

Lee, K., & Brett, C. (2013). What are student inservice teachers talking about in their online Communities of Practice? Investigating student inservice teachers' experiences in a double-layered CoP. *Journal of Technology and Teacher Education*, 21(1), 89-118

What are student inservice teachers talking about in their online Communities of Practice? Investigating student inservice teachers' experiences in a double-layered CoP

This qualitative case study is the first phase of a large-scale design-based research project to implement a theoretically derived double-layered CoP model within real-world teacher development practices. The main goal of this first iteration is to evaluate the courses and test and refine the CoP model for future implementations. This paper demonstrates the potential synergies between two major approaches to teacher professional development practices: i) teachers' CoPs development and ii) online teacher education courses. The double-layered CoP model could provide a practical integration of the two approaches by providing student inservice teachers in an online graduate course with meaningful opportunities to participate in two different teachers' CoPs: i) an internal course CoP and ii) an external professional CoP. Our analysis of student inservice teachers' CoPs experiences shows that the two layers of CoPs supported each other iteratively through the course period. Several design considerations for the second iteration of the online course design are also addressed.

Introduction

There have been emerging efforts to develop student inservice teachers' Community of Practice (CoP) in the field of teacher professional development (Darling-Hammond & Bill, 1997; Hawkins, 1996; Kooy, 2009; MacDonald, 2008). Applying the concept of CoP into teacher development practices shows great promise in enabling graduate student inservice teachers without enough time or resources to focus on improving their teaching practices, to build professional relationships and to interact with peer-teachers. Through these ongoing interactions in CoPs, student inservice teachers have the extended opportunities to reflect on their teaching practices and learn from other teachers compared to attending occasional single workshops that are less closely connected to their classrooms (Darling-Hammond & Bill, 1997; Kooy, 2009).

As technological innovation and the societal importance of online interactivity increases, there has been a parallel emphasis on encouraging technological integration into teacher professional development practices through means such as constructivist approaches to online teacher education course design, which emphasizes learners' use of different kinds of interaction and reflection as means to construct their own knowledge. The major purpose of online course design is not to deliver particular knowledge or skills to student inservice teachers, but rather to provide them with opportunities to interact with peer-teachers, regulate their own learning processes; and furthermore, transfer the learning outcomes to their real-life practices (Laferrière, Lamon, & Chen, 2006; Marra,

2004; Schlager, Fusco, & Schank, 2002; Thompson, Schmidt, & Davis, 2003).

Unfortunately, these two major vehicles for teacher professional development practices, namely teachers' CoPs development and online teacher education courses, have not been practically integrated with each other; even though there have long been efforts to build community through online courses (e.g. Conrad, 2005; Rovai, 2002; Paloff & Pratt, 2007). The limitation of previous studies may rest in a lack of recognition of the two approaches' potential synergies or a holistic understanding how the two approaches are connected to each other. To better articulate the educational potential of this synergy, this study aims to clarify the relationship between student inservice teachers' online course experiences (which are calling an internal CoP as it involves just the students in the course) and their participation in external teachers' CoPs (student inservice teachers' professional teaching communities) rather than concentrating on each approach separately. Based on deeper understanding of the relationship between two approaches, this design-based qualitative case study will suggest a double-layered CoP model as a way to conceptualize the relationship between the two and to clarify the kinds of instructional interventions that support such synergy.

Theoretical Framework

This research draws upon two theoretical sources, Communities of Practice and constructivist approaches to online course design. Previous studies in teacher professional development field are also critically reviewed to understand their limitations and suggest research considerations for this study. Based on the results, a double layer CoP model integrating two approached to teacher development will be offered as a theoretical framework.

Community of Practice

The original concept of "community of practice" was proposed by Lave and Wenger (1991) to describe learning through active participation in the practices of social communities - an approach based on situated learning theories and assumptions. The basic argument is that CoPs consist of groups of people who share a common interest and a desire to participate in and contribute to the practices of their communities and that all individuals are involved in multiple CoPs at work, school, or even at home. Wenger (1998) describes the structure of CoP as involving three interrelated processes. First, through participation in community, members build collaborative relationships called

“mutual engagement,” which ties members together as a social entity. Second, the members create a shared understanding of what they are doing together by continuous interaction and renegotiation through their practice, which Wenger calls “joint enterprise.” Third, the community produces a set of communal resources, called “shared repertoires”. The structural characteristics of CoP have been recently redefined slightly by Wenger, McDermont, and Snyder (2002) and termed “domain”, “community”, and “practice” respectively. A CoP has an identity defined by a shared domain of knowledge, which creates common ground, inspires members to participate and guides their learning. In pursuing their interest in the domain, members engage in joint activities and interactions to share ideas, and build relationships that enable them to learn from each other. A CoP is not only a community of interest or learning; members in CoP as practitioners develop a shared repertoire of resources for their practice. While all CoPs have these three elements, they come in a variety of forms and members develop their practice through a variety of activities. Wenger et al. (2002) suggested a few typical examples of activities in CoPs such as “problem solving, requests for information, seeking experience, reusing assets, coordination and synergy, discussing developments, documentation projects, visits, mapping knowledge and identifying gaps.”

Constructivist Approaches to Online Course Design

Constructivist ideas initially arose from Jean Piaget, who suggested that through processes of accommodation and assimilation, individuals construct new knowledge from their experiences (Huitt & Hummel, 2003). The fundamental principle in Constructivism is that the learner is the center of the learning: learning being a knowledge construction process mediated through an individual learner’s active interpretation. Vygotsky (1978) further suggests that knowledge is first constructed in a social context and then is appropriated by individuals and that individuals can solve problem beyond their developmental maturities with other’s help, which is the concept of the “zone of proximal development”. Based on Vygotsky’s notions, different constructivist learning theories and models have been proposed, all of which emphasize interactions and collaborations among learners to construct knowledge and solve problems in social contexts. “Situating learning” is one of the theories contributing to constructivist approaches that arose from social and cultural perspectives on knowledge construction (Lave & Wenger, 1991). It puts more emphasis on learners’ active participation in different levels of interactions and real-life practices as learning processes.

Furthermore, social web technologies have facilitated the design of better constructivist learning

environments, enabling learners to more easily regulate their own learning activities and construct personal knowledge through interacting with other learners, than has typically been the case in traditional physical classrooms. Various online course design models and principles have been suggested based on Constructivist ideas. Ally (2004) proposes an online learning model, identifying four important learning components that should be considered when designing online courses. The model consists of four major learning phases: “learner preparation”, a variety of pre-learning activities to motivate and prepare learners for courses, “learner activities”, a variety of individual learning activities to build personal understanding, “learner interaction”, a variety of interacting activities between the learner and learning contents, peer-learners, and contexts, and “learner transfer”, a variety of opportunities for learners to transfer what they learn to real-life applications. The time and opportunity for learners to reflect on their learning and internalize the knowledge is also a key important component for online course design.

Hung and Der-Thanq (2001) apply both CoP perspectives and constructivist learning theories to online learning environments and suggest four online learning principles and design considerations that contribute to a sustained community. The four online learning principles are “situatedness”, where learning should be embedded in a rich social context and focused on reflective tasks; “commonality”, suggesting learning should involve identity or membership formation and be socially constructed; “interdependency”, where learning should be socially distributed between persons and tools and dependent on engagement in practice; and “infrastructure”, where learning should be facilitated by activity, derived by proper mechanisms and accountability structures. This study provides a good example of how CoP experiences and constructivist learning theories could be harmoniously incorporated in online course design. From the two major theoretical stems of CoP and constructivist online course design, the importance of the close connection between learning activities and professional practices is suggested. In parallel, active interaction through shared practices among learners is suggested as critical for successful learning in both theoretical positions. As the following examples demonstrate, those foci also have been substantively discussed and applied within the field of teacher professional development.

Teacher Professional Development Practices

The attempts to apply both CoP concept and constructivist online course design principles into teacher professional development practices are various. One important example by Schlager and his research team (2002) was an online CoP, called “TAPPED IN”, built for teacher professional development, which incorporated many CoP principles.

They suggest a systemic education CoP has three major functions; it enables teachers to participate in self-motivated teacher development activities from their workplace; teacher development organizations can cooperate with each other and improve their service quality; and different education agencies organize and host online CoP activities including online teacher development courses. Wang and Lu (2012) also show how a school-based online teacher CoP facilitates teachers' subject knowledge and transforms their teaching practices over time. The research demonstrates how participating in an online CoP can enable teachers to share their practices, reflect on their teaching and gain new subject knowledge through interacting with peers. However, there continues to be some resistance among teachers to online CoP participation as a mean of professional development and also towards the use of innovative communication technologies mostly due to sufficient knowledge and experience with them.

Several studies identify successful online course design principles for teacher professional development (Hramiak, 2010; Johnson, 2004; King, 2002; Marra, 2004; Slaouti, 2007; Thompson, Schmidt, & Davis, 2003). Slaouti (2007) suggests that online courses provide situated learning experiences by facilitating learners' reflection about both learning processes and teaching practices and by building the CoPs among learners. In Slaouti's (2007) online course model, an entire course is divided into eight stages, which have different foci, inputs or tasks and learning proceeds through repeated sequences of teaching, learning and assessment processes. Hramiak (2010) suggests a blend of online and face-to-face learning environment for both enhancing learning experiences and also creating teachers' communities. Hramiak's (2010) study also emphasizes the blend of in-service teacher' learning activities and their teaching work through the course; however, this research still shows the challenges of maintaining a sense of community and facilitating open communication. In same vein, Tsai (2011) focuses on how to sustain in-service members' participation in online CoPs, built through their pre-service teacher education courses, and how to improve the effectiveness of computer-mediated communication tools to foster their ongoing discussion. Even where Tsai suggests online CoPs as an alternative form of teacher education to traditional course-based learning, members' participation was mainly shaped by the course design elements of task requirements and discussion activities. Thus previous studies in teacher education have pointed to the close connection between CoPs and online courses; suggesting that the two approaches are not simple alternatives to each other but could be complementary, which is the perspective we are taking in this paper.

Limitations of Previous Studies and Rationale for this Research

One of the most common limitations of previous studies in the teacher professional development literature is the lack of clear definition or usage of the key concepts. Most significantly, similar-sounding terms are used somewhat loosely including: “community of practice”, including “community of learners”, “learning community”, “teaching community”, “online community”, “school community”, “knowledge-building community”, and in many cases, just “community”. Those terms are often used interchangeably as synonyms without clear classification. Of course, this is not a problem only in the teacher professional development field, as Barab & Duffy (2000) claim, it is also a serious problem in most educational research fields. Interestingly, Wenger (1991)’s early notion of “Situated learning” applied to all of these communities, even though Wenger suggests “practice” as the important structural characteristic of a CoP, and the one that can best distinguish other “community”-related terms from that of a CoP. He also described the “community of learners” in his later book (2002) as the community that may be relatively easily developed in school settings, where it is difficult to have shared practice across schools. Therefore, the notions of community and CoP have different characteristics and should be used separately.

Another related problem is the overly broad use of the term “CoP” which, without more explicit definition may gradually weaken its original meaning. For example, several studies in the teacher professional development field including pre-service teacher education give suggestions on how to design teacher education course so as to foster CoP development (Schwen & Hara, 2003). However, the term CoP in many studies is used simply to refer to a group of students who work collaboratively and interact actively for course assignments. Therefore, recommendations from such studies are usually focused on how to best support student’ collaboration or social interaction, but this approach alone cannot connect students to real-life practice or problem solving. The lack of the connection to practice weakens the CoP related claims of such studies. A clearer instantiation of the original definition of a CoP and its appropriate application would make research studies on CoP’s much clearer and more useful.

To avoid such issues, we developed specific research considerations for this study. First, the term CoP used here is based on clear criteria, taken from Wenger’s original definition and description of CoP characteristics. Second, this study will distinguish the interaction among learners’ from the practitioners’ mutual engagement, and also distinguish the learners’ group projects from the practitioners’ joint enterprise, and finally will distinguish the learners’ discussion postings from the practitioners’ shared repertoires. To achieve this separation, the double-

layered CoP model described below provides student inservice teachers with opportunities to participate in two different kinds of CoPs: one is an CoP formed through student inservice teachers' collaborative practices within a constructivist online course (an internal CoP) and the other is a professional CoP existing outside of the course environment (an external CoP). With the goal of developing more effective strategies for teachers' professional development via rich CoP experiences, this paper will focus on describing the mechanism that allows two such CoPs to be so closely connected to each other as well as any synergies that may arise. Thus, before any proposal of integrating or connecting these CoPs, we first need to develop a deeper understanding of the relationship between student inservice teachers' internal course CoP experiences and their external CoP.

A Double-layered CoP Model as a Constructivist Online Course Design

Based on the theoretical framework, a double-layered CoP model is suggested as a fundamental design principle for developing constructivist online courses for teacher development. Alley's (2004) online leaning model is selected as the structure for the constructivist online course. The four specific learning activities in the original model, learner preparation, learner activities, learner interaction, and learner transfer have been revised as course preparation, foundation building, interactive learning, and knowledge transfer according to this particular research context. Between each phase, a series of reflection activities are added to the double-layered CoP model based on Schön's (1983) concept of "Reflection on Action" in which practitioners consciously reflect on their behaviors and often document growth toward the deeper understanding and intentional change critical for meaningful learning (Schön, 1991). The first phase, "course preparation", is the period of time before the course starts after learners register in an online course. In this phase, learners may be provided with course instructions or orientation by instructors and have an opportunity to visit the online learning environment and engage in preparatory activities, such as sharing their biography with other peers. Technically this phase is not an actual part of course activities and is usually hard to observe or document in much detail beyond the data captured by automatic tracking data of use of online functions. Reflection on this phase for an instructor is usually focused on checking students' previous knowledge and experiences, answering student questions, setting individual learning goals or selecting learning strategies for this course.

The second phase involves "foundation building", in which individuals learn to build personal

understanding by reading course reading assignments, searching additional learning resources, or seeking further understanding individually. Often, individual learning can directly accompany knowledge transfer, which is the last phase, through deeper interaction with reading content. Also, individual learning can be closely connected with interaction with others, which means that there is often no clear boundary between individual learning and collaborative learning. Reflection on these activities tends to be common in online learning; in many online courses, learners are required to write reflective journals regularly through which to reflect on what they learned from reading or individual research.

The third phase, “interactive learning”, is the main learning process through which learners experience different levels of interaction in online learning environment. Learners interact with learning contents such as peers’ postings, discussion topics and instructors’ comments; they interact with peers by exchanging knowledge, providing feedback, asking questions, and sometimes socializing; and they interact with contexts including both the learning environment and the real world. The learners in this phase may develop a large number of course artifacts and reflect on their interactive experiences by writing reflective journals, responding to peers’ ideas or receiving instructors’ feedback on what they are doing. Based on individual learners’ needs, they can also go back to individual learner activities.

The last phase, “knowledge transfer” is the ultimate goal of learning, in which learners apply what they learn to their real-life practices. These phases are not always linear, for example knowledge transfer may also occur sometimes during individual learning or group interaction, not only at the end of the course. In fact, effective constructivist-based online courses try to provide learners with rich opportunities to connect their learning, throughout the course, to their daily-life practices in order to foster knowledge transfer. Thus while for purposes of clarity each learning phase in the model is described separately, all phases can, and do occur at various points and learners can be part of more than one phase at the same time in the actual online learning environment.

In order to develop a constructivist online course specifically as a CoP, we have added the structural characteristics of a CoP (Wenger et al., 2002) to Alley’s learning model. First of all, “the shared domain of knowledge” is integrated. This creates common ground and can inspire learner to participate in shared activities. All learning phases are relevant to the CoP domain and guide the entire learning process - from the learner preparation phases through social interaction among learners. The second characteristic of a CoP integrated in the online course

structure is “the community”. This refers to joint activities and interactions where ideas are shared among learners while they build relationships with emerging levels of trust that facilitate their mutual learning opportunities. The last CoP characteristic is “the practice” and this is the distinguishing criterion with which to assess the presence of a CoP in an online course.

Even though the learners have a shared domain and build relationships, if they do not develop a shared repertoire of resources for this practice, it is hard to claim that a CoP has been truly developed in the course. And here, the practice is not just course projects or assignments, which are inevitably separated from real-life experiences; ideally the practice should be also connected to a learner’s real-life practices as well as being shared with other peers. While each CoP may have a different form or activities, all CoPs should contain all three characteristics. In turn, actually developing an internal CoP can be as difficult as knowledge transfer itself. However, Wenger and his co-researchers’ (2002) examples of key activities in CoPs give some important indicators of how we might assess the existence of a CoP, including elements of problem solving, requests for information, seeking experience, reusing assets, coordination and synergy, discussing developments, documentation projects, visits, mapping knowledge and identifying gaps.

In parallel with nurturing an internal CoP inside the course environment, students are encouraged to search and participate in an external online CoP outside the course based on personal interest and need. By introducing the fundamental concepts and structures of a CoP through providing a number of examples of existing professional CoPs outside of their courses, such participation in external CoPs can be structured. Student experiences in external CoPs might be diverse in domain, as well as in pace of peripheral participation. Despite these differences and the individual nature of their experiences, students are asked to continuously share their experiences on returning to the online course environment. Both through posting individual experiences, and also reading others’ reflections and getting feedbacks from peers, students can increase their reflective learning opportunities and improve both their external and internal CoP participation.

Research Questions

This study seeks to answer the following three research questions:

1. How do student inservice teachers in an online course perceive their internal CoP participation?
2. How do student inservice teachers in an online course share their external CoP participation?
3. How are the two layers of CoP participation (online course and external CoP) actually interconnected?

Methods

This qualitative case study is the first phase of a large-scale design-based research project to implement a theoretically derived double-layered CoP model within real-world teacher development practices (Collins, Joseph, & Bielaczyc, 2004). For the present study, we analyze the complex educational phenomenon involving these two elements a) student inservice teachers' internal CoP participation and b) their external CoP participation. The researchers are a graduate course instructor and teaching assistant who closely investigate student inservice teachers' online discourses and interactions through participant observation. The goal of this first iteration is to evaluate the effectiveness of the course structure for facilitating and supporting the two CoP elements and test and refine the CoP model for future designs. Therefore, the results in this paper mainly contribute to evaluating the viability of the double-layered CoP model and suggesting those revisions to the design of the online teacher education course that seem to be most important.

Sampling

One graduate online course at Ontario Institute for Studies in Education (OISE) has been purposefully selected to answer the research questions in this study. Twelve participants in this course are student inservice teachers and educators who are pursuing graduate studies in both MA and PhD programs at the same institute for their professional development. They have diverse demographic characteristics, online learning experiences, teaching experiences, and technology competences. The course is twelve weeks long and discussion-based using online readings and resources in an asynchronous conferencing environment developed in the institution, called Pepper. In this course, pairs of student inservice teachers lead the weekly discussion by identifying critical questions from the assigned readings and facilitating class discussion. Throughout the course, the students conduct a collaborative case study based on a particular educational context in which they are involved, and additionally write learning journals to reflect on their learning within the course and in their professional context. The final group assignment is the

design of a Computer-mediated Communication (CMC) environment with effective features for a specific group or a particular educational purpose.

Simultaneously with working on course assignments in the online learning environment, students are asked to participate in an external online CoP, which relates to their own subject matter and domain interests. Through learning journals and weekly discussion, they share their experiences related to their external CoP participation and respond to each others' ideas. All twelve students are invited to participate in the research project and provide written consent for their work to be analyzed for this study. Additionally particular students are selected for a semi-structured follow-up interview based on interesting aspects of their online contributions.

Measures and Data Collection

The course artifacts in the online environment are used to look for deeper insights into the research questions. Those qualitative data include discussion threads, learning journals, course assignments, and chat records written by student inservice teachers throughout the graduate course. Students also participate in semi-structured interviews that focus on 1) additional description of how the participants perceive their CoPs experiences and 2) in-depth explanations about why they wrote particular ideas in the online course environment. Additional data sources include researchers' field notes for deeper understanding of the results and to resolve possible questions that arise through data interpretation.

Teachers' Online Course Experiences as an Internal CoP Participation

Even though student inservice teachers' course experiences varied according to their personal and professional characteristics and background, certain patterns were observed. In this section, we describe these patterns of student inservice teachers' learning experiences in the online course as internal CoP participation using the learning phases postulated in the double-layered CoP model.

Phase 1: Course Preparation

During the first two weeks after joining the course, student inservice teachers explored the learning environment and course requirements and wrote their biographies to introduce themselves to the rest of the group. Through sharing information about themselves such as personal traits, professional histories, online experiences, and learning styles,

students developed a mutual understanding about the class. A great number of comments included greeting, sympathizing or complimenting such as “nice to meet you!”, “hello, again” “me, too!”, “I am with you!”, “very interesting”, or “thanks for sharing.” Even though the students had never met each other in person, there were greater efforts and opportunities to find something in common and know about their peers than in most face-to-face classes. There were 16 original biographies and 126 replies in total indicating that all participants interacted with some other participants through reading the class biographies and writing comments to each other, as illustrated in the following examples:

Lesley: Olive, it sounds like you would be great to meet in person! I work in OOO too. From my work, I have observed that individuals who have qualities outside what is expected are often most effective, impactful and memorable - 3 additional strengths to add to your list. Hope you were able to enjoy this amazing summer with your curious daughter. It certainly was beautiful... just not for our grass...

Tina: I also took [the course] and it allowed me to negotiate my relationship with how I view and use computers for teaching and learning. Definitely a great class! Videos as tools for learning from an individual and collective intelligence strikes a newer avenue of learning opportunities that is gaining much popularity. I look forward to hearing more about your research as it unfolds in this class.

We, as instructor and teaching assistant, were also engaged in this social introductory process both modeling interactivity and creating a sense of our own presence to the students. To further facilitate the sense of community among the class, the instructor videotaped and uploaded a short greeting and introduction while the teaching assistant organized the informal chat sessions, encouraging participants to join in:

Tina: Yesterday, Hera and I met in a chat room as scheduled and had a great time informally connecting with one another. It would be great if we could keep up these informal chats as a way to stay connected and build community through this class. Looking forward to chatting with you all online at some point.

Overall, this first phase “course preparation” prepared the student inservice teachers not only for their individual learning but also for the collaborative learning experiences and for developing a CoP relating to their own professional context.

Phase 2: Foundation Building

We emphasized the formation of an internal CoP through the course interactions as being an important goal of the

course. Also, each student was asked to search and participate in a CoP external to the course and share those experiences with other members in this course community. In order to orient teachers to the course and establish a common ground of CoP, papers about the concepts and characteristics of CoP and collaboration were provided as a first reading assignment. We asked teachers to write about their previous experiences of CoPs and collaboration in response to a set of questions such as, “what do you like or dislike about CoP experiences and activities?” and “what do you consider to be your strengths and weaknesses when working collaboratively?” Both concerns and expectations about the course that required deep collaboration within a CoP were salient in their first writings:

Jim [I am a slow thinker]: I find it difficult to speak my opinions effectively because I think and formulate my thoughts into words more slowly than most people. It has often been frustrating for me to work with people who just ping pong ideas back and forth because the discussion goes at a pace that is too fast for me to formulate and say what I want to say in a coherent and articulate manner.

Alex [I am a fast thinker]: I also find that when I am working with others, I tend to get ahead and want to develop the bulk of whatever we are doing as soon as possible because I feel that if times goes by, then we will be rushing in the end ... I like to discuss ideas and develop them fully but in order to do this collaboratively I like to put it all out on the table first and then work through it with my colleagues. I find that my thought process and development is not necessarily conducive to collaboration because I have been told it overwhelms people.

Lesley [I can draw a big picture]: My strengths when working collaboratively are staying attuned to the big picture and mobilizing each person’s strengths to produce a formidable final product ... After I initiated each task, I encouraged each person to continue the work I had started based on their interest and strength. I scheduled synchronous chats with the group each or every other day so that we could discuss our progress or challenges on an ongoing basis ... While my preference is not to be in a project manager role, it is definitely one of my strengths that I will use when necessary when participating in collaborative work.

Gerald [I enjoyed!]: I enjoyed the sense of camaraderie that is developed as people come together for a similar cause. Even though most of the members of my CoP are from different disciplines and have different focuses ..., it has been fascinating to see how these different views and positions interpret things so differently. As articles are shared, for example, I find the focuses to be fascinating and varied. Yet, there is a certain flow to the sharing that makes the community feel like a cohesive space. Further, everyone is so respectful and interested in learning more that it is a very positive space to be.

Based on our analysis of the teachers' initial writings and responses to each other, we found that one of the most important course design considerations is to provide the class with an opportunity to reflect on their previous collaboration experiences as well as their personal characteristics as a member of CoPs. As Jim and Alex's reflection also show, through this assignment, the class was able to develop a better understanding of complex dynamics of collaboration among different participants who may have very varied learning styles. The teachers also shared a variety of views about the value of CoP as reflected in the academic literature. Most students agreed upon the merits of CoP participation as Gerald's note indicates, even though there were a number of concerns, and students seemed articulate about the strengths they were able to bring to bear on the collaborative activities in the course. Thus, all students mentioned their own ability to contribute in particular ways to the collaborative work in the course. This self-reflection and discussion provided a meaningful context in which to introduce the goal of developing and nurturing a CoP through deep collaboration among participants who bring different perspectives, interests, expertise, and experiences to the community.

We found that each student inservice teacher constructed different concepts of CoP and their levels of understanding were varied although most of them were already familiar with CoP as a concept. However, as discussed earlier in this paper, in the literature on CoP, the term has been used to refer to all kinds of disparate communities. For example, Brenda said, "I love the thought that my family of six is its very own COP. Even if this is too unconventional to fit the serious definition, I will continue to think of it that way, for my own enjoyment and satisfaction." Liz also addressed her experiences of sharing the recipes with people in several cooking groups on Google+ as active CoP involvements. We, therefore, decided to provide a clearer explanation of three crucial characteristics of CoP suggested by Wenger et al. (2002); the domain, the community, and the practice. The following is the part of the instructions we posted with a title "How to find the right online CoP for you!" to facilitate the teachers' understanding of CoP and guide their external CoP searching:

That is, not everything called a community is a CoP. When you wander around web sites to find a CoP in which to participate, remember the three defining characteristics: **'the Domain, the Community, and the Practice'** ... A single conversation or chatting do not alone make a CoP, but regular meetings for lunch and discussion can be one form of practice. You can distinguish a CoP from other types of communities including a community of interest by looking into why people are gathering, what they are sharing or how they are talking. If you want to join an online CoP of ESL teachers, for example, look closely into the shared practice

and repertoires within the particular website.

The second learning phase “foundation building” was critical to establishing a shared understanding among teachers coming from diverse academic and professional backgrounds; and this foundation seemed a necessary condition for developing the course as an internal CoP.

Phase 3: Interactive Learning

The course consisted of three major collaborative assignments: 1) participating in and leading discussion on weekly readings, 2) conducting a case study based in a particular educational context, and 3) writing a group insight paper integrating different questions and perspectives. While each teacher participated in a different external CoP, there was a considerable amount of interaction among students within the course environment as well. Different forms of interaction emerged and, teachers interacted not only with each other, but also with learning contents and their professional working or personal learning contexts.

Student inservice teachers reflected on their collaborative experiences through their online learning journals, therefore by analyzing these journals, we hoped to understand their collaboration processes as well as various difficulties or problems they had while working with others. In particular, we noted a great deal of effort to explain and make sense of their own experiences and thoughts. That is, most teachers were trying to locate and understand reasons for any difficulties they experienced during the collaborative elements of the course. Reasons varied from their own personal limitations to contextual ones. For example, Daniel reflected on his group discussion moderation:

There doesn't seem to be ANY discussion on any of the three questions in the Personal Learning Environments sub-view... although I am hoping that it will pick-up on the weekend, I suspect that we created too many sub-views during our moderation ... and maybe raised too many questions on too many articles in each sub-view ... so I hope there is more discussion this week. It has crossed my mind that, having “re-joined” the course late, that perhaps my lack of participation in others' week of moderation was perceived as a lack of interest... which is definitely NOT the case...

Daniel and his moderation partner Jim led the discussion in week 12 and developed six different discussion topics, which likely was too many considering that an average number of discussion topics for preceding weeks was three. Even though there was no public feedback from an instructor or other students within the discussion, Daniel listed several possible causes of this lack of discussion.

There were also large amount of learning journal entries that expressed personal feelings and thoughts about their learning experiences through the course period. Most frequently expressed emotions were “frustration” or “anxiety” about students various current learning situations. Hera, who joined the course late, shared her experiences of the first few weeks in the class:

Over the past couple of weeks, I have come to more fully understand the term ‘lurking’. Yes, I have been lurking in Pepper. This is the first online course that I have taken as a student, although as an instructor I have often had to build the online components of blended learning courses for Blackboard or WebCT. The pepper environment, however, is quite different, and I have been a little overwhelmed. I began the course late, and I optimistically thought it would be a matter of catching up with readings. Wrong. While I have found the environment of Pepper relatively easy to navigate, and the YouTube tutorials helpful, I have found the reading a little daunting and I don’t mean the content of the articles, which have been uniformly interesting. The reading I refer to is the text-based interactive component of the course.

Her frank confession of her frustration gained sympathy and encouragement from other teachers who had similar experiences with her. Lesley replied to Hera’s note expresses those sentiments:

During the 6-week summer intersession, I took an online course while taking a 2-day a week face-to-face course. I had never taken an online course and thought it would be easy to manage both. Needless to say, I was a wreck. In my F2F class, we had a discussion about “what word comes to mine when you think about online learning” and I embarrassingly burst into tears when it was my turn and said “STRESSSSSS.” ... As a peer in the class and a long-standing lurker, just remember that we are all here to support you and that reading the discussion threads is still a way of participating until you feel comfortable ... It does take awhile to process everything, and quality is always better than quantity so take your time and I hope you continue to feel comfortable in freely posting.

The emotional or personal interactions seem to play a more important role in developing a strong sense of community than the academic discussions and collaborative projects. We observed these growing attempts by students to evaluate the qualities of their collaboration processes as well as to share both academic knowledge and emotional experiences, and we observed the rapid emergence of the CoP through this “interactive learning” phrase, which included mainly collaborative learning activities.

Phase 4: Knowledge Transfer

The most important goal of learning is knowledge transfer. Even though the course assignments were independent of individual teacher's real-life teaching practices, we observed students continually trying to connect the course work to their own practices. Students were clearly attempting to bring their own professional and personal experiences into the online classroom discussions as resources. Many teachers tried to understand the readings through applying the complex concepts and theories to situations within their actual teaching contexts. Class moderators also suggested discussion questions that asked teachers to rethink their own professional experiences based on the reading assignments. Here are two examples of such questions: "Are you willing to bring SNSs into your classroom? What would be your issues?" and "How does such an assertion hold up to your educational experiences using technology in the classroom? Is it possible that such technologies are sometimes treated more like a privilege than a right?" The general trend was thus for teachers in this course to use their own real-life examples to construct new knowledge; and it may be that the teachers are more likely to transfer that knowledge into their teaching practices, although more research would be needed to establish that claim.

The teachers also tended to put themselves in their students' positions when reflected on their learning experiences in the course as a learner, as reflected by Jim in this learning journal excerpt:

Knowing our students. It has been an emotionally draining week because of some personal issues. And right now, I just think about, how as teachers we can be more cognizant of our students' personal issues as they arise and then respond accordingly. One is to always carefully monitor our students' behaviour and make sure to talk to your students when signs come up ... Certainly blogs is a way for students to express their moods and on-goings. Last week we talked about Facebook, which allows for statuses. I guess if we are "friended" with our students we can always be aware that way.

There were more direct experimental approaches to their own teaching based on course learning. Gloria tried out different technological tools in her own classroom teaching based on the theories and models she learned from this course and reached the insightful conclusion that she should consider each student's need and preference when she uses technologies for teaching. She also shared the lesson with other teachers in her learning journal:

It has been a couple of weeks since my students have been introduced to Moodle. Although the students use the iPads and netbooks throughout the entire day, I'm really pleased with the way they are using it during our Language block. I see technology just as a tool to enhance student learning. Just like any other tool in the classroom, netbooks and iPads should be used only when it makes sense to. I am using Moodle as a Learning

Management system where the students can read and respond to text, engage in a wiki with one another, access their marks and feedback from school and from home, etc ... I like that technology allows for students to differentiate their own learning.

Both Jim and Gloria's learning journals, which were well-connected to their actual teaching contexts, opened productive classroom discussion. Tina, for example, shared with Jim her own method called "sponge activity" to understand students' daily feelings and readiness for learning. Gloria's teaching practices of incorporating various tools in her classroom developed into a collaborative project for the final paper. Even though we could not observe student inservice teachers' actual classroom practices, we did see potential for teachers to transfer course knowledge to their own teaching practices in different ways through their course reflection and interaction.

The last learning phase of "knowledge transfer" enabled us to define this course as a CoP. That is, the class had shared a certain "domain" of knowledge through their continuous questioning and discussion about the characteristics of CoP and CMC. As described in the previous "foundation building" section, teachers started the course with different levels of understanding of the CoP concept. However, through the extended discussion and critical reflection on their online interactions and collaborations, they had reached a common understanding of CoP by the end of the course. These students had also developed a shared "practice," which was connected to their professional teaching experiences while working on the collaborative projects and participating in the active discussions in the course. Through these activities students had created the relationship conditions that enabled them to learn from one other and to share their personal thoughts without fear, which in turn created a sense of "community".

Teachers' Reflection on External CoP Participation

In this section, we will describe students' experiences of their external CoPs participation as they were revealed through entries in the course discussion. Twelve teachers brought twelve different CoP stories into the course discussion. Even though each story was very unique and meaningful, we generated four major themes that captured how students talked about their own CoP experiences and how this discussion within the internal CoP affected their learning processes. The four themes are related to the sequence of events leading to their choice of external CoPs participation: "search and join the CoP - first participation in the CoP - interactions in the CoP – and evaluation of

the CoP.”

Phase 1: Search and Join the CoP “Why is this group my CoP?”

Most student inservice teachers introduced their chosen CoP during the first one or two CoP journal entries with explanations of how they found the particular CoPs and why they wanted to join them.

Gloria: I have been thinking about CoP’s that I want to be a part of and after having thought about it long and hard I finally made a decision ... I am currently the only teacher in my school with iPads in the classroom, and therefore, I have little support on how to best use the them in the classroom. This is why I have decided that I will search for a CoP that focuses on integrating technology in the classroom, specifically the iPads ... Perhaps I will begin by asking them of CoP’s that they are part of.

Gerald: I think I have found an excellent Community of Practice that relates strongly to my work. Through www.educationcommunities.org, I have discovered a community called Digital Literacy and Creativity. The community is relatively new ... and although it only has 25 members it seems active and interesting.

Eve: I’m already part of the Instruction in Library Use (ILU) Committee ... We meet once a month and have a business agenda ... Between or after agenda items, though, we do find time to share our experiences less formally - so the Committee itself serves partly as a CoP, at least for its members. A new member, however, has just proposed creating a CoP for all librarians on campus who are interested in instruction, with communication being through a blog, a Twitter account, and an online discussion forum.

Daniel: One day a month, staff at my school gathers in Professional Learning Communities (PLC). Although there are several to choose from (i.e. Environmental Initiatives, English Language Learners, Multimedia, Numeracy, Student Achievement), given that I’m taking this course on CMC, I decided to sign up at for the Technology and Computer Integration PLC, which I have chosen to be my CoP.

After we initially asked teachers to search and join an online CoP they found diverse examples of groups for their external CoPs based on their own needs, interests and professional contexts. As the examples above indicate, while Gloria and Gerald tried to find new online CoPs which could facilitate their classroom teaching practices, Eve chose the face-to-face professional group in her working context, in which she was already involved, and focused on its online discussion forum. Gerald also signed up at one of the PLCs in his school setting. Three teachers who could not find existing CoPs that met their needs, built their own CoPs via creating a group page on a

certain social networking site and inviting the site members who were interested in the group or interested in organizing a face-to-face group meeting with their similarly-minded colleagues. In short, personal interests, course contents, and current or future professional contexts were the most influential factors influencing their choice of CoPs.

Phase 2: First Participation in the CoP “I joined the CoP!”

Once teachers found and joined their external CoPs, they started “legitimate peripheral participation” activities as described by Lave and Wenger (1991). After exploring the new online environments and group dynamics through reading the threads and consulting with other members, they tried to be a legitimate member of the CoP in different ways. Even though the levels of engagement were varied, teachers who joined the face-to-face CoPs started to attend meetings and introduce themselves to other members. Those who joined the online CoPs also attempted to develop their own presence in these new environments either by posting their introductory biographies or asking questions and responding to other members’ questions to participate in discussion.

Jim: [I] was anxious to help anybody with anything I can. So I posted this response to a question somebody posted ... I wondered if I gave too much of an answer to this student. I hope in at least explaining my answer that I would be of some educational help but maybe next time, I will be more cryptic so that the user would have to interact with me to get more. Lesson learned.

Gloria: I’ve been reading a lot of posts on TheCanadianTeacher.com, and I’m so far I am happy deciding to make this my CoP of choice. I did a search on technology and I managed to find a thread on Koobits which is a web 2.0 application that allows students to create eBooks ... My goal this week is to not just read posts on from TheCanadianTeacher.com, but to also contribute.

Hera: I did it! I contributed to my online COP! I have always appreciated the generosity of a downtown colleague in maintaining and updating a Conference page ... It takes a great deal of time to keep abreast of what is happening in the field, and having a webpage that synthesizes and vets the other conference websites is very useful.

Gerald: I think I have a tendency to sit back, soaking in other people’s conversations like a sponge. Although I feel like I gain a lot from that process, I also am aware I have much to offer. My goal is thus to do my best to contribute actively. To encourage myself, I have adapted a pseudonym for the CoP. I am hoping that the fact that I am more anonymous will lead me to fully enjoy the benefits of the community.

Teachers' external CoP experiences were more deeply influenced by their personalities and goals, since there were no fixed norms or rules for contribution or participation unlike the situation with the course context. For example, teachers with high levels of self-confidence like Jim played a role in providing information even though he was a beginner member in his new CoP, whereas, for Hera it took almost two months until her first contribution to her CoP. As Gerald's reflection shows, he negotiated between his goal to be an active contributor to his CoP and his passive disposition and decided to be an anonymous contributor.

Phase 3: Interactions in the CoP "I want to report what happened last week."

After their first participation in their external CoPs, teachers continued to report on events in their CoPs through their CoP journals. Based on individual perspectives and interests, the main focus of their journaling about their CoP experiences became more varied. Also, there were much more open expressions of personal emotions including excitement and frustration about their external CoP experiences than were expressed in relation to the internal course CoP experiences. For example, Eve who participated in the professional group at her work, focused on the leadership of the person who led the particular group. She described several meetings where only the leader's own voice was heard and members' diverse opinions were silenced. She also expressed her own frustration of being passive in that context; "but I'm sitting here feeling disgruntled and resentful. I don't like the changed dynamic of the committee ... I'm an adult, I'm a professional, I'll get over it. I'll contribute. I'll put some effort into making it work. But not quite yet." Participants tended to be more open to express their opinions and feelings about the external CoPs experiences in the course environment possibly because members of their external CoP had no access to their journals in this course environment. One interpretation is that participants experience the course as a safe place to share their honest thoughts about external CoP experiences.

At the same time, there were extended discussions about the possibilities and limitations a CoP could have. Brenda, who was in a leadership position in her school teachers' CoP, focused on how best to include the visiting teachers in her CoP and to offer them opportunities to be connected to the school board. She initiated meaningful discussion about the possibilities of integrating different social groups in school contexts through building a CoP. As she mentioned, "one challenge about an online CoP such as this, is having faith that everyone in the group is actually who they say they are. I find myself suspecting fakers quite often," she also wrote deep reflections on her own identities and responsibilities as a member of a certain group. Of course, her academic interest in critical issues

in educational settings such as inequality and injustice may have significantly influenced her CoP experiences. However, it could also be the case that having context-specific and professionally-related CoP experiences triggered diverse in-depth course discussion. Jim, as well, suggested an interesting point about the role of CoP in his English teaching field.

Jim: I am starting to see how the CoP I am using can be a real force for labour rights and power. There is a section about jobs and it just gives so much information about which employers are good to work for and who are not? In the teaching abroad field, this is important information ... CoPs do provide a way for teachers to learn more about employers before committing resources and sacrifices into a contract that they only find out later to be absolutely wrong for them.

Through the continuing discussion and reflection processes moving back and forth between two CoPs, teachers developed a clearer and more articulated understanding of the role and value of a CoP.

Phase 4: Evaluation of the CoP “My CoP seems like...”

Tom: My CoP that I launched with the Facebook group ... has “died on the vine,” I am the only posting in it ... So the lesson to be learned perhaps is that the tactical way people in a CoP communicate must be with a medium that is familiar to all the participants, otherwise good intentions will not translate into enough communication to merit such a structure.

Lesley: Still busy in and enjoying my CoP participation. As a matter of fact, with the success I experienced in participating in my Career Professionals of Canada CoP, I ramped up my participation in some of my other online groups through LinkedIn and had similar results ... Through participation in my other online CoPs, I have been able to promote other practice areas in my company, which is one of the desired competencies here, so that’s another bonus.

Tina: Ok to my surprise, I’ve been recognized as being a ‘contributor’ to my CoP. I hadn’t realized that role for myself, but was pleasantly surprised when a member of my CoP appreciatively commented that I make regularly updates about the Future of Education Interview seminars to share my knowledge ... I guess the future opportunities afforded through the CoP are based on teacher praxis. With available resources, reflection, and insight into global teaching practices, a Classroom 2.0 member can gain awareness and an understanding of how to mobilize their teaching practice.

Even though all teachers had twelve weeks in the course in which to participate and contribute to their

external CoPs, the results in their last CoP journals particularly seemed to indicate huge changes. Like Lesley and Tina' journals suggest, there were several teachers who found certain benefits from their CoPs, including the emotional enjoyment of sharing and communicating with other members and the practical achievement of improving their teaching practices. As Tina added in her journal, "I have realized that a lot of what I experience is related to how much I effort I put in", Teachers who engaged more in their CoP's shared practices gained greater benefits from their CoP participation. Also, the degree to which teachers connected their CoP experiences to their professional practices tended to be another important indicator of successful external CoP participation.

However, unsuccessful CoP participation cannot be always regarded as being without value. As Tom's note shows, most of the teachers who had unpleasant experiences in their external CoPs such as a lack of interaction or an absence of shared practices, tried to make sense of what happened to them. In particular, to understand the limitations and problems in their CoPs, they brought different texts, readings, and other people's reflections into their own reflection processes. The specific questions including "why I did not settle down well in my CoP", "why my notes did not get enough attentions from others", "why participants in my CoP were not active" or "why my Cop could not have all structural characteristics successful CoPs have?" were addressed and answered through teachers' critical reflection on their CoP experiences. Thus the unsuccessful CoP stories became meaningful opportunities and resources through which to extend their learning.

Discussion

This case study demonstrates the potential synergies between two major approaches to teacher professional development practices: teachers' CoPs development and online teacher education courses. The double-layered CoP model suggested in this paper may provide a practical integration of the two approaches by providing student inservice teachers in an online course with opportunities to participate in two different teachers' CoPs: an internal course CoP and an external professional CoP. Our analysis of student inservice teachers' CoPs experiences shows that the two layers of CoPs supported each other iteratively through the course period.

First, the online course (the internal CoP) facilitated the student's conceptual learning about CoPs. Through the series of learning activities: course preparation, foundation building, interactive learning and

knowledge transfer, we were able to observe the teachers developing shared understandings of the concept of CoP and building the internal CoP through continuing interactions with each other. Second, the course provided individual teachers with situated learning opportunities to participate in their own external teachers' CoPs while simultaneously nurturing their internal course CoP together. Having hands-on experiences of CoP participation through searching and joining their own CoPs, interacting with other members, and evaluating the CoPs, enabled them to have a deeper understanding of CoP as well as of their own collaborative processes. In short, the self-directed CoP participation offered more contextualized learning experiences to the teachers. Third, the teachers brought their external CoP experiences with them to course discussions as additional learning resources that facilitated collective knowledge building. Various forms of interactions within the course helped them conceptualize their external CoP experiences and improve their collaborative practices in the external CoPs.

The teachers' experiences in moving back and forth between two layers of CoPs suggest that the course as an internal CoP may initiate teachers' meaningful learning and provide them with a safe space to share their learning experiences and personal feelings with peer-teachers. At the same time, the teachers seem to perceive their external CoPs as an experimental space that enables them to perform actual actions based on the theories learned from the course. These two interacting layers of CoPs may increase their awareness of their CoP experiences and of their collaborative learning practices. Finally, it facilitates their learning processes in the course as well as influencing their professional development thus potentially improving their classroom teaching practices.

These findings seem to have some important implications for teacher education. One is that the model, based in current research, may be a useful guide for course and program design both in higher education settings and also for ongoing professional development contexts. The insights gained in this study from student in-service teacher's recorded online discourse helped us see how they were learning: where the challenges and successes were occurring and afforded us the opportunity for feedback and support where needed. Following up on such insights can help ensure more successful learning experiences for teacher candidates and in-service teachers. A further factor is the deliberative nature of joining CoPs relevant to one's professional life and being asked to look at the relation between those experiences and concepts and content the being learnt. Essentially this structure pushes learners to transfer relevant ideas between the applied and theoretical contexts that may help students reach a deeper level of understanding of those ideas as well as retain that material in a meaningful way. Finally, the challenge of integrating

teacher's classroom experiences with their formal academic content has long been an issue (Cochran-Smith & Lytle, 1999) in teacher education broadly, and this iterative model shows some promise in helping bridge that gap. However, more research is needed before we can conclusively demonstrate the effectiveness of this model.

The results suggest two important design considerations for the second iteration of the online course design. First, we will provide the teachers with a more structured learning assignment to help them connect with and participate in their external CoPs. Scaffolding their external CoPs experiences by developing more detailed guidelines for searching and selecting the CoPs and suggesting more specific timelines for participating in the CoPs could further facilitate teachers' external CoP experiences. Even though we neither could control nor should regulate their CoP practices outside the course environment, such support is expected to prevent a number of obstacles to having successful experiences, including ????. Also, structuring teachers' reflection by providing questions to think about and respond to may help them engage in more meaningful and critical discussion. For example, we could ask them to focus on and articulate differences and similarities between their two CoP experiences in their CoP journals. The second design refinement would be to develop a more explicit bridge between their personal reflection on their CoP participation in their journal threads and the course's group discussion about learning topics. There were emerging efforts to bring such concerns and questions into the online discussion, however, we may be able to increase the qualities of these efforts among more students in the next course. A more explicit bridge between the two contexts might provide a way to open class discussion through monitoring individual reflection processes and bringing critical questions into the formal classroom-level discussion. Finally, we will be carrying out subsequent interviews with course participants to find out whether, and in what ways these experiences may have influenced their teaching practices.

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