

**Threshold Concepts in connectivist MOOCs: A Phenomenological Exploration
Research Proposal**

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Introduction

Background

The past few years have seen the rapid emergence and adoption of massive open online courses (MOOCs), to the extent that the New York Times declared 2012 to be the “Year of the MOOC” (Papano, 2012). In the discourse around higher education MOOCs have been alternately constructed as saviour and threat, the hallmark of the democratization of education and the death-knell for the university as we know it. Yet MOOCs remain, for the large part, under considered (Morris, 2014).

A MOOC is “a course, it’s open, it’s participatory, it’s distributed, and it supports life-long networked learning” (Cormier, 2010a). The phrase was first used to describe George Siemens and Stephen Downes’ *Connectivism and Connective Knowledge 2008* course (CCK08). Some 2,200 people participated in CCK08 without paying fees or earning credit. The early MOOCs that followed from CCK08 did not receive much attention from either the media or from mainstream educational research (Daniel, 2012). However, after the success Sebastian Thrun had in taking Stanford’s *Introduction to AI* course online in 2011, educational, commercial, and media interest in MOOCs began to grow exponentially. Since then, the number of MOOCs offered, and the number of participants signing up for them, has skyrocketed, so that by the end of 2014 there were dozens of platforms partnered with over 400 universities, offering over 2400 courses to over 10 million students (Shah, 2014).

Although the definition of a MOOC may seem straightforward, the term is used increasingly haphazardly, now referring to a bloated set of diverse types of course (Stewart,

2013). Two primary distinctions have emerged, denoting two very different pedagogical approaches and philosophies of learning: *cMOOCs* (connectivist MOOCs), similar to the early courses from Siemens and Downes, and *xMOOCs*, based on the Coursera model. George Siemens sums up the differences:

Our (c)MOOC model emphasizes creation, creativity, autonomy, and social networked learning. The Coursera model emphasizes a more traditional learning approach through video presentations and short quizzes and testing. Put another way, cMOOCs focus on knowledge creation and generation whereas xMOOCs focus on knowledge duplication. (Siemens, 2012, para. 3)

xMOOCs largely reproduce the banking model of higher education (Morris, 2014); videos of lectures and digitised resources form the content, and assessment takes the form of machine graded multiple choice quizzes. As such, it represents a *sustaining innovation* in that, despite the hype, xMOOCs do not radically challenge traditional structures and practices. cMOOCs, however, represent a more *disruptive innovation*. They are “built for a world where information is everywhere” (Cormier, 2010a), and are based on a model sees learning as not simply a transfer of static knowledge but instead as something that occurs through participation and interaction. They represent a type of *networked learning* that “reflects quite openly how humans construct knowledge naturally, socially, and non-foundationally” (Eijkman, 2009, p. 100).

Rationale

To date, relatively little empirical research has been conducted around MOOCs (Veletsianos, 2013). What has been done has been fairly limited in both topic and method,

focusing primarily on xMOOCs and using mostly quantitative data to examine topics such as course design and structure (e.g. Bruff, Fisher, McEwen & Smith, 2013; Coetzee, Fox, Hearts & Hartmann, 2014), engagement and drop-out rates (e.g. Breslow et al., 2013; Kizilcec, Piech, Schneider, 2013), or participant demographics (e.g. Christensen et al., 2013; DeBoer, Stump, Seaton & Breslow, 2013). Citing several studies that draw on large-scale surveys or data logged by the platform to reach the not very profound conclusion that effort is correlated with achievement, Reich (2015) highlights one of the main problems with MOOC research: "We have terabytes of data about what students clicked and very little understanding of what changed in their heads" (p. 34).

Only a relative handful of empirical studies have focused specifically on cMOOCs. However, as cMOOCs differ from traditional schooling much more radically than xMOOCs, the demands placed on the learner are correspondingly greater. As most participants sign up purely from personal interest in the topic (Swope, 2013), MOOCs can be viewed as a type of *informal learning*, characterised by Livingstone (2001) as "the pursuit of understanding, knowledge or skill which occurs without the presence of externally imposed curricular criteria" (p. 4). Unlike traditional education, informal learning is primarily *self-directed*, where "individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes." (Knowles, 1975, p. 18). Downes (2012) notes, "MOOCs expect that their participants will be motivated and will have learned how to learn" (para. 12). Knowing how to learn and being able to direct one's own learning are complex, high level skills that many learners struggle with, especially

when they take place in a non-traditional, informal, online learning environment (Butcher & Sumner, 2011; Song & Hill, 2007). Yet as traditional forms of higher education are increasingly not meeting the needs of today's learners (Brown & Adler, 2008), the ability to participate in these new learning environments is becoming an increasingly important skill.

Purpose

There is thus a need for empirical research that seeks to understand the factors that support success in these environments. Scholars have particularly noted the importance of methodological approaches that capture the lived experiences of participants from their own perspective (e.g. Fournier, Kop & Durand, 2014; Reich, 2015). While analytic data can provide glimpses of participants behaviour it cannot address the “‘in the wild’ lifeworld of MOOCs” (Adams, Yin, Vargas Madriz & Mullen, 2014, p. 205). As Veletsianos (2013) notes “very few researchers have sought to gain a deep, qualitative, and multidimensional understanding of learner experiences with open forms of learning. Yet, understanding learner experiences is vital” (p.2).

My research proposes to address this need. I conceive of the study as a phenomenological inquiry into the lived experience of participating in a cMOOC, in an attempt to increase understanding of the types of knowledge and skills that support successful participation in this environment. Specifically, my research will explore the complex techno-social relationships enacted by participants, conceived of in this study as *personal learning ecologies*, in an attempt to identify potential *threshold concepts* that, once navigated, contribute to successful participation.

Definitions

While most of the key concepts used in this study are defined in detail later in this proposal, I feel it would be useful to clarify how I am using certain terms in this study. First, I use the term “understand” as it is applied to qualitative phenomenological research; not to suggest the discovery of a definitive answer but in the exploratory sense of “seeking to understand” a phenomenon through commonalities in the experiences of participants (Creswell, 2009). Second, the term “success” is one that needs particular attention, as success in a MOOC has different meanings to different authors. Generally, those working around cMOOCs believe that success can take many equally legitimate forms: completing an entire course for credit, following just parts of interest, developing a learning network, learning new skills, etc. (Cormier, 2010b). In their study of success in one cMOOC, Bentley et al. (2014) found that each participant defined success differently. Drawing on this, I define success only in relation to the ability to accomplish the individual goals participants set for themselves; a participant is successful if they believe that they have been successful. Third, I use the terms knowledge and skills to differentiate between two types of knowledge. Different types of knowledge have been theorised and described in many different ways; for clarity in this proposal I have chosen to draw on the language used within my conceptual framework of threshold concepts and use the term “knowledge” to refer to conceptual knowledge, and “skills” to refer to procedural knowledge. I plan to give further consideration to the most appropriate terminology in writing my final dissertation. Finally, I describe this study as a phenomenological inquiry, drawing primarily on phenomenology as a methodology (as per van Manen, 1990, 2014). While I recognise that methodological phenomenology is strongly rooted in phenomenology as a philosophical

tradition, full consideration of the relationship between the two is beyond the scope of this proposal and will be taken up in the final dissertation.

Conceptual Framework

Threshold Concepts

The term threshold concept (TC) emerged from a large research project that explored characteristics of effective teaching and learning across a number of disciplines in UK higher education. First developed by Jan Meyer and Ray Land, threshold concepts

can be considered as akin to a portal, opening up a new and previously inaccessible way of thinking about something. It represents a transformed way of understanding, or interpreting, or viewing something without which the learner cannot progress. As a consequence of comprehending a TC there may thus be a transformed internal view of subject matter, subject landscape, or even world view. This transformation may be sudden or it may be protracted over a considerable period of time, with the transition to understanding proving troublesome. Such a transformed view or landscape may represent how people ‘think’ in a particular discipline, or how they perceive, apprehend, or experience particular phenomena within that discipline (or more generally). (Meyer and Land, 2003, p. 1)

Unlike key or core concepts, which build vertically on existing knowledge, threshold concepts represent an epistemological and/or ontological shift leading to a horizontal change in understanding. To aid this distinction, Meyer and Land (2003) identified five criteria that can help identify a threshold concept: transformative, troublesome, bounded, integrated, and irreversible. Since that time, three additional criteria have been suggested: discursive,

reconstitutive, and liminal (Land, Meyer & Baillie, 2010). Drawing on the seminal publications of Meyer and Land (2003, 2005) and Cousin (2006a, 2006b), each of these characteristics is briefly described below.

- **Transformative:** Mastering a threshold concept represents an ontological shift, often involving a reworking not only of previous knowledge but also of identity. Such a shift leads to new ways of thinking and new understandings of the subject overall.
- **Troublesome:** Threshold concepts can challenge a learner's existing knowledge, presenting a type of cognitive dissonance that needs to be resolved before a learner can move forward. As such, they often bring with them a level of both intellectual and emotional discomfort.
- **Irreversible:** Mastery of a threshold is usually permanent; once learned it cannot be forgotten. Walker (2013) illustrates this characteristic by noting the difficulty an expert has in trying to return to thinking like a novice learner.
- **Integrative:** A threshold concept represents the attainment of a deeper level of understanding, one in which the learner is now able recognise relationships between previously disparate concepts or fragmented knowledge.
- **Bounded:** Threshold concepts usually have recognisable boundaries, edges, or frontiers, allowing them to be perceived as distinct from other concepts or knowledge.
- **Discursive:** As a learner masters a threshold concept the language they use will be extended or enhanced, often in a way that reflects the thinking and discourse of experts in that area.
- **Reconstitutive:** The ontological or epistemological shift a threshold concept brings with it may require a learner's previous knowledge to change or be discarded. In its place, knowledge is reconstituted in light of the new understandings.

- Liminal: Building on the anthropological work of van Gennep (1960) and Turner (1969), liminality denotes the “betwixt and between” of threshold crossing. Learners in this space may oscillate between old and new understandings, “just as adolescents often move between adult-like and child-like responses to their transitional status” (Cousin, 2006a, p. 139).

In their early work, Meyer and Land stated their intention “to open up discussion of threshold concepts as an important but problematic factor in the design of effective learning environments” (Meyer and Land 2003, p. 10). This discussion has included several critiques and challenges, primarily focused around a lack of common definition and the resulting difficulty of conclusively identifying TCs (Walker, 2013). Rowbottom (2007) criticised the lack of consensus around which of the eight characteristics are essential for labelling something as a threshold concept, while recently Tight (2014) questioned if TCs must prove problematic for all learners across all institutions or contexts. Other authors have questioned who should be involved in the identification of threshold concepts, with Cousin (2008) arguing the need for collaboration between learners, instructors, and instructional designers.

Since Meyer and Land’s original work, the identification and application of threshold concepts in higher education has become a popular field, with Land (2011) identifying over 150 empirical papers from 80 disciplinary or subject areas. Most of this work has looked at threshold concepts within a discipline; economics, engineering, life sciences, and history were the focus of the original research and threshold concepts remain popular in these areas today (Tight, 2014). However, scholars have also begun looking at TCs in non-disciplinary or inter-disciplinary areas such as doctoral education (Kiley & Wisker, 2009; Trafford & Leshem, 2009), information

literacy (Hofer, Townsend, & Brunetti, 2012), and the scholarship of teaching and learning (Carmichael, 2010; Irvine & Carmichael, 2009). It has also been noted that, while the term “concept” places emphasis on conceptual knowledge, procedural knowledge (or skills) may also act as a threshold (Baillie, Bowden, & Meyer, 2012; Sanders et al., 2012).

Threshold concepts in this study.

In discussing the use of theory in researching e-learning or online learning, Ross, Morrison, and Lowther (2010) cite the importance of a broad and encompassing conceptual framework, arguing that embracing a narrow theoretical or paradigmatic stance can lead to a constrained understanding of the phenomenon under study. Similarly, Jones and Kennedy (2012) note the need for theoretical and methodological flexibility when researching emerging technologies. The encompassing and emergent nature of the threshold concepts framework makes it seem particularly suitable for a study that seeks to uncover factors influencing successful participation in a cMOOC. Further, previous studies of learning in open online environments have identified a wide range of both knowledge and skills that contribute to success: familiarity with technologies, applications, and platforms (McAuley et al., 2010); digital, critical, and information literacies (Milligan et al., 2013); self-directed learning skills (Song & Hill, 2007); and the ability to make sense of complex information (Siemens, 2011). Conceiving of threshold concepts as including both knowledge and skills allows it to act as a unifying framework through which a wide variety of factors influencing participation can be explored.

Personal Learning Ecologies

Today's learners draw on complex assemblages of technology to support both their formal and informal learning. These assemblages have been conceptualised and characterised in a variety of ways. One common description is the *personal learning environment* (PLE). Although precise definitions vary somewhat, a PLE is “comprised of all the different tools we use in our everyday life for learning” (Attwell, 2007, p. 4). The interest in PLEs is seen to have emerged from an increasing recognition of the limitations of institutionally imposed *virtual learning environment* (VLE; also known as a learning management system or LMS) and of the central role of the learner in directing their own learning experiences (Martindale & Dowdy, 2010). However, describing these assemblages of technology as PLEs has two primary limitations. First, by defining the PLE in a way that stresses its derivation from the VLE, the PLE is given an institutional rather than learner centred emphasis (some literature even focuses on how institutions can guide or manage development of PLEs [i.e. Fournier & Kop, 2010]). Second, the focus is placed entirely on the tools or technologies, a deterministic perspective that ignores the importance of social connections in learning (Weller, 2007).

A second characterisation is as a *personal learning network* (PLN). Couros articulates the difference between the PLE and PLN:

PLEs are the tools, artefacts, processes, and physical connections that allow learners to control and manage their learning.Definitions of PLNs, however, seem to extend this framework to more explicitly include the human connections that are mediated through the PLE. In this framework, PLEs become a subset of the substantially humanized PLN (Couros, 2010, p. 124).

PLNs are situated in conceptions of networked learning, an “understanding of learning as a social, relational phenomenon, and a view of knowledge and identity as constructed through interaction and dialogue” (Ryberg et al., 2012, p. 45). While this may address the limitations of the PLE, it possibly moves too far in the opposite direction, over-emphasising the individual as the centre of a nexus of connections within a closed, clearly bounded network.

Conceiving of these assemblages as learning ecologies overcomes these limitations. Nardi and O’Day (1999) introduced the metaphor of an *information ecology* as “a system of people, practices, values, and technologies in a particular local environment” (p. 49). The term is designed to evoke understandings of a biological ecology, a “complex system of many parts and relationships. It exhibits diversity and experiences continual evolution” (p. 51). Barron (2006) adapted this idea to describe *learning ecologies*, the “set of contexts found in physical or virtual spaces that provide opportunities for learning. Each context is comprised of a unique configuration of activities, material resources, relationships, and the interactions that emerge from them” (p. 195). Learning ecologies are self-organised, but also open and networked, personalised, but situated within a variety of contexts and communities. They recognise that learning is “multi-directional and multi-modal and learning, idea exchanges, and inquiry all take place within a dynamic system among students, teachers, and global communities with the web 2.0 infrastructures” (Saadatmand & Kumpulainen 2012, p. 268). While learning ecologies may be high self-organised, emergent, and somewhat unpredictable, they also need to operate within some forms of structure and constraint. As Williams et al. (2011) note, it is the role of the learner in curating their own ecology to provide this structure, which they illustrate by labelling these as *personal learning ecologies*.

Personal learning ecologies in this study.

Using the term personal learning ecology to describe the socio-technical assemblages curated by participants in cMOOCs can help us conceptualise the diverse and complex systems that influence participation and learning. While the label “personal” is used to highlight the central place of the learner in curating their own ecology, it is not meant to suggest that they are the only force shaping it; consideration must also be given to the influence of social and cultural contexts. A personal learning ecologies perspective aims to recognise the technologies, processes, contexts, interactions, and relationships without inherently privileging one over the others. Further, viewing ecologies as complex systems with permeable boundaries also allows us to both recognise the cMOOC as a bounded space yet also to account for the influence of factors that may technically lie outside of this boundary. As cMOOCs are relatively new, and can be described as an emergent, dynamic, and evolving technology, they lend themselves well to an ecological metaphor that acknowledges such complexity. Finally, the notion of learning ecologies as self-organising, complex, “multi-directional and multi-modal” (Saadatmand & Kumpulainen 2012) calls to mind the similar metaphor of learning as a rhizome with “no center and no defined boundary; rather, it is made up of a number of semi-independent nodes, each of which is capable of growing and spreading on its own, bounded only by the limits of its habitat” (Cormier 2008, p. 1). As the context of this study (described below) is a MOOC that focuses on rhizomatic learning, this metaphor seems particularly apt.

Review of the Research

In developing this study I’ve reviewed a vast array of literature around MOOCs, informal online learning, threshold concepts, learner experience, networked learning and related subjects.

In order to narrow this literature to a reasonable scope for the purposes of this proposal, I have chosen to focus primarily on the works that are most relevant to my study: empirical studies around cMOOCs that offer insight as to the concepts and skills (i.e. potential threshold concepts) that influence participation.

In possibly the first, but also one of the most informative studies of cMOOCs, McAuley, Stewart, Siemens, and Cormier (2010) collated narrative recountings of the authors' experiences as both participants and facilitators in the early cMOOCs. Their study sought to understand the skills, literacies, and knowledge privileged and rewarded in cMOOCs, and to explore the factors influencing participation in this environment. They present a detailed accounting of a number of abilities they deem necessary for participation: consuming and creating media with a variety of tools/platforms; directing one's own learning; adaptability and flexibility to deal with a constantly changing environment; making sense of fragmented, distributed information; selecting with which content and platforms to engage; developing and engaging with a digital network. Although they do not refer to it as such, the importance of the personal learning ecology comes through in their work, as they label the capacities to "work with current digital tools to connect fragmented, diffuse, and distributed knowledge" (p. 47) and to "contribute to and create a productive collaborative network" (p. 48) as the most important factors for successful participation in MOOCs. Some of their comments also suggest threshold concepts that successful participants have navigated. Stewart noted she felt the type of frustration and a lack of confidence experienced by learners in a liminal space before she found ways to organise her learning and to contribute to the community. All authors also remark on the transformative nature of their experiences as participants, particularly noting that: "A distributed network

identity that marks a participant as a product of the network he or she participates in tends to emerge as a course progresses” (p. 50).

Another early study by Fini (2009) focused specifically on the technological dimensions of participation in *Connectivism and Connective Knowledge 2008* (CCK08). He drew on a framework of “personal knowledge management” which, similar to a personal learning environment, connects “learning-to-learn competencies with technologies”. Similar to McAuley and colleagues, he cited factors such as technological competency, critical information literacy (finding, selecting, and curating relevant information), and self-directed learning skills as essential for participation. He also highlighted the need for participants to make conscious and reflective choices about the ways in which they participated and in how they curated their personal learning ecologies. Successful participants were able to choose which content and technologies to engage with, and to participate in ways that supported their goals, learning styles, and outside demands. While Fini did not give much consideration to the social components of the MOOC, his work did indicate a clear difference between novice and expert participation: some participants struggled with engaging and making connections with others as they felt intimidated by the expertise and confidence demonstrated by more active learners.

George Siemens (2011) focused his doctoral research on the sensemaking strategies of participants in CCK08. Through an analysis of forum posts and social networks, he found participants used a number of strategies to help them navigate the course: contextualising concepts to make them personally relevant, creating artefacts to organise and share information, forming personal learning networks with other participants, and sharing emotive experiences in

the form of stories, metaphors, analogies. It could be suggested that many of these strategies indicate potential threshold concepts, especially as Siemens notes that participants relied on these strategies much more heavily early in the course, and later were more likely to engage in increasingly complex tasks and conversations. He also comments on the importance of identity, as sharing identities, building networks based on shared identities, and recounting the transformation of identity over the duration of the course were integral parts of the sensemaking process. Siemens's work is somewhat limited in that he relies exclusively on the data collected by the platform. As he attempts to understand the experiences of participants, a methodology that does not actually include participant voices seems a rather limiting selection.

Several authors have commented on the need for participants in cMOOCs to have strong self-directed learning skills. Kop and Fournier (Kop, 2011; Kop & Fournier, 2011) specifically explored the relation between learner experience and self-directed learning through a number of multiple mixed method studies focussing on two of the early cMOOCs: *Personal Learning Environments, Networks, and Knowledge 2010* (PLENK10) and *Connectivism and Connective Knowledge 2011* (CCK11). They identified a number of skills utilised by successful participants: managing time and competing demands; coping with vast amounts of information by being able to choose what to focus on; and using technologies outside of the course platform to support their learning. Further, they noted that the level of engagement demonstrated by participants (*active participants* or *lurkers*) was related to their levels of confidence and autonomy, and to previous experience with the technical and pedagogical aspects of the MOOC. Similar to other scholars, their work also noted the importance of strong verbal and written communication skills, the ability to work collaboratively in a networked environment, high-level

technical skills, and interacting with information critically and creatively. Like Siemens (2011), their studies relied primarily on quantitative methods such as surveys and data mining; more attention given to the voice of participants may add detail to their findings.

Littlejohn, Milligan, and colleagues examined how participants in *Change11* drew upon self-directed learning skills to plan, implement, and reflect on their experience (Littlejohn, 2013; Milligan, 2013; Milligan et al., 2013). They found that different patterns of engagement (*active*, *passive*, or *lurking*) were mediated, in part, by participant's self-directed learning skills. However, they also noted that while those who participated less (i.e. lurkers or passive participators) often made a conscious choice to do so, some of these participants did not know how to participate more actively. To illustrate this, they share the experience of a participant who realised that in this type of course they had to actively seek out information they wanted. Another participant noted how their engagement in the course became much more meaningful after they realised that active participation meant more than simply writing a blog. They characterised these as "a-ha moments", illustrating the transformative nature of these understandings. These studies also touched on the important role of personal learning ecologies, suggesting that being able to leverage digital technologies and personal networks to support learning was a key factor of success.

Mackness, Waite, Roberts and Lovegrove present two papers that drew on a mixed methods case study of *First Steps into Learning and Teaching in Higher Education 20120* (FSLT12): Mackness et al. (2013) focussing on the relation of design to learner experience, and Waite et al. (2013) looking at "triggers for active participation" (p. 200). While both studies

drew similar conclusions, Waite et al. (2013) is the only work to date that has applied the threshold concepts framework to look at learning in MOOCs. The authors articulate three main themes of their findings. First, echoing the findings of McAuley et al. (2010) and others, participants found navigating the multiple technologies, platforms, and sources of content overwhelming and disorienting. They label the type of information literacy in which participants “develop skills of finding relevant information and become adept at filtering, picking and choosing information relevant to personal learning” (p. 210) as an example of troublesome knowledge. Their second theme highlighted the transformative learning that took place during the course. Successful participants went through a variety of transformational shifts, such as realising that it was not necessary to engage with all course content or through all course platforms. Similar to other literature around threshold concepts, they note that participants often identified instances of transformative learning in reference to a reconfiguring of identity. They also described aspects of liminality, displayed in participant’s attempts to negotiate the skills and behaviours needed for active participation, suggesting that time and conscious reflection were important factors in eventual success. The final theme Waite and colleagues noted related to the importance of learning networks, particularly in providing peer support and in allowing novices to emulate the practices of more experienced participants. In this work, the threshold concepts framework helped the researchers focus on not only on potential barriers to success, but also on how these barriers could be successfully navigated, clearly illustrating the benefits threshold concepts can bring to this type of research.

In a collaborative auto-ethnographic study, Bentley et al. (2014) explored their participation in *Open Learning Design Studio: Learning Design for a 21st Century Curriculum*

(OLDSMOOC), particularly focussing on what had made their experiences successful. Each author defined success somewhat differently, noting that their patterns of participation reflected their individual goals. This reinforces the importance, mentioned by several scholars, of evaluating success in a MOOC in relation to the goals of the individual (Cormier, 2010b; Mackness et al. 2010; Milligan et al. 2013). Like McAuley et al. (2010) and Waite et al. (2013) they stress the importance of both the technological and social components of their personal learning ecologies, specifically citing familiarity with online environments and supportive peer connections as integral to their success. Similar to Kop and Fournier (2011) and Milligan et al. (2013), they noted the need to draw on self-directed learning skills; those who were successful articulated clear goals and carefully planned and monitored their participation throughout the course. The authors also articulated the need for participants to have the confidence, motivation, and persistence needed to achieve their goals, characteristics they gather under the label of self-efficacy. They recognised that their own self-efficacy increased during their participation in the course, a transformative shift that enhanced their identity as learners.

Saadatmand and Kumpulainen explored the role of personal learning ecologies both in networked learning in general (2012) and specifically within cMOOCs (2014). Their ethnographic study drew on participants in three early cMOOCs (*Social Media and Open Education* [EC&I 831], PLENK10, and CCK11) to “capture the learning experiences and the choice of the tools used by the participants and what kinds of interactions and engagements in different networks and communities were taking place during the course” (2014, p.6). Drawing on ecological concepts, they frame the need for self-directed learning skills as “self-organised learning”, a process in which “learners must find the appropriate ways to manage various

learning processes, such as dealing with tools and contents, choosing the best out of the available resources, maintaining connections, and being involved in learning networks” (p. 25). Like Fini (2009) they found participants expressed a preference for using technologies already part of their learning ecologies, noting the challenges of developing new technological competencies in a limited time period. They focused in particular on the use of blogs, commenting that participant’s blogs were not just spaces to reflect and publish their thoughts, but also acted as a method of developing connections with peers through commenting on each other’s work. Participants felt that the process of self-organisation required a great deal of effort. Yet while they described it as “time consuming and disruptive” they also found it “motivating and inspiring” (p. 271), noting an increase in their self-efficacy similar to Bentley et al. (2014). The authors also highlighted the importance of the personal learning ecology, observing that participants drew on the tools, processes, and connections of their ecology in different ways according to their different needs. One particularly interesting finding in this study was the potentially troublesome nature of “openness”. Many participants found that the demands for publishing, sharing, and demonstrating knowledge in open spaces pushed the boundaries of personal or cultural comfort. For many, it was the development of a supportive personal learning ecology that allowed them to overcome these concerns and to engage more fully with the course. What clearly emerges from a review of the literature in this area is the need for participants in a cMOOC to possess and deploy a complex mixture of technological knowledge and skill, personal characteristics, and learning abilities. In every study reviewed, participants described feelings of being overwhelmed, confused, and disheartened at some point during their cMOOC experiences. The need for research that aims both to identify the specific knowledge and skills

needed and to understand how successful participants develop and utilise this knowledge is clearly illustrated.

Methodology

Methodological Approach

This study is conceived of as a phenomenological inquiry into the lived experiences of participants in a cMOOC. Phenomenology focuses on describing the “common meaning for several individuals of their lived experiences of a concept or phenomenon” (Creswell, 2013, p.76), in this case defined as participating in a cMOOC. My study draws particularly on the “phenomenology of practice”, an interpretive approach developed by van Manen (2014) to be especially suited to studying educational environments.

Phenomenological studies are particularly adept at exposing tacit understandings and revealing complex realities, and are particularly valuable in studies that seek to understand learner experience through the learners’ own voices (Sharpe, Beetham & DeFreitas. 2010). Threshold concepts research often uses a phenomenological approach to include the voice of the learner in the identification of threshold concepts (Meyer, 2012). Scholars have also noted a shared set of beliefs and values between networked learning and phenomenology, in part due to both drawing from a socio-cultural view of knowledge as relational (Turkle, 2004; Cutajar, 2014). Within phenomenological inquiries there are no set methods or prescribed approaches (van Manen, 2014). As such, phenomenology permits flexibility and innovation appropriate to studying new or emerging technologies that lack a strong research base (Jones & Kennedy, 2012; Ross et al., 2010). It would seem, as Adams et al. (2014) note “phenomenology of practice is

ideally suited for revealing the rich, complex realities of everyday student learning experiences in MOOCs” (p. 207).

Within the tradition of phenomenological inquiry, my study draws more specifically on a case study approach. Case study research involves “the study of a case within a real-life, contemporary context or setting” (Creswell, 2013, p. 97). It is particularly recommended for in-depth research focusing on contemporary phenomena (Yin, 2014). When studying online learning, the vast and connected nature of the internet can make it difficult for researchers to establish a reasonable scope for a study. Taking a case study approach can help the researcher by creating a bounded system (Davies, 2008). While the case is often considered the primary unit of analysis in case study research, embedding a case study approach within a phenomenological inquiry allows attention to be given to the case, the individuals’ experiences of the phenomenon under study, and the interaction between the two (Creswell, 2013). As I believe an understanding of rhizo15 (the case) is integral to understanding the experiences of participants in rhizo15, this type of instrumental case study (Creswell, 2013) is a suitable approach.

Research Questions

The specific questions guiding this study are:

- How do participants in rhizo15 describe their experience of learning in a cMOOC?
 - What digital learning ecologies do participants curate and draw upon while participating in rhizo15?
- What threshold concepts for participation in a cMOOC can be identified from the experiences of rhizo15 participants?

- What supports or constrains the navigation of these threshold concepts?

Table 1 below illustrates some of the concepts identified through the literature review that may be relevant to these questions, and lists some related constructs that could potentially be used to develop questionnaire items and interview questions.

Table 1: Concepts of interest as identified by the literature and possible related constructs

Concepts	Dimensions	Constructs
learner characteristics		<ul style="list-style-type: none"> - age - employment - educational attainment - gender - country of residence - English fluency
engagement with course	<ul style="list-style-type: none"> expected actual 	<ul style="list-style-type: none"> - understandings of course expectations - time spent on course - course elements utilised - technologies utilised - curation and use of personal learning ecology
personal learning ecology	<ul style="list-style-type: none"> technologies people relationships 	<ul style="list-style-type: none"> - familiarity with various technologies - level of skill with various technologies - confidence with technology - prior experience with MOOCs (and similar) - prior network development - capacity for developing and utilising network
self-directed learning	<ul style="list-style-type: none"> goal setting motivation planning self-efficacy 	<ul style="list-style-type: none"> - reasons for taking the course - goals for the course - time management - monitoring of participation - confidence - autonomy
critical information literacy		<ul style="list-style-type: none"> - finding and filtering information - strategies and technologies for collating information

Study Site

The context (or site) for this study is a MOOC entitled *Rhizomatic Learning 15* (rhizo15), set to begin mid April and lasting for approximately six weeks. Facilitated by Dave Cormier, the course will explore ideas around *rhizomatic learning*, “a story of how we can learn in a world of abundance – abundance of perspective, of information and of connection” (Cormier, 2014, para 2). While the course is hosted on the *Peer To Peer University* platform (P2PU, www.p2pu.org), it is designed as a true cMOOC, distributed across a number of online spaces, utilising fully open content, requiring active participation, and conceptualising knowledge as created by participants and through interactions.

Rhizo15 is likely to have a number of similarities to the first iteration of *Rhizomatic Learning* (rhizo14), which began last spring (see <http://davecormier.com/edblog/2014/01/12/your-unguided-tour-of-rhizo14/> for a detailed description of the course). Rhizo14 eschewed traditional ideas of content prepared in advance instead focusing on simple weekly questions, each introduced with a brief video and a few references. As such, the focus was placed on the content created by participants and on the conversations among them. Conversations took place over a number of platforms (Facebook, Google+, Twitter, P2PU forums) and across participants’ individual blogs. It is estimated that over 400 participants actively engaged with the course through at least one of these platforms (D. Cormier, personal communication, January 2015), and, even though the course technically finished last February, there is still a growing and thriving rhizo14 community.

I have chosen rhizo15 as the site for this study for a number of reasons. Although each cMOOC is unique, scholars working in the field have identified rhizo14 as typifying the cMOOC genre and noted the value research on the course could have (Bali & Honeychurch, 2014). As I participated in rhizo14, I am already familiar with the general format and content that will be used in rhizo15. I also have access, as Dave Cormier has eagerly given me permission to conduct this study and has offered his support in any way needed. Therefore it would seem that rhizo15 fulfils the suggestion that the researcher:

examine that case from which we feel we can learn the most. That may mean taking the one most accessible or the one we can spend the most time with. Potential for learning is a different and sometimes superior criterion to representativeness. (Stake, 2005, p. 451)

Sample and Participant Selection

In discussing MOOC research, conceptualisations of population and sample can prove problematic. On average, only around 5% of those who register for a MOOC participate fully in the course (Jordan, 2014). Further, unlike a traditional course, participants can and do begin or leave at any time during the course. They may also engage only with certain aspects of the course; patterns of participation in MOOCs can take many different, equally legitimate forms (Milligan et al., 2013). These problems are further confounded in a cMOOC like rhizo15, where the course is distributed across a number of platforms, participants often drop in and out, and engagement with any or all aspects of the course is considered valid participation.

Taking a phenomenological, case study approach minimises the problems this may present. The focus of phenomenological inquiry is not on obtaining any type of representative sample but

instead on the gathering of a range of descriptive evidence from which underlying patterns and structures of experience can be drawn (van Manen, 2014). The essential criteria are that the “research participant has experienced the phenomenon, is intensely interested in understanding its nature and meanings, is willing to participate” (Moustakas, 1994, p. 107).¹ Sampling in phenomenological studies is usually criterion based, in that “participants in the study need to be carefully chosen to be individuals who have all experienced the phenomenon in question, so that the researcher, in the end, can forge a common understanding” (Creswell, 200, p. 81). Specific details of participant recruitment are provided in relation to each of the data collection methods articulated below.

Data Collection

I plan to take three approaches to data collection: pre and post course questionnaires, naturalistic observations of course spaces, and semi-structured interviews and collection of course related contributions from a small group of participants. Details of each of these methods are provided below.

Questionnaires.

Questionnaires are very commonly used in research around MOOCs (e.g. Kop & Fournier, 2011; Milligan et al., 2013) and in studies seeking to uncover threshold concepts (Kandlbinder &

¹ I believe that the experiences of participants who have “dropped out” during the course, or who have only engaged in a limited manner, may be useful in contributing to an understanding of the barriers to successful participation. As such, I plan to include these participants in all methods of data collection within this study. I will, however, make sure to include questions that ask about the participant’s level of engagement so that data analysis can be conducted and conclusions can be drawn with this taken into consideration.

Peseta, 2009; Kiley & Wisker, 2009). I plan to use both a pre and a post course questionnaire, containing both closed and open-ended questions, with some items remaining consistent so that changes over the duration of the course can be noted.

The pre-course questionnaire will focus on learner characteristics, elements of personal learning ecologies (e.g. familiarity and comfort with technologies, prior connections with others, previous MOOC experience), and expectations for the course (motivations, goals, expected engagement, projected challenges). The data from this questionnaire will also be used to inform further aspects of the study (i.e. to develop interview questions, focus observations, select participants for interviews, etc). The questionnaire will be hosted on an online platform (most likely Fluid Surveys). Requests to complete the questionnaire will be made in a number of ways: an email sent through P2PU's anonymous system to all participants who have registered for the course, a posting on the course home page, and through postings to the various course related social media spaces. Participants will be asked (but not required) to provide email addresses on the questionnaire form to allow pre and post course questionnaires to be matched, to ensure participants haven't completed the questionnaire multiple times, and to contact those interested in participating further. The survey will be available from a few days before the official class start through the end of the first week. This provides enough time to ensure that participants joining a few days after the start will still have a chance to complete the questionnaire, but not so long that responses may be biased by extensive engagement with the course.

The post-course questionnaire will ask about actual engagement with the course, use of personal learning ecologies, as well as participants' course experiences. Similar to the pre-

course questionnaire, it will be hosted online, available during the last few days of the course and the week after, and requests for completion will be made in a variety of ways.

Naturalistic Observations.

Rooted in ethnographic methodology, observations are a common method of data collection across a range of research approaches, including case studies (Yin, 2013) and phenomenology (vanManen, 1990). Several researchers looking at learning in MOOCs have drawn on observations of the course pages, forums, social media spaces, and blogs used by participants (e.g. Kop & Fournier, 2011; Mackness et al., 2013; Siemens, 2011). Similarly, I plan to observe the various spaces used by participants in rhizo15 in a naturalistic, non-participative manner. Though it is difficult to specify precisely what these spaces may be before the course starts, this will likely include the course forums on P2PU, the Facebook group, Tweets with the rhizo15 hashtag, a Google group, and blogs shared by participants. It would be impossible to observe all rhizo15 activity in real time and in detail; instead I plan to scan through the various spaces daily, following up in more detail on anything that seems potentially valuable. The dynamic nature of the course and the different forms of the various online spaces participants utilise do not lend themselves to the use of a formal, concrete observational protocol. Instead, I plan to be guided by the questions of the study and the concepts of interests, and to record notes in my research journal.

Interviews and collection of course related contributions.

Phenomenological inquiries use a variety of data collection strategies to explore the lived experiences of participants in detail. In my study, I plan to follow the experiences of a small

group of participants in-depth, by collecting the postings they make to various course sites throughout the course, and conducting interviews after the course has ended.

Drawing on various sources of written data, such as course documents, portfolios, or journals is common in both phenomenological studies and threshold concepts. In studies of MOOCs and similar online environments, researchers have successfully collected data through blogs (Zutshi, 2013), forum postings (Gillani, 2013), and social media postings (Mackness et al., 2013). For participants in cMOOCs, blogs and social media spaces often serve as a space to engage with content and ideas, and to reflect on developing understandings. Similar to past use of journals in threshold concepts research (Gourlay, 2009), blogs and social media posts could provide insight into the experiences, struggles, and potential threshold concepts encountered by participants. They also have the advantage of capturing participant experience at different times throughout the course in a flexible and unstructured way, encouraging the type of pre-reflectivity desirable in phenomenological inquiries. Participant's posts will be collected throughout the course using various methods (possibly including screen captures, Tweet aggregators, or copying of text), and will be collated into a timeline for each participant. Following participants in this manner will produce a picture of their journey through the course, and will also help guide conversation during interviews.

Interviews are seen as an integral data collection method for research that wishes to focus on the experience of learners (Mayes, 2006). They are an "attempt to understand the world from the subject's point of view, to unfold the meaning of peoples' experiences, to uncover their lived world" (Kvale, 1996, p.12). They are also the main method of data collection used in

phenomenological studies (Creswell, 2013) and are very commonly used in threshold concepts research (Barradell, 2013). The type of interview one conducts should be determined by the question asked and the type of information desired (van Manen, 1997). As my goal is to examine the experiences of participants in rhizo15, with specific attention given to possible threshold concepts and the components of personal learning ecologies, a semi-structured interview seems the best choice. Walker (2011) notes that semi-structured interviews allow the researcher to guide the interview and obtain required information, yet also give participants the freedom to describe their experience in their own words. Hence I plan to develop a few guiding questions but otherwise focus on participant's experience through conversation. As phenomenological inquiries seek to capture the lived, pre-reflective experiences of participants, they should take place as soon after the experience as possible (van Manen, 2014). Further, literature around threshold concepts suggests that it is often difficult for learners, once a threshold concept has been mastered, to recall the struggles they faced around that concept. Therefore, I plan to conduct interviews in the week or two immediately following the conclusion of the course.

There is no prescribed or optimum number of participants for a phenomenological study, though Polkinghorne (1989) recommends between five and 25. Understanding that it is difficult to specify an optimum number at the design stage (Creswell, 2013), I hope to have 15 to 20 participants for in-depth data collection and interviews. However, I need to balance this with the knowledge that MOOCs often see precipitous declines in enrolment over the course and this may translate to higher than usual participant withdrawal during my study. To account for this, I will aim to recruit around 40 participants at the start of the course. As mentioned above, I plan

to recruit participants through requests placed on the pre-course questionnaire form. Depending on the number of participants this yields, I may also make requests through the various platforms of the course. Since it is likely participants will be widely geographically distributed, I plan to conduct interviews using Skype (or similar technology). Interviews will be recorded and transcribed verbatim shortly after the interview occurs.

Researcher Journal.

The concept of *bracketing* (or *epoché*) is integral to phenomenological research (van Manen, 2014). Bracketing is the process by which the researcher sets aside their own beliefs and experiences in order to truly examine the phenomenon from the participants' perspectives. While it is acknowledged that it is impossible to truly achieve this in practice, researchers are encouraged to consciously examine the ways in which their knowledge, beliefs, and assumptions may influence understanding (Moustakas, 1994). One method for doing this is for the researcher to keep a research journal. This can provide a place to articulate one's beliefs and world views, reflect on experiences, bracket out assumptions, and to trace the researchers evolving understandings. I plan to keep a detailed journal throughout the course of this study, both to help with bracketing, and as a space to record notes on my observations.

Data Analysis

Data analysis will take an inductive approach, drawing on thematic analysis. This is particularly appropriate for a phenomenological study, as it offers a flexible method for identifying and analysing themes in the data, referred to in some phenomenological research as "structures of experience" (van Manen, 1997, p. 79) or "clusters of meaning" (Cresswell, 2013,

p.82). In this type of qualitative analysis there is no attempt made to test hypotheses that have been determined in advance. Instead, the goal is to explore the phenomena by working primarily with raw qualitative data.

While an inductive approach to data analysis is generally a non-linear, recursive procedure that moves back and forth through multiple stages, the steps recommended by Creswell and Plano Clark (2011) provide a helpful structure:

1. Prepare the data: As researchers working with the large quantities of discursive data that often accompany MOOC research have noted the value of qualitative coding software (Fournier et al., 2014), I plan to use NVivo to aid data analysis. Data from the open-ended questions on the questionnaire, transcripts from interviews, text from course related postings and observations will be imported to the software and prepared for analysis according to the software protocols.
2. Explore the data: The first step in qualitative data analysis is to read through the data to develop a general understanding and note any initial thoughts (Creswell & Plano Clark, 2011). I plan to explore all qualitative data, including my own researcher journal, in this manner. Memos to record any initial thoughts will be added to each of the NVivo documents.
3. Analyse the data: In this stage, I plan to take an iterative approach to coding, according to the three stages of coding in thematic analysis offered by Braun and Clarke (2006): generating initial codes, searching for themes, and reviewing themes. NVivo offers the ability to easily organise material into broad topics, helpful in generating codes. Yet as it relies primarily on algorithms

that count occurrences of words or phrases, the nuances normally picked up by a human reader can be missed (Fournier et al., 2014). Therefore, I plan also to code 'by hand' as far as possible, balancing the quantity of data and time required with any depth of understanding gained.

Although the emphasis in phenomenological inquiry is on analysing the data without reference to preconceived hypotheses, it is also important to be cognisant of the questions driving the research study through the data analysis process. Once coding has identified a number of salient concepts, I will examine each in reference to the eight criteria for threshold concepts, and consider how each may relate to understandings of personal learning ecologies. Considering these concepts more holistically will help me generate a description of the overall experience of participants in rhizo15.

While the above section has detailed my analysis of qualitative data, my questionnaire will also collect some quantitative data through a number of closed-ended questions. The goal of collecting this data is not to perform detailed quantitative analyses but rather to uncover general trends or patterns that can be used to enhance understandings gained through the qualitative data. As such, SPSS will be used to organise this data and to generate descriptive statistics.

Ethical Considerations

Ethical considerations are integral to high quality social research, and there are a number of well-documented procedures for ensuring research is conducted in an ethical manner. While my study will necessarily be guided by the requirements and advice of the UBC Behavioural Research Ethics Board (BREB), I will also draw on the advice provided by organisations related

to my research (i.e. Association of Internet Researchers, Canadian Interagency Advisory Panel on Research Ethics, British Educational Research Association). However, research in open online settings is relatively new, requiring the researcher to carefully examine how the context under study may affect principles of ethical research (Eynon, Fry & Schroeder, 2008). As such, I have consulted a number of sources in considering the ethical implications of my study. I have paid close attention to descriptions of ethical considerations in related research studies, read literature around ethics in online research, and have spoken with others who have engaged in similar research around MOOCs. I have also spoken with UBC's office of research ethics, who believe that the protocols I outline below would classify my study as minimal risk. Lunt (2007) identifies six key ethical principles that should be considered within any social research project:

1. Obtain voluntary informed consent: As I use a variety of different data collection methods, informed consent will be gathered in a few different ways. At the start of the course, an email will be sent to all course participants registered on P2PU explaining this study in detail. As mentioned, it is possible that course participants may not register before the start of the course, or may participate in aspects of the course without registering on the P2PU platform. Therefore I will also post information about my study on the course homepage and on any social media platform used in the course. This will contain a link to my website where detailed information about the study will be posted. It will also offer participants a way to opt-out of the study, meaning their data from any and all aspects of the course would not be included during observations. Information about the study will also preface the questionnaire form. BREB has informed me that it would be considered acceptable to use an "opt-in" method of consent where completion of the survey is considered consent for the data to be used. In regards to the

participants I follow in-depth, full information on the study will be provided and full informed consent will be obtained from each participant before any data is collected. As geographic distribution would likely make it unreasonable to obtain a signed, hard copy consent form, I will follow guidelines set out around seeking informed consent in studies that take place in online spaces, including asking participants to return the consent form indicating their agreement via email, and briefly reviewing the study details and asking for verbal consent at the start of each interview (Eynon et al., 2008). Finally, if during observations I collect any specific information/quotations from an individual not participating in the in-depth part of the study, I will contact them to obtain full informed consent before using the data.

2. Avoid deception: Emails to participants and postings placed on the various sites will clearly state that research that is being done around rhizo15 and will identify myself as the researcher. As stated, I will maintain a detailed description of the research on my website so that at any time participants can read and comment on the study.

3. Maintain participants' right to withdraw: Participants will be informed that any or all of their data can be removed from the study at any time.

4. Avoid harm: Though the potential for harm in this study seems limited, I must be sensitive to the fact that participants come from diverse backgrounds and may have differing cultural norms or expectations. Further, as I plan on collecting demographic data, I must be wary in any analysis of using this data to make generalisations about groups of participants.

5. Respect privacy: Privacy concerns are an inherent part of research in public online spaces. I plan to take several measures to ensure anonymity and confidentiality as far as possible.

Although the MOOC under study will be identified as rhizo15, all personal names and identifying data will be removed. However, it is understood that as much of the course takes place in open online spaces, it is possible that participants may be identifiable. This will be communicated to all participants in the course so that they may fully opt out of the research, and in any instance where there is potential for specific participants to be identified, I will be sure to inform participants of this and obtain further consent. Throughout the study, pseudonyms will be utilised if participants so choose. Data will be securely stored, according to the protocols laid out by UBC BREB.

6. Debrief participants: Results of the study will be made available to all participants. In addition, I will consider debriefing individually or in a group setting with those participants I follow in-depth.

Validity

Approaches to ensuring validity in studies that draw primarily on qualitative data vary widely. As the intent of this type of research is not to make generalisations applicable to a wider population, focusing on internal validity, or an “attempt to assess the accuracy of the findings” (Creswell, 2013, p. 249), is most important. While Creswell (ibid.) labels this ‘validation’ other terms, such as trustworthiness (Lincoln & Guba, 1985), are also often used with similar meaning. Ensuring a study is trustworthy can also contribute to naturalistic generalisation (Stake, 1995) or

transferability (Gomm, Hammersly & Foster, 2000); provided a study is well designed and is sufficiently rich, the reader may see it as applicable to other situations.

As there are no specific procedures or universal criteria for determining the trustworthiness of a phenomenological study, Creswell (2013) suggests drawing on validation strategies applicable to qualitative research in general. Creswell and Miller (2000) posit nine procedures (detailed in Table 2 below) that can be used to ensure validity.

Table 2: Nine procedures to ensure validity, as applied to the current study

Procedure	Definition	Application to this study
Triangulation	Search for convergence among multiple sources of information	Comparison of data from different components of my study
Disconfirming evidence	Searching data for evidence that contradicts emerging themes	Critical examination of data from all sources after preliminary coding
Researcher reflexivity	Researchers disclose beliefs, values, and assumptions that may bias findings	Using the phenomenological procedure of bracketing to acknowledge biases, keeping a researcher journal during the study
Member checking	Taking data and interpretations back to study participants	Inviting participants to review their data and to read findings before final conclusions are drawn
Prolonged engagement in the field	Extensively interacting with the context and participants	Drawing on my experience in rhizo14, passively participating in rhizo15
Collaboration	Actively involving participants in the study	Sharing details of my study publicly with rhizo15 participants
Audit trail	Provide clear documentation of all research activities	Keeping a researcher journal, making all documents available (within ethical bounds)

Thick, rich description	Provide rich, detailed accounts of the phenomenon	Include detail in reporting my findings, particularly drawing on the participants' own voices
Peer debriefing	Review data with someone familiar with the research and/or the phenomenon	Continual feedback from supervisory committee, sharing findings with others involved in similar research

Conclusion

Anticipated Outcomes

This primary goal of this study is to contribute to an increased understanding of learning in open online environments. As Veletsianos (2013) notes,

At a time when researchers and online learning providers are embracing the use of learning analytics and big data to examine learner behaviors, activities, and actions, very few researchers have sought to gain a deep, qualitative, and multidimensional understanding of learner experiences with open forms of learning. Yet, understanding learner experiences is vital. A nuanced appreciation of how users experience open learning, including the successes and obstacles they face, will assist learning designers, researchers, and providers in refining and improving open online learning (p. 2).

This study addresses a gap in the scholarly literature that has been noted by several authors (Adams, 2014; Selwyn, 2012; Veletsianos, 2013). Commenting specifically on the lack of empirical literature surrounding MOOCs, Reich (2015) articulates his belief that studies examining how participants learn in MOOCs could both advance the field and offer valuable contributions to the science of teaching and learning. It also may contribute to the developing

field of threshold concepts research, specifically the discussion around threshold concepts in inter-disciplinary settings and threshold concepts as skills rather than conceptual knowledge. While it is acknowledged that the conclusions drawn from this study will not be generalizable, they may still hold a degree of transferability and thus may influence practice in a number of ways. For example, this study could assist course designers, instructors, and facilitators in making the most effective decisions around the design and pedagogy of open online courses. As Merchant (2009) argues “If we are more attentive to insider accounts of informal learning in Web 2.0 spaces it may just be possible to predict how more engaging and relevant practices could re-invigorate or even transform educational provision” (p.110). Framing barriers to success as threshold concepts also introduces them as a set of concrete practices or strategies that can be implemented by course instructors or designers (Perkins, 2006).

Finally, the timeliness of this study may lend to its significance. The recently released *Innovating Pedagogy* report brings together experts in the area of higher education to suggest ten innovations that “have the potential to provoke major shifts in educational practice” (Sharpley et al., 2014, p.3). Three of these innovations are directly related to this study: threshold concepts, massive open social learning (which draws on the cMOOC philosophy and format), and learning to learn (focusing on developing the capacity to learn rather than on content). Similarly, the *2014 Horizon Report* (Johnson, Adams Becker, Estrada &Freeman, 2014) cites evolving practices of online learning, including learning through participation in collaborative social spaces, as topics likely to drive changes to educational practices in the coming years.

Limitations

Although it is difficult to articulate detailed limitations of a study before the research is carried out, it is possible to consider potential limitations inherent in the design. First, as phenomenology is not a method and there are no definitive procedures to be followed, the onus is placed on the researcher to choose methods and approaches that are most appropriate to their own study (Dukes, 1984). Thus the researcher must make careful, considered decisions to ensure their study addresses the questions asked; this can be aided by reference to well-regarded literature on research design and by drawing on the methods and procedures followed by others who have conducted similar studies. A second limitation is the risk of bias in the research, particularly when the researcher themselves has experience of the phenomenon under study. The notion of bracketing (described above) can help ensure that the possible effects of the researcher's viewpoints and experiences are clearly recognised and articulated. Further, phenomenological studies rely heavily on the data collected through interviews. There are a number of limitations inherent in the interview form (Kvale, 1996), which must be considered and addressed in the study.

Limitations are also presented through the selection of a site and a sample. While the selection of the site for this study (rhizo15) was informed by a number of factors (as described above), it is of course impossible to tell before the course has run if it truly will unfold in the manner expected. It is also, of course, impossible to claim that the experiences of participants in this one course are representative of all cMOOC participants, or that the participants in rhizo15 are typical of cMOOC participants more generally, which may limit potential transferability of the findings. Further, in phenomenological studies such as this, individual participants are chosen for their ability to describe the phenomenon under study and are often self-selected. As

such the accuracy of findings depends on their ability to clearly and accurately articulate that experience, and may mean they are not representative of all those who have experienced the phenomenon.

There are also certain limitations within the threshold concepts framework. Similar to phenomenological research, there are no specified methods or set criteria to follow and researchers often draw on the method/ologies common to their discipline. While this flexibility can be valuable it can also lead to a lack of rigour, and to a lack of shared understanding due to disciplinary differences (Baradell, 2013). Further, the lack of a clear definition of threshold concepts can make identifying them challenging. This limitation can be addressed by considering a definition of threshold concepts in relation to the specific study, and by drawing on the experience of learners to identify them.

This is by no means an exhaustive list of potential limitations of this study, and consideration will be given to further limitations throughout the research process. Effort will be made to address limitations, and they will be clearly articulated in the final dissertation.

Proposed Timeline

February - March 2015	Revise proposal Develop questionnaire, interview guide Complete and submit BREB forms	
March - April 2015	Refine proposal and instruments	
April – June 2015 (course is currently set to run April 20 th through May 31 st , though these	Immediately prior to start of course	Distribute study information to course participants Administer pre-course questionnaire
	First week of course	Begin inputting and analysis of data

dates may shift)		from questionnaire Begin recruiting participants for interviews/in-depth data collection Begin observations
	On-going during course	Naturalistic observations of course spaces Analyse data previously obtained Refine post course questionnaire
	Final days of course	Begin administering post-course
	Two weeks following course conclusion	Conduct interviews Send reminders for questionnaire completion
June - July 2015	Follow up with participants to collect any missing data Transcribe interviews Input data from questionnaires Prepare data from all sources Begin coding data	
August - October 2015	Complete data analysis Triangulate data Begin dissertation draft	
November – December 2015	Draft dissertation	
January - February 2016	Refine dissertation draft Submit dissertation	
Late spring/Early summer 2016	Complete PhD viva	

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