of the American “ivy league”) offering the course played in the high enrollment. Nevertheless, participants in MOOC #2 did not mention the institution’s reputation as a factor in their decision to enroll. Canvas provided the learning software for MOOC #1. MOOC #1 had a lower enrollment (n=515). It is unclear the roles which institutional reputation, course provider visibility online (i.e. Canvas), or the subject matter, contributed to the difference in enrollments between MOOC #1 and MOOC #2. Personal interest in course content was the predominant theme that sustained participants throughout both MOOC #1 and MOOC #2. Social presence was higher in MOOC #1 than in MOOC #2. Discussion forum activity tied directly to participants’ experiences in relation to the course content. In MOOC #2, participants were not required to contribute through these kinds of discussions.

Social presence— playing a supporting role to cognitive presence— provides a link
between course content and students’ experiences; i.e., by sharing experiences and engaging in other forms of collaboration through discussion forums and other means (such as social media) students make progress through their courses. It is possible that more frequent and more meaningful opportunities for students to express their personal interests and experiences via-a-vis course subject matter and content through more varied kinds of assignments and other learning activities (i.e. videos, podcasts, web design, and others)— perhaps including peer review and/or evaluation— may lead to enhanced social and cognitive presences within MOOCs.

**Support for learning.** Students, generally, did not express a sense of belonging to a learning community in either MOOC. Nevertheless, social presence seemed to have a positive, supporting relationship to cognitive presence in both courses. Therefore, it is possible that enhanced social presence will lead to enhanced cognitive presence in MOOCs. Possibilities to enhance social presence in MOOCs might include adding greater emphasis or use of videos within discussion areas and as an alternate means of responding to student or co-learner comments and inquires. It is also possible that by adding a wider range of teaching strategies such as those proposed by Aragon (2003)— including incorporating audio, structuring collaborative learning activities, and providing frequent feedback— may help initiate more frequent and complex interactions between and among students in order to realize higher-order learning outcomes (i.e. a greater degree of cognitive presence). Students in both MOOCs did not use social media for their courses, or express interest in doing so. It is possible that adding social software functionality to the MOOC learning management programs could lead to enhanced social presence. Such features might include blogs for students, or chat software for use between specific groups of participants.
It was clear that participants were motivated to participate in discussions to the extent to which discussions helped them complete the course. Inasmuch as the data from this study show that social presence supports cognitive presence, it is implicit that MOOCs—regardless of subject—can benefit from high levels of student engagement in purposeful discussion forum activity. MOOC instructors and other staff could promote higher levels of student engagement by providing clear and explicit guidelines to students for best discussion forum use; by making discussion involvement a required component for course completion; and by training facilitators and staff on good practices for facilitation within forums. Tracking individuals’ postings at the granular level that this would require could, however, prove problematic given massive enrollments and potentially limited resources to support such evaluation. It might be possible to automate tracking of students’ participation. Evaluation, through additional marks, in graded courses might help enhance social presence throughout courses. Less formal measures of recognition, such as digital badging or additional annotations on completion certificates to recognize frequent and/or high-quality discussion board participation might also help enhance social presence.

**Opportunities to collaborate.** Both MOOCs studied were fully asynchronous. It could be possible to enhance social presence in MOOCs by adding synchronous elements, such as chat or video conferencing. For example, in MOOCs with credit-bearing on-campus equivalents, institutions could stream lectures from campus online via web conferencing applications. MOOC students could then follow along, and potentially posit questions or comments through a chat feature or through social media (e.g., Twitter™). In the case where a MOOC had particularly high enrollment numbers, it is possible that multiple web conferencing sessions could help accommodate these learners, i.e., with various parallel sessions as per various themes related to
the course content. This model could provide further integration between free (MOOC) and paid (on-campus) offerings, and provide the opportunity for educational innovation in both. Furthermore, institutions could reuse recordings of lectures in future iterations of the MOOC thereby reducing overall costs of running and maintaining MOOCs.

Additionally, some participants in MOOC #2 expressed a willingness to speak to others taking the MOOC about the MOOC topic (i.e., energy science) as it related to their local communities. Course designers and instructors could designate specific discussion areas by geographic region, thereby providing participants the opportunity to meet synchronously online via chat and web conferencing, or in person. Another possibility would be to provide students alternate pathways to certificates of completion. This might include group options for completing assignments. It may also include providing space or staffing for tutorials or study groups. Detailed questionnaires when registering for courses could also help place students into discussion or provide resources specific based on their interests, geographic profiles, or other factors. Increased personalization of MOOCs through registration procedures, patterns of use (i.e. user analytics), and achievement on learning tasks could make courses more responsive to individuals’ expectations or self-defined learning goals.

**Suggestions for Further Research**

This study has explored one element of the CoI model within the context of two MOOCs. It has looked at participants’ social interactions within courses as these relate to and support learning. It has also looked at how course design and pedagogy shapes the kind of learning which takes place within these kinds of courses. There are many questions for research remaining in the following areas.
Further MOOC research. This study explored social presence in two xMOOCs. One possibility for a future study would be to explore social presence in one cMOOC compared to one xMOOC, or within two different kinds of emergent MOOC formats. Another approach would be to increase the number of MOOCs studied as part of a more widely ranging multiple case study. Finally, while case study methodology has proven valuable for this research, I recommend that researchers use additional methodologies than currently appears in the MOOC literature such as grounded theory, narrative inquiry, action research, and others. It would also be very helpful to see more studies that focus on instructor and/or course designer perspectives on MOOCs. This will help provide more information and ideas to inform and enhance teaching and learning within the context of these kinds of courses.

Further CoI research. It is helpful to look at the areas of overlap between social presence and cognitive presence as well as teaching presence in the CoI model: “supporting discourse” and “setting climate”, respectively. In MOOC #1 and MOOC #2, social presence helped cognitive presence by providing opportunities for students to help realize course outcomes. Teaching presence helped to set the climate for social presence by providing directions guiding the use of discussions for productive purpose (i.e. to help realize course completion). Future research might explore— specifically— areas of overlap between all elements of the CoI model within the context of MOOCs. Such study would provide further insights into how CoI applies to this popular, emergent course format.

Conclusion

In less than a decade MOOCs have become one of the most popular means through which members of the public engage with institutions of higher learning. Findings from this research have helped provide additional evidence suggesting that individuals enroll in MOOCs
for a wide variety of reasons. Furthermore, it would appear that learning outcomes within the context of MOOCs tend to be highly personal and specific to the individual learner. Studying social interactions, vis-à-vis social presence and the Community of Inquiry model, has the potential to help further our understanding of how learning occurs in MOOCs. Such study can also help inform the practice of MOOC design, development, and facilitation. As MOOCs continue to find an increasingly broad and diverse community of learners amongst the global public, there will be further need for study in all areas of teaching and learning in these online course environments.
REFERENCES


Engle, D., Mankoff, C., & Carbrey, J. (2015). Coursera’s introductory human physiology course: Factors that characterize successful completion of a MOOC. The International Review of Research in Open and Distributed Learning, 16(2).


Jordan, K. (2014). Initial trends in enrollment and completion of massive open online courses. The International Review of Research in Open and Distance Learning, 15(1).


Kop, R. (2011). The challenges to connectivist learning on open online networks: Learning experiences during a massive open online course. *The International Review of Research in Open and Distance Learning, Special Issue-Connectivism: Design and Delivery of Social Networked Learning, 12*(3).


Kop, R., Fournier, H., & Mak, J. S. F. (2011). A pedagogy of abundance or a pedagogy to support human beings? Participant support on massive open online courses. *International Review of Research in Open and Distance Learning, 12*(7), 74-93.


Mak, S., Williams, R., & Mackness, J. (2010). Blogs and forums as communication and learning tools in a MOOC. Networked Learning Conference (pp. 275-284). University of Lancaster.


LIST OF APPENDICES

Appendix A: Demographic Survey
Appendix B: Individual Interview Protocol
Appendix C: Community of Inquiry (CoI) Survey Instrument
Appendix D: Early Exit Survey
Appendix E: Focus Group Interview Protocol
Appendix F: Case Study Protocol
Appendix G: Emails of Permission / Copyright
Appendix A: Demographic Survey

1. Please indicate your gender:
   - Male
   - Female
   - I do not wish to disclose

2. Please indicate your age:
   - Less than 10 years old
   - More than 10 and less than 20 years old
   - 20’s
   - 30’s
   - 40’s
   - 50’s
   - 60+
   - I do not wish to disclose

3. Please indicate your level of proficiency in English:
   - Native speaker / first language
   - Second or other language / highly proficient
   - Second or other language / moderately proficient
   - Second or other language / minimally proficient

4. Which country do you live in?

5. Please indicate your highest level of formal education:
   - K-12 (primary and/or secondary)
   - College: Technical / vocational
   - University: Undergraduate
   - Graduate: Masters
   - Graduate: Doctorate
   - Other (please specify)

6. What is your job title?

7. Please indicate your level of experience with online courses (MOOCs or other types of courses):
• Highly experienced
• Moderately experienced
• Minimally experienced
• Not experienced at all

8. Is this your first MOOC?

• Yes
• No

9. If no to the previous question, how many MOOCs have you participated in?

   1-5
   6-10
   11+ (please specify)

10. What is your primary reason for participating in this course?

   Personal interest in topic
   Professional development opportunity
   Academic development and/or upgrading
   Obtaining credential / certificate of completion
   Social networking opportunity
   Other (please specify)

Would you be interested in participating in an individual interview and/or focus group interview to discuss your experiences as a student within this course? Yes / No

If yes, please provide email address:

Thank you for your cooperation and participation in this survey. Your responses will remain confidential.
Appendix B: Individual Interview Protocol

Project: Social Presence a Massive Open Online Course (MOOC): A Case Study

Time of Interview:

Date:

Place:

Interviewer:

Interviewee:

Position of Interviewee:

--

Purpose of the Study

[read verbatim]

The intent of this case study is to investigate how participants’ social presence can affect teaching and learning within a Massive Open Online Course (MOOC). The researcher will seek to understand individual participants’ experiences of social presence within the course; the researcher will also explore how the population of the course as a whole perceives social presence. By looking at both individuals’ and groups’ experiences of social presence, the researcher will learn more about individuals’ reasons for participating in the MOOC, and the extent to which social presence affects their learning. This study will also provide the opportunity to learn about how MOOC design could be improved to enhance social presence as well as cognitive and teaching presences (elements of Garrison’s Community of Inquiry model).

The following questions will guide this research: 1. How does social presence affect teaching and learning within a MOOC? 2. What factors contribute to participants’ establishing a social presence in a MOOC? 3. How does social presence affect participants’ perceptions of a sense of belonging to a learning community?

What Happens to the Information Provided?

Participation is completely voluntary and confidential. You are free to discontinue participation at any time during the study. No one except the researcher will be allowed to see or hear any of the answers to the interview recording. There are no names on the collected data. Published (e.g., conferences and journal publications) results of the study will contain only aggregated conclusions of data of which no individual participant will be identified. The researchers will
store the anonymous data in a secure location after the completion of the study for a period of three years and then will destroy the data.

The interview will take approximately 25-30 minutes. You may choose not to answer any of the questions, and you may choose to discontinue the interview at any time.

**Written Consent**

Your completed consent form was received via email on [date] and has been saved.

[Test Skype and/or other conferencing application connection]

[Test recording application]

--

**Questions**

**General / Usage**

1) Why did you decide to register in this MOOC? Why was this topic of interest?

2) How frequently did you engage with the course online (i.e. sign in and/or access course resources and/or otherwise participate)? Why was this the case? Can you provide details and/or specific examples related to your answer?

3) Did you participate in the course primarily through the course environment (i.e. website / LMS), social media, or both? Why? Can you provide details and/or specific examples related to your answer?

**Related to social presence**

4) To what extent did you engage in discussions and/or other types of interaction with other course participants? Why? Can you provide details and/or specific examples related to your answer?

5) To what extent did you feel you could present yourself as “a real person” within the course? Why? Can you provide details and/or specific examples related to your answer?
6) To what extent do you feel that you were able to get to know other course participants “as real people”? Why? Can you provide details and/or specific examples related to your answer?

7) To what extent did you interact with other participants in person, over the phone, or in other “off-line” settings? Why? Can you provide details and/or specific examples related to your answer?

**Related to course structure / design**

8) To what extent did course-related discussions and/or social media help you learn? Why? Can you provide details and/or specific examples related to your answer?

9) Would you characterize your impression of discussions in the course as primarily positive, negative, or neutral / ambivalent? What factors contributed to this impression? Why? Can you provide details and/or specific examples related to your answer?

10) What features of the course (i.e. readings / other media, discussion boards, social media, or other) were most conducive to your learning? Why? Can you provide details and/or specific examples related to your answer?

**Related to types of participation**

11) What factors/conditions influenced your decision to participate or not participate in course discussions and/or social media? Why? Can you provide details and/or specific examples related to your answer?
12) To what extent did you discuss or otherwise engage with the course offline (i.e. discussions with friends / family or others not involved in the course)? Why? Can you provide details and/or specific examples related to your answer?

13) What (if any) changes would you make to the design or facilitation of the course? Why? Can you provide details and/or specific examples related to your answer?

14) Overall, how would you describe / characterize your experience as a participant in this course? To what extent do you feel social presence between and among yourself and other students and/or course instructors helped you learn? Why? Can you provide details and/or specific examples related to your answer?

--

Thank you for your cooperation and participation in this interview. Your responses will remain confidential. You may be invited later to participate in a focus group interview to discuss experiences within (name of MOOC) and how future versions of this course might be improved.
Appendix C: Community of Inquiry (CoI) Survey

Community of Inquiry Survey Instrument (draft v14)

Teaching Presence

Design & Organization
1. The instructor clearly communicated important course topics.

2. The instructor clearly communicated important course goals.

3. The instructor provided clear instructions on how to participate in course learning activities.

4. The instructor clearly communicated important due dates/time frames for learning activities.

Facilitation
5. The instructor was helpful in identifying areas of agreement and disagreement on course topics that helped me to learn.

6. The instructor was helpful in guiding the class towards understanding course topics in a way that helped me clarify my thinking.

7. The instructor helped to keep course participants engaged and participating in productive dialogue.

8. The instructor helped keep the course participants on task in a way that helped me to learn.

9. The instructor encouraged course participants to explore new concepts in this course.

10. Instructor actions reinforced the development of a sense of community among course participants.

Direct Instruction
11. The instructor helped to focus discussion on relevant issues in a way that helped me to learn.

12. The instructor provided feedback that helped me understand my strengths and weaknesses.

13. The instructor provided feedback in a timely fashion.

Social Presence
Affective expression

14. Getting to know other course participants gave me a sense of belonging in the course.

15. I was able to form distinct impressions of some course participants.

16. Online or web-based communication is an excellent medium for social interaction.

Open communication
17. I felt comfortable conversing through the online medium.

18. I felt comfortable participating in the course discussions.

19. I felt comfortable interacting with other course participants.

Group cohesion
20. I felt comfortable disagreeing with other course participants while still maintaining a sense of trust.

21. I felt that my point of view was acknowledged by other course participants.

22. Online discussions help me to develop a sense of collaboration.

Cognitive Presence

Triggering event
23. Problems posed increased my interest in course issues.

24. Course activities piqued my curiosity.

25. I felt motivated to explore content related questions.

Exploration
26. I utilized a variety of information sources to explore problems posed in this course.

27. Brainstorming and finding relevant information helped me resolve content related questions.

28. Online discussions were valuable in helping me appreciate different perspectives.

Integration
29. Combining new information helped me answer questions raised in course activities.

30. Learning activities helped me construct explanations/solutions.

31. Reflection on course content and discussions helped me understand fundamental concepts in this class.

Resolution
32. I can describe ways to test and apply the knowledge created in this course.

33. I have developed solutions to course problems that can be applied in practice.

34. I can apply the knowledge created in this course to my work or other non-class related activities.

5 point Likert-type scale
1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree

I would be interested in participating in an individual interview and/or focus group interview to discuss my experiences as a student within this course: Yes / No

If yes, please provide email address:

Thank you for your cooperation and participation in this survey. Your responses will remain confidential.
Appendix D: Early Exit Survey

1. What factors influenced your decision to discontinue participation in the MOOC? (choose all that apply)
   - Time constraints
   - Other commitments (personal, professional, etc.)
   - Related to course content (i.e. web, readings, etc.)
   - Related to course facilitation
   - Related to other course participants (discussion comments, social media postings, etc.)
   - Additional comments (optional)

2. Did this course meet your initial expectations?
   - Yes
   - No
   - Additional comments (optional)

3. How weeks were you involved in the MOOC?

4. How often did you log in to the course environment and/or visit social media associated with the course?
   - Very often
   - Often
   - Occasionally
   - Almost never
   - Additional comments (optional)

5. Please describe your overall experience in the MOOC:
   - Positive
   - Ambivalent / neutral
   - Negative
   - Other (please specify)
   - Additional comments (optional)

6. What features of the course (i.e. readings / media, discussions, social media, or other) were most conducive to your learning? Why did you find this?

7. What features of the course (i.e. readings / media, discussions, social media, or other) were less conducive to your learning? Why did you find this?
8. What (if any) changes would you make to the design or facilitation of the course?

9. Would you take another MOOC in the future? Why or why not?

Would you be interested in participating in an individual interview and/or focus group interview to discuss your experiences as a student within this course? Yes / No

If yes, please provide email address:

Thank you for your cooperation and participation in this survey. Your responses will remain confidential.
Appendix E: Focus Group Interview Protocol

Project: Social Presence a Massive Open Online Course (MOOC): A Case Study

Time of Interview:

Date:

Place:

Interviewer:

<table>
<thead>
<tr>
<th>Interviewee</th>
<th>Position of Interviewee</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
</tr>
</tbody>
</table>

[Add to the table above as needed]

--

Purpose of the Study

[read verbatim]

The intent of this case study is to investigate how participants’ social presence can affect teaching and learning within a Massive Open Online Course (MOOC). The researcher will seek to understand individual participants’ experiences of social presence within the course; the researcher will also explore how the population of the course as a whole perceives social presence. By looking at both individuals’ and groups’ experiences of social presence, the researcher will learn more about individuals’ reasons for participating in the MOOC, and the extent to which social presence affects their learning. This study will also provide the opportunity to learn about how MOOC design could be improved to enhance social presence as well as cognitive and teaching presences (elements of Garrison’s Community of Inquiry model).

The following questions will guide this research: 1. How does social presence affect teaching and learning within a MOOC? 2. What factors contribute to participants’ establishing a social
presence in a MOOC? 3. How does social presence affect participants’ perceptions of a sense of belonging to a learning community?

What Happens to the Information Provided?

Participation is completely voluntary and confidential. You are free to discontinue participation at any time during the study. No one except the researcher will be allowed to see or hear any of the answers to the interview recording. There are no names on the collected data. Published (e.g., conferences and journal publications) results of the study will contain only aggregated conclusions of data of which no individual participant will be identified. The researchers will store the anonymous data in a secure location after the completion of the study for a period of three years and then will destroy the data.

The interview will take approximately 25-30 minutes. You may choose not to answer any of the questions, and you may choose to discontinue the interview at any time.

Written Consent

Your completed consent forms were received via email and have been saved.

[Test Skype and/or other conferencing application connection]

[Test recording application]

Questions

Each participant will be invited to speak to each of the questions below in turn.

1) Overall, how would you describe / characterize your experience as a participant in this course? Why did you find this to be the case? Can you provide details and/or specific examples related to your answer?

2) What (if any) changes would you make to the design or facilitation of the course? Why? Can you provide details and/or specific examples related to your answer?

3) What features of the course (i.e. readings / media, discussions, social media, or other) were most conducive to your learning? Why? Can you provide details and/or specific examples related to your answer?
4) What features of the course (i.e. readings / media, discussions, social media, or other) were less conducive to your learning? Why? Can you provide details and/or specific examples related to your answer?

5) How could social elements of the course be improved (i.e. discussions, group work on assignments, social media) in a future iteration of this course? Why? Can you provide details and/or specific examples related to your answer?

6) How could cognitive-related elements of the course be improved (i.e. assignments, evaluation, selection of content /readings / other media) in a future iteration of this course? Why? Can you provide details and/or specific examples related to your answer?

7) How could teaching / facilitation of the course be improved in a future iteration of the course? Why? Can you provide details and/or specific examples related to your answer?

8) What other suggestions do you have for future iterations of this course? Why? Can you provide details and/or specific examples related to your answer?

--

Thank you for your cooperation and participation in this interview. Your responses will remain confidential.
Appendix F: Case Study Protocol

A. Introduction to the case study and purpose of the protocol
   1. Case study purpose: The purpose of the study is to investigate the role social presence plays within two Massive Open Online Courses (MOOCs). The research questions are as follow:
      i. How does social presence affect teaching and learning within MOOCs?
      ii. What factors contribute to participants’ establishing a social presence in MOOCs?
      iii. How does social presence affect participants’ perceptions of a sense of belonging to a learning community?
   2. Theoretical framework for the case study: Community of Inquiry (CoI) framework
   3. Role of the protocol for the case study: Assist other investigators to use the same methods and arrive at similar conclusions; to enhance reliability for the study.

B. Recruitment procedures: I emailed instructors associated with MOOCs on public websites for upcoming MOOCs. In the email I requested permission to join their course as an observer. Once permission was given, course administrators posted a notice in the learning management software, and/or by social media, and/or by course-wide email with my recruiting script seeking participants for the study. The script contained links to informed consent forms (online), as well as the project website, and the Demographic, CoI, and Early Exit surveys. Participants who completed informed consent were able to express willingness for contact regarding individual and/or focus group interviews.

C. Data collection plan: All data was collected online.
   1. Individual interview participants has the option to have their interview recorded through an online conferencing application, or to submit their answers to interview questions through email or online form.
   2. Individual interview participants were contacted approximately two months after the course was over, to participate in focus group interviews using an online conferencing application.
   3. Links to surveys resided on the project website, and were shared with students by the course administrators.
   4. Participants indicated on the informed consent document if they were willing for me to use their discussion postings for the study.
From: Matthew Stranach  
Sent: Tuesday, August 01, 2017 8:15 AM  
To: D. Randy Garrison  
Cc:  
Subject: Col visual  

Dear Dr. Garrison,

I hope things are well.

I am in the process of preparing the final version of my thesis- Social Presence in Two Massive Open Online Courses: A Multiple Case Study- for University of Calgary.

Is it possible for me to use the representation of the Coil model found on the Community of Inquiry website within my thesis?

https://coi.athabascau.ca/coi-model/

*I am scheduled to defend my thesis on September 15th.*

Thank you very much!

Kind regards,

Matthew Stranach  
Educational Developer  
Science Building / UA 3220  
University of Ontario Institute of Technology
Matthew,
You have my permission to use the SP indicator table.
Best wishes,
DRG

Sent from my iPad

On Jan 27, 2017, at 1:14 PM, Matthew Stranach wrote:

Dear Dr. Garrison,

I hope things are well.

I am in the final months of writing my Ed.D thesis—Social Presence within Two Massive Open Online Courses (MOOCs): A Multiple Case Study.

As part of this research, I am carrying analyzing the content of discussion posts from within two MOOCs. I am hoping to use the table describing indicators of social presence from the 2003 edition of your book E-learning in the 21st Century; this would be for coding purposes (table is attached).

I was hoping to use this table when coding, and to reproduce this table within the text of my thesis; no other use beyond within the thesis document is needed.

If you are able to provide permission for the use of this table, this would be most appreciated!

I am happy to answer any questions you might have regarding my research and/or thesis.

Thank you very much!

Kind regards,

Matthew Stranach
Educational Developer
Teaching and Learning Centre / ERC 2031
University of Ontario Institute of Technology
http://tlc.aps.uoit.ca/