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From an Online Cohort Towards a Community of Inquiry: International Students' Interaction Patterns in an Online Doctorate Program

Lucilla Crosta, Viola Manokore, & Morag Gray
Laureate Online Education

Abstract

The current study explored the interaction patterns of a cohort of international students in a Professional Doctorate of Higher Education program (EdD) in order to establish the extent to which (if at all) the cohort evolved into an authentic online learning community. Phase 1 of the study consisted of a retrospective audit of three out of the nine modules taught in the program (beginning, middle, and end). The audit explored a cohort of students' interaction patterns within and between the three modules. In phase two, eight cohort members participated in thorough interviews designed to gain insight into the issues that were identified in phase 1 of the study. Using the Community of Inquiry model, we discovered that a majority of the students did not feel their cohort resembled an authentic online learning community. Although cognitive and teaching presence was evident, social presence was less evident in the modules.

Among the literature reviewed, there has been no single agreed definition of "Online learning community". Tu and Corry (2002) define online learning community as electronic interactions of students as they engage in learning and activities. This definition implies that any group or cohort of online learners becomes an online learning community. Contrary to that perspective, Ke and Hoadley (2009) pointed out that not all learning environments are learning communities. Ke and Hoadley (2009) further argued that "online learning communities evolve from simple cohorts when learners elevate their engagement with each other to an emotional sense of community" (p. 489). Therefore, community members have a sense of belonging and commitment to individual and group needs (McMillan & Chavis 1986 as cited in Ke and Hoadley, 2009). According to Palloff and Pratt (1999) and Rheingold (2000), a learning community needs to be designed and continuously nurtured in order to evolve online, otherwise, it may run the risk of becoming a static entity. McConnell (2006), who carried out a study on an online master program, adds that "the cornerstone of the online community lies in the presence of 'socially close, strong, intimate ties', the development of trust, shared values, and social organization" (p. 23).

In the present study, we conceptualized online learning community as it was defined by Garrison and Anderson (2003). According to Garrison and Anderson (2003), the main three elements of "community of inquiry" are cognitive presence (as a higher order learning intent, reflection, and discussion), social presence (as emotional and social connection with other students), and teaching presence (as the mediator and facilitator actor between cognitive presence/learning and social presence).

Cognitive Presence

According to Garrison, Anderson, and Archer (2010), cognitive presence creation depends on how the learning environment encourages deep and meaningful learning. Using Garrison's (1991) model of critical thinking, Newman, Johnson, Cochrane, and Webb (1996) identified indicators for deep and surface learning approaches. Deep learning indicators include welcoming new ideas and linking ideas. Surface learning indicators include repeating information without inferences (Newman et al. 1996). Cognitive presence in an online community of inquiry is therefore more than just completing the task; it is about participants being able to construct meaning through sustained ways of communicating (Garrison, Anderson, & Archer, 2001). Though cognitive presence is about interacting with curriculum materials and learning the concepts, it is not enough on its own to sustain learning communities as teaching and social presence are equally important (Garrison, Anderson, & Archer 2010),

Social Presence

Previous research has linked the benefits of online learning communities to students' satisfaction and consequently retention (e.g. Palloff & Pratt, 1999; Rovai & Wighting, 2005). For example, Swan (2002) gave 3,800 students enrolled in 264 online courses multiple-choice questionnaires to explore their satisfaction and found out that online social interaction was highly related to student satisfaction in those courses. Boston, Gibson, Ice, Richardson, and Swan (2010) distributed the Community of Inquiry questionnaire (CoI) to undergraduate students over six semesters to explore the relationship between different components of CoI and retention. The authors identified that social presence and online interaction in an authentic online community was one of the most important factors that may enhance students' retention in online learning environments (Boston et al., 2010).

Contrary to other studies, Drouin (2008) reported that a sense of community was not necessarily connected with student retention in an online course, though it was connected with student's satisfaction. In other words, Drouin's study highlighted how some students might not feel that being part of a community was a necessary aspect of their online learning experience and stability on the course.

Teaching Presence

Shea (2006) developed a Teaching Presence Scale which was tested for validity and reliability through a random sample of online students. It was a multi-institutional study with 1057 technology students studying in 32 different colleges. Shea (2006) found that teaching presence constituted a key positive factor in improving the perceptions among students of their sense of learning community. Hence, a more participative teaching style contributed to students developing a sense of connectedness and learning, which is crucial to an online environment. Interestingly, Liu, Magjula, Bonk, & Lee (2007) discuss how the sense of belonging to a learning community was positively related to instructor's presence and facilitation. Regular course announcements, feedback, and the use of non-content related strategies (icebreakers, online coffee house, and so on) helped to boost the online sense of community and interpersonal relationship. Neither faculty nor students expected that studying online implied having some sort of social expectations (Liu et al., 2007). Additionally, research has shown that teaching presence was key in building and establishing both social and cognitive presence, as well as a community of inquiry and students' satisfaction (Garrison, Cleveland-Innes, & Fung, 2010; Joo, Lim, & Kim, 2011; Kim, Kwon, & Cho, 2011).

Swan (2002) also found that student-student interaction and student-instructor interaction enhanced students' satisfaction in an online course. However, this is in contrast to Drouin (2008) who found that the greater sense of community reported by students reflected the ability to communicate with peers rather than with the instructor. According to McConnell (2006), some of the advantages of collaborative work in a learning community are related to both high quality of reasoning and learning; and a distribution of power between teacher and student. Ford and Vaughn (2011) conducted a phenomenological study of 3rd year online doctoral students (n=14). Using the results from semi-structured interviews, they argued that trust was another key element for building a community. In order for participants to perceive each other as a community of members, they need to experience social, emotional, intellectual, and cognitive presence (Garrison & Anderson, 2003). Hence, building or facilitating the creation of an online community is also an effective matter that involves social presence and is more than a technical one where online students are simply expected to complete a task (Conrad, 2005).

However, Hodgson and Reynolds (2005) warn researchers that the positive belief attached to a learning community can become oppressive and conformist if someone deviates from the norms and, thus, becomes marginalized. Lapoint and Reisetter (2008) in a qualitative study found that while some students perceived the presence of an online learning community helpful for their learning, others perceived it as superfluous and unnecessary.

Among literature reviewed, the gap in knowledge is not about whether authentic online communities enhance learning and encourage students' persistence; but rather, it is about how learning environments support the evolution of online cohorts to the formation authentic online learning communities. At the time of this study, there was evidence that not all online learning cohorts are learning communities; neither do they all evolve into authentic online learning communities (Shackelford & Maxwell, 2012).

The aim of the study was to explore if the EdD international students' interactions and collaboration within the learning environment resembled an authentic online learning community of inquiry. In addition, we were interested in exploring whether the design of the program supported the evolution and elevation of EdD cohorts to online learning communities.
Given the international nature of students and faculty in the EdD program, the following research question guided our study: "is the online learning environment enabling learners to build, form, and sustain learning communities, where they support each other throughout their doctoral journey and increase their on-going motivation through online interactions?" We deliberately added the focus on students' on-going motivation to explore if being in a community, fostered or hindered their engagement in the course.

Methodological Perspectives

We used Garrison and Anderson's (2003) explanation of the three tenants of communities of inquiry as a lens to categorize and code students' asynchronous texts as they interacted with the learning environment. As researchers, we made interpretations about students' texts using the interpretive paradigm (Cohen, Manion, & Morrison, 2011). Interpretive paradigm acknowledges that people give meaning to their experiences in an environment and that researchers also make interpretations about such perspectives (Thorne, 2008). We relied on interrelating, coding, and analyzing existing students' interaction texts as per interpretive perspectives (Angen, 2000). The approach chosen was a single evaluative case study design (Cohen, et al., 2011) since the main

aim of our work was to look in depth at a specific case, namely a specific cohort of online students in the EdD program and its potential development into a Community of Inquiry (COI).

Study Context

The online EdD program is designed in three tutor facilitated segments, with each segment containing three modules; making a total of nine modules comprising the taught component of the program. Each module lasts 10 weeks and has a common structure comprising of whole group discussion, weekly focused questions, and smaller group learning team tasks. Learning team members was usually assigned by faculty. There was, however, a progression in terms of developing learner autonomy and peer group working with the modules culminating in segment three containing predominantly small group learning team activities.

During the course of the week, students were required to respond to their colleagues' postings on Blackboard™ by posting 3-5 asynchronous posts. The tutor was expected to contribute about 10% of the total discussion posts during the course of the week. It was participants' interactions (on class discussion forum or learning team spaces) in the three modules that form the basis of this part of the study.

The current study was approved by the university's ethical review process. During data analysis, student participants were randomly assigned numerical numbers to protect their identities. Authors did not facilitate any of the three modules that were analyzed. The authors were insiders in the sense that they are tutors in the program and know how the university's modules are facilitated. They were also outsiders in the sense that they were not part of the interactions that took place in the modules that were retrospectively audited as part of this study.

Participants

A cohort of 17 students who had completed the modules at the time of the study were invited to participate in the study. Of that, 13 students volunteered to participate in the study and gave their written consent for us to retrospectively audit their posts and learning team activities. There was no reward for participating in the study. The students represented several countries including China, India, Ireland, Japan, Malaysia, Middle East, Tunisia, United States of America, and the United Kingdom, as well as both genders (6 men and 7 women).

Data Collection Tools and Procedures

Phase one of the study consisted of auditing weekly discussions. The unit of analysis was a thread of discussion initiated by an initial submission from each student. Guided by Garrison and Anderson's (2003) framework, we analyzed for teaching, cognitive, and social presence in online asynchronous class discussions interactions in the three modules. We also wanted to explore if there were any variations from module to module or between participants (which was the purpose behind sampling modules from the beginning, middle, and end of the program).

Retrospect Module Audit

In phase 1 of the study, we audited students' interactions patterns to identify who was interacting with whom and about what. Each student's post was analyzed in modules two, four, and seven. In modules two and four, the analysis was done in weeks when students had whole class discussions. The whole class discussions are structured such that students can freely choose to whom they want to respond. Module 7 was structured in such a way that students interacted in small groups (there were no whole class discussions) as learning teams. Each learning team (in

our case there were two) had about five students assigned to the learning team by the tutor. The students' posts were categorized accordingly as interlocutor, response, or follow-up post as well as whether is it was of cognitive, teaching, or social presence in nature.

In-depth Interviews.

In phase 2 of the study, eight students consented to participant in detailed interviews. The interviews were designed to follow-up on interaction patterns observed during the retrospect audit in phase 1 of the study. The interview solicited students' perspectives on their interaction preferences, their feelings if nobody responded to their posts, their thoughts on whether their cohort was a community, as well as cognitive and social connections with their peers. The interviews were conducted over Skype™ and ranged between 30 and 60 minutes in length. The digital recordings were transcribed verbatim and subjected to thematic analysis.

Results and Discussion

The findings are presented by the following main themes: who interacts with whom, nature of interactions, teacher presence, and community formation. We also categorized students and teachers' posts in discussion forums as either cognitive or social as per Garrison and Anderson's (2003) framework. The interaction patterns observed during the auditing phase were also followed up.

Who interacts with whom?

We analyzed participants' conversations to determine the type of their post as the initiator of the discussion (Interlocutor), as an answer, or follow up to other peers' posts (Responder). From the audit analysis, it was evident that discussions were centered on certain students' initial posts more than others. Students who had more peers "writing to them" would have most posts as responders rather than interlocutors. For example, figure 1 shows who was interacting with student 14 within and between module two and module four. About 75% of student 14's posts were responses to peers who commented on her initial response to the prompt of the week.

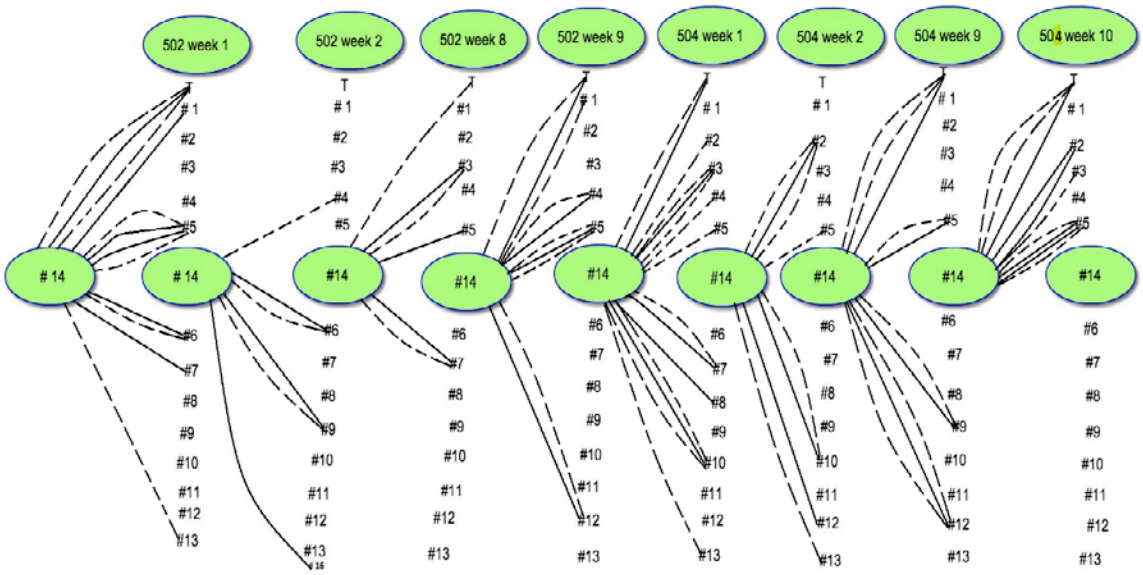

Figure 1. Student #14 interaction pattern within and between modules
Solid lines represent student # 14 writing to colleagues as interlocutor or responding, while broken lines represent colleagues writing to # 14.

Some students had more posts as interlocutors than responders to their colleagues. For example, student #3 had more interlocutor posts as compared to student 14 who had more response posts. Importantly, student 14 often had more colleagues "reacting" to her initial Discussion Questions (DQ) response as compared to student 3. Student 14 had a total of 12 interlocutor and 25 response posts in the 8 weeks (Module 2 & 4) we analyzed, whereas student 3 had a total of 17 interlocutor and 13 response posts in the same 8 weeks. It was evident that a student whose initial DQ had more colleagues reacting to it tended to have more response posts than interlocutor posts, as the student tried to respond to issues raised by interlocutor peer or tutor. Also, evident from the audit was that it possible for a student to interact more with some students. For example, student 14 interacted more with student # 5 and did not interact with student 11 in Modules 2 and 4 (see figure 1). This pattern raises the question as to whether or not students formed small communities within the cohort.

Interview participants had various explanations as to why some students had more peers commenting on their posts than others and on DQ. Student 12 indicated that he also observed that in some cases, some students' posts were not responded to and he raised that concern with his personal tutor (DDP tutor). During interviews, student 12 said the following:

> I do not know whether to call it culture or language barrier. I think it was a language barrier where English native speakers tend to aggregate and none English speakers also "group". It was a bit uncomfortable for me when I noticed such groupings. I discussed my observations and concerns with my DDP tutor and had it in my reflection. After I made myself aware about such barrier and aggregation- I started reaching out and interacting across language barriers. I am an English native speaker, so I made an effort not just to respond to native speakers but also non-native speakers. (Student 12)

Zhou and Zhang (2014) explored experiences of face-to-face international students in a Canadian university. These authors found that international students tend to hang out with other international students more than domestic students because of language, social interest, common experiences, and culture. There is some similarity between Zhou and Zhang (2014)'s findings

and participant 12's comment on how students tended to group themselves and, hence, its impact on community of inquiry formation. Participant 12 noticed the interaction preferences of most students in ways that could resemble intercultural/international understanding that requires reflecting at self as the other (Tarc, Mishra-Tarc, Ng-A-Fook, & Trilokekar, 2013). This means that participant 12 was aware of interaction patterns and would think of others as he interacted in the classroom (an important aspect in community formation).

However, student 14, who was not an English native speaker, thought it was more a case of interest as to whether they responded or not to someone else's post. She thought that students would respond to the posts that resonated with them and had something to say about the post. Two other students felt that it could relate to time zones, where those who posted first would most likely get more peers commenting. Though student 14's claims could explain some of the interaction patterns, student 12's time zone was behind that of student 4. This indicated that not all students who posted their responses early had peers interacting with them more. However, all participants shared the similar sentiments that having no one respond to their posts would be demotivating.

Nature of Interactions

From coding and analyzing students' asynchronous texts, we found out that most of the interactions were of cognitive nature. For example, 100% of the posts in the discussion forum in Module 2 and Module 4 were of cognitive nature (although participants would always have a supportive opening remark to others such as "thank you, insightful post, informative response"). We also found out that the teaching presence was of cognitive nature with some encouragement to extend the discussion. The lack of social presence in the asynchronous interactions in this study could have been compounded by many factors. For example, given the cognitive nature of the interactions, it was evident that the focus was on meeting the stated cognitive objectives of each module. It is possible that students were not expecting to have social conversations as part of their interactions in the module (Liu et al. 2007). The lack of tutor mediation on social presence might have contributed towards a general lack of social presence in the modules audited. In addition, the program required tutors to facilitate the learning process to help students meet the stated cognitive module learning outcomes. It is also pertinent to note that this online professional doctorate program is part-time, therefore time management between their studies, professional, and social life could also factor into the lack of social presence. However, the fact that there was no evidence of the social presence in audited texts does not necessarily mean that participants did not have social interactions outside the online learning environment (a possibility that was explored in phases 2 of the study).

The follow-up interviews confirmed the lack of social presence and social aspects in the EdD program. Almost all of the participants stated that they rarely, if ever, had contact outside the module during the program. Student 14, for example, reported that there was only surface level of social aspects because there was no room for social relations in the program. Student 10 indicated that she fostered her relationship on a more professional level since there was limited opportunity to develop strong ties. For her, performing activities during the program and being polite was the major goal. She stated that she preferred to be an independent learner. Although Student 5 considered the

module very task oriented, he recognizes the importance of having more social aspects as this would help in learning more from each other and building something together.

Student 8 explained how he usually connected more with the content than with people. He stated he did not connect with anyone outside of the modules for the entire program. However, during the interview, he provided an interesting idea on the importance of the initial personal introduction of each participant and how providing video clips on this could help in enhancing the relationship.

Student 6 discussed how he developed relationships with colleagues, developed a feeling of belonging to the program, and how he got in touch with others outside the module. He also reported a high number of social posts in the discussion board during the audit phase. Student 13 agreed that there was a social presence in his view because he got in touch with others outside the module via Skype in order to discuss personal and family issues. When the discussion touched issues other than the academic ones, then it becomes social. Student 13 added that personal connections outside classroom fostered a sense of belonging and motivation to complete the program as a cohort.

Student 12 however, presented a different view on the issue and urged the university to do more in terms of supporting social presence in the program:

> There was no personal connections though we were polite and formal during interaction. There was no strong connection though there was friendly communication. I think if we had more non-academic discussion, then we would feel more connected at personal level. I think socialization is important, need activities where people let down their guards and interact at a more personal level… I think it is important to improve socialization, I do not know how this can be done but I know it is possible. The socialization does not have to be academic but just something for personal connections. We were polite to each other but not connected at personal level (Student 12).

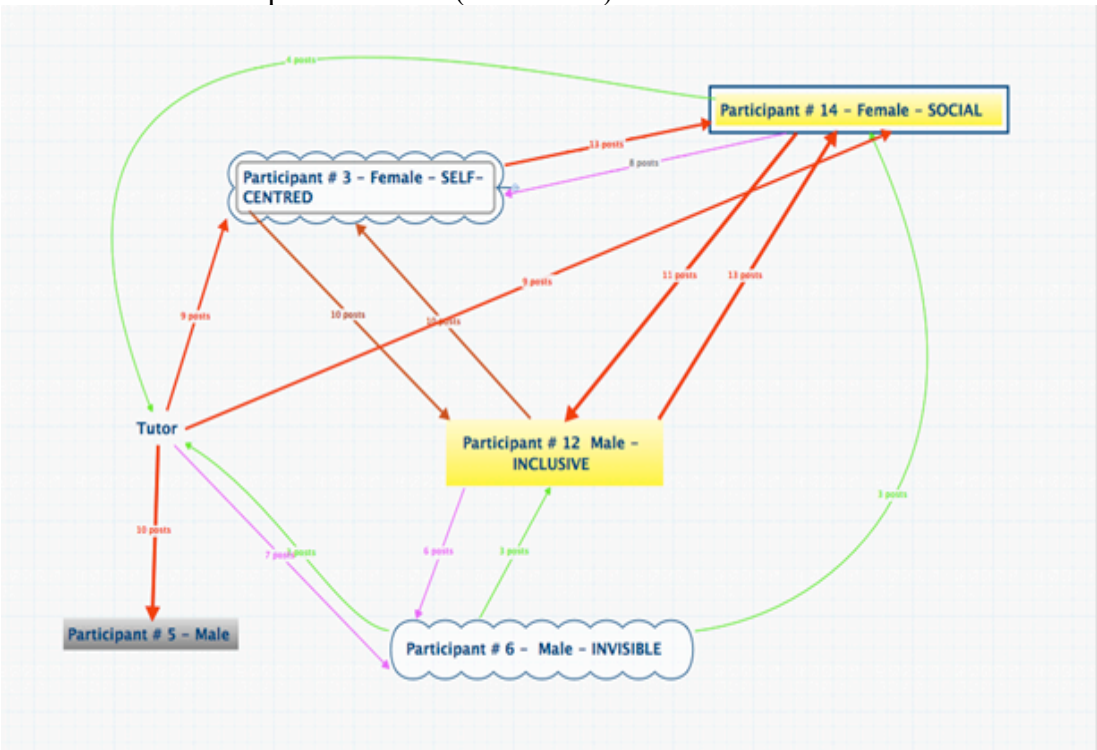

Figure 2. Interaction patterns in module 7 learning team

Tick red lines represent lots of posts exchanged from one student to another, whereas thin colored lines represent less post exchanged among students

Figure 2 shows the different interaction patterns of students in module 7 in their small groups that are referred to as learning teams. Based on who was interacting with whom, it was evident that Student 12 had an inclusive approach since he interacted with all group/team members. This could have been because he mentioned that he was not comfortable to "see" other students being left out in discussions. We referred to student 14 as social because she also posted a number of social posts. Student 3 had a pattern that was different from her peers. She responded only if somebody wrote to her and she rarely initiated a discussion, hence, we referred to her as self-centered. In both small group/team and whole class discussions, not many students responded to student 6 posts and we referred to him as the "invisible student".

During interviews, student 6 indicated that at times peers do not have time to read and comment on all posts. He did not seem to care about being not responded to. During interview, student 6 said the following:

> I realized I would do the same just because of a lack of time. So I realized they don't need to reply – they have a lack of time too. Besides they would reply in another format, in another discussion format so I would know that they had read it. I would never take it personally. Usually the professor would reply or acknowledge your point so it worked out perfectly in the end. There was no personal hard feelings – it worked out (Student 6).

Student 6's response showed that though we "labeled" him invisible, he was not very concerned about not having peers interacting with him. He thought that as long as the tutor responded to his post, he had nothing to worry about. His comments reflect the important role of the tutor in online discussions.

Teacher/Tutor Presence

In this study, we found that teacher presence was an important component in online interactions. Retrospect audits showed that though module tutors were supportive in their responses, their posts were cognitive in nature. We also observed that students were most likely to respond to the tutor than their peers.

Student 13 indicated that since the program attracts international students, tutors needed to be more culturally sensitive and said the following:

> Some teachers- they need to be culturally sensitive, at times they are not sensitive to different cultures, either in the way they interact with others which might be detriment to some students. In some classes/modules I got the impression that teachers have favorites. Maybe it was difficulty for them to interact with all students then they pick certain individuals. Some teachers would go round and pick all students as they go through the module. Some teachers from week 1 they talk to certain students throughout the module, that gives the impression that others are not important. Some might not be aware that is what they are doing though some are aware of the fact that they pick which students to interact with. …. I was not affected as such but I know there were some of my colleagues who were affected and they had to write to the tutor expressing their concern. My overall experience was positive and enriching (Student 13).

Student 13's quote made us reflect on the role of the tutor in an online environment. The interactions are text-based and students would notice who the tutor is "talking to". Hence, highlighting the importance for online tutors to make sure that they "talk" to all students over the course of the module. Students viewed the role of the tutor as that of being a knowledgeable expert: supportive, encouraging, motivating, and culturally sensitive. The following quotations illustrate the findings from this theme:
"Having an interesting introduction from the tutor at the beginning help to set the relationship between tutor and students" (Student 10) and "The tutor plays a key role in the community but this varied from tutor to tutor… I feel connected with some tutors while I did not with others, they have to help connecting and make ties" (Student 8).

Learning Community Formation

Nearly all the participants interviewed indicated that their cohort did not resemble a learning community in the truest sense of the term. It is important, however, to note that although at the beginning it was like dealing with strangers (Student 10), they became more familiar with each other towards the end of the program. For example, Student 10 mentioned that each time they started a new module she would look for familiar names in the class list and that provided relief.

Student 12 did not feel his cohort was fully a learning community because he never got to know his colleagues (this was attributed to how cohort composition changed module after module thereby losing touch with each other). The definition participants gave about learning community is best illuminated by student 5, since he mentioned a clear difference between a team and a community and he stressed the importance of connections and the presence of friends: "... a community is where you really engage with everyone and you make friends, connections and then you are connected with them for years, that did not happen for me".

He also declared that he missed the sense of being part of a community of learners because modules were very much task and goal oriented and this impacted on the community. Student 13 provided another definition of learning community where encouragement was enhanced, together with closeness again. However, he confirmed that he did not feel part of that community and that he did not get closer with all of his peers. "Learning community is not just about school, it is about support, encouragement and closeness. I got to be friends with some but not all in my cohort" (Student 13).

Student 12 added that connections developed better in small online teams than in bigger ones, although socialization was a key aspect missed in the community. "Yes, I think the levels of interactions and personal connections matter and impact the formation of a community. In Learning Teams, we had better connections than discussion questions (forums) think there is need for more socialization" (Student 12).

In summary, although this EdD cohort did not form a real learning community as defined by Garrison and Anderson (2003), it seems like there was an overall need for a social presence while learning online. Words like "Closeness, encouragement, friends, and small teams" were repeatedly discussed by participants on several different occasions, together with the need of and the importance of socializing online. Social exchange indeed partially happened inside learning team in Module 7.

Conclusions and Recommendations

This study focused on investigating and reflecting if and how a real Community of Inquiry established in this cohort of the EdD program after up to three years of working together. Clearly, if we define the COI as a place where students take responsibility for their learning and challenge each other's ideas in respectful ways, composed by cognitive, teaching, and social presence (Garrison & Anderson, 2003) it was found that not all students were challenging each other's contributions and this manifested particularly in earlier modules.

"Cognitive presence" is a higher order learning intent- reflection and discussion and it was a central part of the community in this cohort (Garrison & Anderson, 2003) since it was related more to the cognitive process or learning and connected tasks. If we consider "social presence" as emotional and social connection with other students (Garrison & Anderson, 2003) and consider that social presence helps online students to overcome their feelings of isolation (Joo et al., 2011), then social presence was not overtly present among students in the present study. Although the study by Dawson (2006) stated that high level of interaction among peers was positively associated with a strong sense of community, we can only postulate, at this stage, that the type and kind of communication taking place in all the three online modules across the program created a "pseudo online learning community" in within this cohort of students.

Students and tutors tended to exchange more cognitive posts in nature, rather than social ones. The presence of the tutor was cognitively supportive towards students who were more "invisible" in that their posts were not responded to by colleagues in the class. Indeed, the interviews confirmed that only a few students had additional interactions with peers outside the module (i.e. Skype) or cultivated friendship with peers after the end of the module. Last, but not least, students who tended to post later in the week seemed rather excluded in the discussion from their peers and the tutor usually engaged with them from a cognitive perspective.

From this small study, we can state that although students did not form a real online learning community, they declared its importance and the need for making more social connections with others. Although social presence was another missing element in the program, students considered it as a key element while learning online and for helping each other. We found that the role of the tutor was key in the online interaction patterns among students. Although it was focused on cognitive aspects of the course rather than on social ones, students found tutor role to be key in encouraging, supporting, and connecting during the module. Further studies are needed in order to understand how the role of the tutor may impact the formation of the community and students' motivations toward the program. Additional research is also needed to identify how faculty can support cohorts to develop into communities and maintain such communities throughout the program.

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