CONCEPTUAL MODEL FOR DESIGNING A SUCCESSFUL ONLINE COMMUNITY FOR TEACHER PROFESSIONAL DEVELOPMENT

by

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(Under the Direction of Julie A. Moore)

ABSTRACT

The purpose of this study was to develop a conceptual model for the design of a successful online community to support teachers' professional development. First, it identified the critical elements of a successful online community that can support teachers' professional development. Subsequently, the specific implementation strategies and actual design ideas for each element were sought. Finally, these findings led to the development of a conceptual model for an online community.

Specifically, a qualitative Delphi study was used to identify the elements that constitute a successful online community. Four rounds of data collection involving 10 experts were conducted. These 10 experts were categorized into two different groups: the developer group and the user group of teacher online communities. The data collection took approximately five months and a total of 20 interviews were conducted. Following the data collection and analysis, a final model that comprised the relevant elements, strategies, and actual design ideas was developed based on the findings.

The final model suggested 12 important elements for consideration in the design of a successful online community for teachers' professional development. These are: *evolving*

environment, diversity of services, sustainability, multiple layers of incentives, responding to teachers' immediate needs, ease of usability, direct teacher involvement, sense of membership, professional discussion, facilitative leadership, and *social connection*. These 12 elements were grouped into three dimensions: (1) supporting an open system, (2) fostering teacher participation, and (3) creating a culture of collaboration based on their characteristics. For each element, experts also suggested the appropriate strategies and possible online community features as actual design ideas.

INDEX WORDS: Community, Online Community, Teacher Professional Development, Delphi, Situated Learning

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DEDICATION

To my God

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It has been a long journey. I am immensely grateful to those who were there for me and with me throughout this journey. It was a blessing that I met all these people during this critical time of my life, for without whom I would not be where I am today.

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CHAPTER 1

INTRODUCTION

> Designing an online learning environment that fosters the development of a learning community is not about adding technology on to current professional development practices. Rather, it is about designing, building, and supporting a structure and a process that are purposeful and fluid in nature and in meeting the personal ongoing professional development needs of teachers (Lock, 2006, p. 663).

Background

Teachers today face complex challenges. Teachers are required to adapt themselves to a more open and evolving environment where they have to deal with various dimensions of social change (Darling-Hammond, 1998; Hargreaves, 2000). Student demographics are more diverse than ever. Technology advances every day. New ideas and pedagogies constantly emerge, along with ever-changing standards and requirements from governmental bodies.

In this era of uncertainty from a multitude of pressure sources, teachers are expected to find order and re-position themselves (Cook, 1997). They are continuously expected to change their roles and practices according to the given social system by updating their expertise in various aspects of their field including technology, skill, and knowledge (National Center for Education Statistics, 1997). In other words, teachers need to engage in ongoing professional development that incorporates the current social era, which is open and complex. Hence an

effective support system for teachers' professional development should be constructed in a way that responds to the contexts of rapid change and uncertainty.

Statement of the Problem

As an attempt to provide a support that helps teachers deal with such social demands, many researchers have discussed the immense potential of online communities to be an innovative way to sustain teachers' professional development (Aurell, 2002; Jones, Lang, Terrell, Thompson, & Ramondt, 2001; Lock, 2006; Treacy, Kleiman, & Peterson, 2002). Accessing ubiquitous resources that reside in online communities allow teachers to learn based on their needs and pace (DeWert, Babinski, & Jones, 2003; Lock, 2006). This just-in-time aspect of online communities can support teachers' "just-in-time needs" (Lock, 2006, p. 675) by providing "just-in-time answers" (Charalambos, Michalinos, & Chamberlain, 2004, p. 137).

Also, due to its fluid and cohesive nature, online communities can provide an environment for more active collaboration among teachers (Lock, 2006). This characteristic facilitates the connection between new teachers and the teaching profession (Herrington, Herrington, Kervin, & Ferry, 2006), while at the same time, helps break down traditional isolation barriers among teachers (DeWert et al., 2003; Jones et al., 2001; Stuckey., Hedberg, & Lockyer, 2001). Finally, the open and evolving nature of the online community sensitively responds to the changes of the outside system and up-to-date needs of teachers' professional development (Lock, 2006). As such, online communities have the potential to support teachers to be better engaged in their professional development in contexts involving rapid change and uncertainty.

Despite this encouraging situation, however, little has been discussed about how these communities need to be structured in a way that best support teachers' ongoing professional

development. Studies in this area have mainly focused on reviewing the impact or application of existing online communities for teachers (e.g., Barab, MaKinster, Moore, & Cunningham, 2001; K. Kim, Isenhour, Carroll, Rosson, & Dunlap, 2003). While studies these lines provide useful information on how certain online communities are uniquely framed, they do not offer a guiding model that can inspire the design process of other online communities. Dede (2006) presented a similar view in his recent work about online teacher professional development. He stated that most published studies of well-designed empirical research do not provide "collective insights to guide design and implementation of effective model" (p. 4), hence developers are confused about design possibilities in other communities. In other words, the findings do not provide the foundation for further application beyond the projects *per se*. Therefore, in order to build an effective online community that supports professional development, its design must be grounded in a model or framework that is carefully developed from existing knowledge.

In fact, the need of a systemic model of online community for teachers' professional development has been raised by many. Lock (2006) stated that "the realization of online learning communities to facilitate teacher professional development is a matter of carefully and deliberatively designing dynamic learning environments that foster a learning culture" (p.663). Di Petta (1998) suggested that for a community of professionals working together, the development of "appropriate models of community and skills that will enable us to refine our professional lives in relation to these new environments" (p. 64) is required. Bradshaw et al. (2002) also stressed that while the use of online communities has considerable potential in professional learning possibilities, "much needs to be learned in terms of how to structure and facilitate such communities if their potential is to be fully exploited" (p.19). As such, it becomes

obvious that a successful online community for teachers' professional development calls for deliberate design by identifying what constitutes its structure.

Of note, two recent studies on teachers' actual use of online communities have shown that teachers do not use online communities to support their teaching practices (Moore & Chae, 2006; Selwyn, 2000), even when they are entirely comfortable in using the Internet. These results may also suggest a need to take a deeper look at the structure of online communities for teachers and to rethink about what it takes to build a truly effective online community for teachers.

Purpose of the Study

The purpose of this study is to develop a conceptual model for the design of a successful online community to support teachers' professional development. The first goal is to identify the critical elements of a successful online community that supports teachers' professional development. Second, the study seeks to identify specific implementation strategies and possible online community features for each element. Finally, these findings will lead to the development of a conceptual model for an online community. Given this purpose, I sought to address the following research questions:

- What constitutes a successful online community to support teachers' professional development?
    1. What are the critical elements to consider for designing a successful online community for teachers' professional development?
    2. What are the appropriate strategies to implement each identified element?
    3. What are the specific design examples to deploy such elements in a real online community environment?

Finally, it is important to state the boundary of this study. For this study, I looked at web-based online communities only. While web-based is the most common form of online teacher communities, there are other types of online communities that teachers use for their professional development, such as list-serves or newsgroups.

Significance of the Study

The two major dimensions of this study include online communities and teachers' professional development. For each area, there were a wide range of discussions that identify the critical elements for success. The critical elements for successful professional development for teachers are certainly well-organized and now used as guidelines for many professional development plans (Dunne, 2002; Hawley & Valli, 1999; Loucks-Horsley, Hewson, & Love, 1998). Likewise, the ways to build an effective online community have also been extensively discussed in the literature and again used for real community design as guiding frameworks (Kim, 2000; Preece, 2000).

However, discussions have not been established on what constitutes a successful online community for teachers' professional development. It is true that success factors of the two separate areas provide useful information in speculating what might be the critical elements for the integrated area. Yet, such an integrated area is a whole new dimension of complexity that requires new investigations. Thus, the critical factors for a successful online community for teachers' professional development need to be explored. As Lock (2006) stated, it is "not about adding technology on to current professional development practices" (p. 663).

Some might doubt the usefulness of identifying the success factors and conceptualizing a design model of an online community for teachers' professional development due to the contextual differences between communities. Barab et al. (2003) claimed that "designing for

virtual communities involves balancing and leveraging complex dualities from the *inside* rather than applying some set of design principles from the *outside*" (p. 237).

However, the study does not attempt to provide a guaranteed recipe for every online community. Rather, this study attempts to search for and identify a list of critical considerations in designing an online community for teachers, so that designers can use it as a guiding framework. A conceptual model that is comprised of design elements, strategies, and actual online community features would support their effort to make a best decision throughout the entire design process. In addition, starting a design process based on a conceptual framework is critical, because an effective and systematic design of an online community can be only brought out when it is purposefully designed based on its framework model with deliberation.

Therefore, it follows that this study will directly benefit researchers and developers working on developing online communities for teachers. Learning the critical elements and strategies for the design of effective online communities for teachers will not only support the developers during design process, but also during the implementation and evaluation periods. Importantly, a conceptual model of an online community will provide an opportunity for designers to see an online community from a holistic view, which will enhance their understanding of a community's integrated structure.

Finally, teachers will enjoy the most benefits as the end-users of the possible product of this research: A conceptual model of an online community. That is, if the online communities for teachers are designed effectively, based on the suggested model, it may be expected that teachers will find it useful to their professional development and everyday teaching practices.

Definitions of Terms

In an attempt to alleviate any confusion due to the use of different terminologies, the key relevant terms are defined based on how they are used in this study.

Community

A community is a collection of individuals tied together with a common interest, with a certain degree of social interaction (Hillery, 1955).

Online Community

An online community is a social network anchored in shared interests that happens to exist online (Kim, 2000).

Professional Development

Professional development is defined as "the sum total of formal and informal learning pursued and experienced by the teacher in a compelling learning environment under conditions of complexity and dynamic change" (Fullan, 1995, p. 265), which should contain a moral purpose, pursue continuous improvements in professional work cultures, and be embedded in a continuum of career-long teacher education.

Successful Online Community for Teachers' Professional Development

It is where "teachers can work in online collaborative, collegial spaces investigating ideas, engaging in pedagogical conversations, sharing resources and expertise, reflecting on practice, and providing support" (Lock, 2006, p. 670), while it holds the capacity for high sustainability.

Element

An element is "a fundamental, essential, or irreducible constituent of a composite entity" (American Heritage Dictionary, 2006). For the purposes of this dissertation, an element refers to

an essential component to consider in the design of a successful online community for teachers' professional development.

Strategy

A strategy is "a plan, method, or series of maneuvers or stratagems for obtaining a specific goal or result" (American Heritage Dictionary, 2006). For the purpose of this dissertation, a strategy refers to the means by which elements for the design of a successful online community for teachers' professional development can be employed.

Online Community Feature

In this study, an online community feature refers to actual function of online community to perform the strategies.

Summary

In this chapter, I present the background of the problem, stated the purpose of the study, discussed the significance of the study, and defined the relevant terms. In Chapter Two, I provide a review of scholarly literature that have supported the design of this study, including the pertinent theoretical foundations, discussions on professional development, as well as existing analyses of online communities. Following this, in Chapter Three, I present the study design that was implemented to arrive at the findings. Chapter Four comprises the findings of this study as a form of a conceptual model for designing a successful online community for teachers' professional development. Finally, Chapter Five concludes this study by presenting a summary of the findings, a discussion on critical issues, implications of the study results, recommendations for future research, and a formal conclusion.

CHAPTER 2

LITERATURE REVIEW

Overview

This study aims to identify what constitutes a successful online community for teachers' professional development. Multiple areas of scholarly literature have guided this study in pursuing this purpose. They comprise conceptual discussions and empirical findings from four relevant areas, including *situated learning*, *community*, *online community*, and *teachers' professional development* (see Figure 1 for illustration).

In the first section, situated learning is discussed as a philosophical and theoretical framework of this research. This is then followed by a discussion of the concept of a generic community that provides a broad perspective for the study. In the third section, the focus is narrowed to online communities, which constitutes the primary research theme in this study. This section specifically reviews the concept of an online community and its historical development, followed by the use of online communities in support of teachers and the *design* of an online community. Finally, teachers' professional development is discussed, which provides contextual information for the research topic.

To locate the relevant literature, I primarily utilized databases, such as ERIC, Education Abstracts Full Text, GALILEO Interconnected Libraries (GIL), UGA Libraries Electronic Journals, and UGA Electronic Theses and Dissertations. In addition, I used web search engines to find online reports from research institutions and professional organizations in the relevant areas.

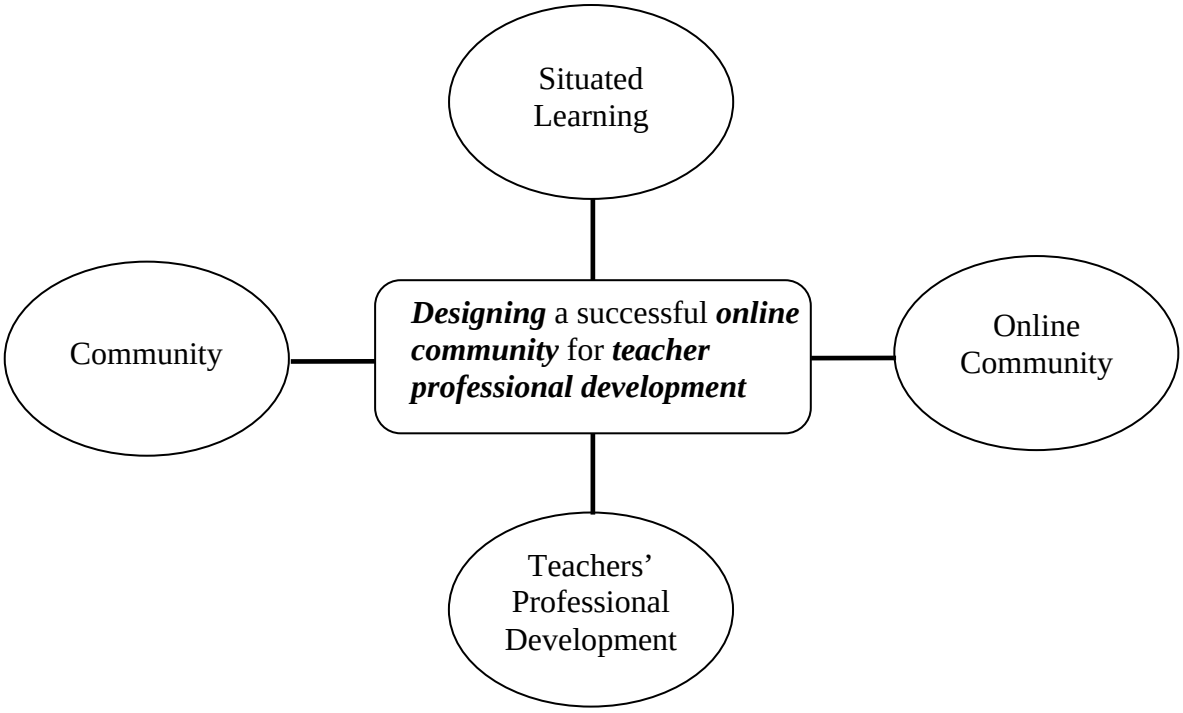

Figure 1. Four dimensions of the related literature.

Situated Learning

> Being alive as human beings means that we are constantly engaged in the pursuit of enterprises of all kinds, from ensuring our physical survival to seeking the most lofty pleasures. As we define these enterprises and engage in their pursuit together, we interact with each other and with the world and we tune our relations with each other and with the world accordingly. In other words we learn (Wenger, 1998, p. 45).

Situated learning is a notion that suggests that learning is contextual and embedded in a social environment (Anderson, Reder, & Simon, 1996; Brown, Collins, & Duguid, 1989; Lave, 1988, 1991; Lave & Wenger, 1991). This is in contrast to the traditional notion of learning that assumes conceptual knowledge can be abstracted from the context in which it is situated.

Although the term “situated learning” (Lave, 1988) has been around for only the past 20 years, great thinkers such as Dewey and Vygotsky have advocated the situated perspective in learning and knowledge much earlier.

Dewey (1938), in his book, *Logic*: *The Theory of Inquiry*, described the nature of situation as an encompassing whole that surrounds and regulates human experience. He rationalized that “we never experience nor form judgments about objects and events in isolation, but only in connection with a contextual whole” (p. 66). That is because “in actual experience, there is never any such isolated singular object or event; an object or event is always a special part, phrase, or aspect of an environing experienced world-*situation*” (p. 67). Therefore, the perceived object such as pencil or apple is only “an object of knowledge but not of knowledge as ultimate and self-sufficient” (p. 67). For Dewey, human understanding and knowledge is completely controlled by the nature of its immediate situation.

Vygotsky (1978) proposed that social interaction leads to cognitive development. Opposing the beliefs that learning is simply an assimilation and accommodation of new knowledge by learners, he argued that human cognitions are grounded in its social context, and therefore should be explained by the processes and products of social interactions. He stated that “human learning presupposes a specific social nature and a process by which children grow into the intellectual life of those around them” (p. 88). He found that students perform well under guidance, in groups, and in collaboration with one another in skills they have not mastered independently. Such potential functions that have not yet matured but in the process of maturation, according to Vygotsky, depends on a phenomenon called the Zone of Proximal Development. He described this phenomenon as “the distance between the actual development level as determined by independent problem solving and the level of potential development as

determined through problem solving under adult guidance or in collaboration with more capable peers" (p. 86). As such, for Vygotsky, knowledge and cognition are the end products of socialization.

Apart from these leaders in the field, Lave (1988) is often credited with starting the concept of situated learning. In her seminal book, *Cognition in Practice* (1988), she discussed cognition and learning from the perspective of social anthropology, rather than psychology. She conducted an empirical project to observe how mathematics (as a form of cognition) assumes its form differently in different contexts. The project revealed that the mathematical processes involved in everyday life, such as in grocery shopping, is shaped by the dynamic relationships between "the mind at work and the world in which it works" (p 1), like every other form of cognition. For Lave, this simply establishes that cognition is "a complex social phenomenon" (p. 1). In fact, she does not perceive that learning as a dichotomy between the individual and the social world. In *Situated Learning in Communities of Practice* (1991), Lave explained that all social entities such as the mind, culture, history and the social world are interrelated with each other: "the world is itself socially constituted" (p. 67). Therefore, the only way to facilitate learning is to participate in it.

In the same time frame, Brown, Collins & Duguid (1989) took a slightly different approach to their research while maintaining same situated notion of learning. They emphasized the importance of authentic *activities* to achieve the best results in learning and applied the situated perspective in the ideas of cognitive apprenticeships. Just as "craft apprenticeship enables apprentices to acquire and develop the tools and skills of their craft through authentic work" (p. 39), cognitive apprenticeship is designed to "support learning in a domain by enabling students to acquire, develop, and use cognitive tools in authentic domain activity" (p. 39).

Through the process of engaging continuously in authentic activities, apprentices (learners) articulate their world experience to general ideas. In the process, they enter the culture of practice. Thus, for Brown, Collins and Duguid, learning is a process of enculturation.

Lave and Wenger (1991) in *Situated Learning: Legitimate Peripheral Participation* examined situated learning from a perspective that is deeply rooted in social learning theory. The usual concept of apprenticeship involves the gradual learning process of knowledge transfer from a master to an apprentice through engaging in authentic activities. While they agree that learning occurs as a function of the activity and context, Lave and Wenger moved the focus of learning from the view of certain forms of knowledge acquisition and the cognitive process, to social engagement and co-participation in a community of practice. They characterized this notion of learning as a legitimate peripheral participation in a community of practice. That is, learning is "configured through the process of becoming a full participant in a socio-cultural practice" (p. 29), participation that is "at first legitimately peripheral, but that increases gradually in engagement and complexity" (p. iii).

Anderson, Reder, and Simon (2006) examined the claims that have been advocated in the area of situated learning. They argued that the current implications of situated learning have often misguided teaching and learning by ignoring the differences involved among different circumstances. They therefore suggested the need for more research that provides information on these circumstantial differences in applying a situated learning notion to teaching and learning.

So far I have examined the critical literature in situated learning as the theoretical framework of this study. In the next section, I discuss the concept of a generic community that provides a broad perspective for the study.

Community

Concept of Community

The definitions of community are abundant in sociological literature. The quest for a community has been one of the most compelling discourses in modern social science (Barab, Kling, & Gray, 2004; Cohen, 1985; Fernback, 2003). At the same time, it has been highly elusive to define the community due to its uncertain nature, hence, it is impossible to set clear boundaries for the concept (Oxford Dictionary of Sociology, 1998).

Despite this ambiguity, however, the origin of the term, *communis* in Latin, which means *common* (American Heritage Dictionary, 2000) provides some definitive aspect of a community. Thus, it follows that a community is the collection of individuals tied together with a "common" interest (Kowch & Schwier, 1997). Aristotle (1908), in his *Nicomachean Ethics*, shared this view and described the community as an association of people with a view to a common advantage. He explained that people have formed communities on the pursuit of this common advantage that is particular to each community. Dewey (1916) also believed the strong connection between commonness and community: "Men live in a community in virtue of the things which they have in common; and communication is the way in which they come to possess things in common" (Dewey, 1916, p. 4). Discussion from the workshop held at the Computer Supported Cooperative Work conference (1996) resulted in supporting this idea as well, in that the among five defined attributes of a community, three of them are related to "shared" (common) aspects of the community (Whittaker, Isaacs, & O'Day, 1997).

Along with this common-tie aspect, "social interaction" has also been critically reflected in many studies related to the community, as a key attribute. It has been discussed that, at any stage of social change, people are always in pursuit of social interactions, and thus naturally

search for communities (Szczepanska, 2001). Tönnies (2001), who introduced two types of human association, including *Gemeinschaft* (community) and *Gesellschaft* (society), remarked that, in any setting in which human beings are brought together in an organic fashion by their own desire to interact, *Gemeinschaft* (community) is always to be found. Wheatley & Kellner (1998) also underscores this community-seeking nature of human beings that is caused by their desire for social belonging and interaction: "the instinct of community is everywhere in life" (p. 11). Hillery's comparative analysis on 94 different definitions of a community is most suggestive in that nearly three quarters of the definitions mentioned "social interaction" as the key element of a community (1955).

Researchers' interests to define the community and its essence continue even today. One of the particular issues they have been enthusiastically discussing is the community of the future. Zobel de Ayala II (1998) anticipated that communities of the future will head toward globalization, a deeper sense of group culture, a stronger coherence in relationships, an uprising of information technology, and the citizen's voluntary involvement in community. Importantly, many are looking forward to the globalization of a community that will be more fluid, intercultural, celebrating toward diversity, and reaching out to humanity (Barksdale, 1998; Goldsmith, 1998). Researchers, however, also point out that such an ideal future community can only come true if we consciously channel the evolution of a community in this direction (Covey, 1998; Goldsmith, 1998; Zobel de Ayala II, 1998). As Nobel peace laureate Wiesel (1986) memorably depicted, it is our duty to "give a noble and humanizing meaning to a community" (p. 275).

Online Community

Concept of Online Community

Since the first electronic BBS (Bulletin Board System) in 1978, online communities have rapidly grown to become a major social phenomenon today. As of 2005, nearly 100 million Internet users in U.S. seem to belong to at least one online community to various extents (Pew Internet & American Life Project, 2005). Yet, the concept of an *online* community remains as elusive as the concept of a community. Inheriting the uncertain nature of a "community", an online community appears difficult to define (Barab, MaKinster, & Scheckler, 2004; Kendall, 2003; Preece, 2000). To some, an online community is a social aggregation that requires a strong bond among its members (Rheingold, 2001; Whittaker et al., 1997), while others consider it as a social network anchored in shared interests, not necessarily entailing fellowship (Bruckman & Jensen, 2002; Fryer & Turner, 2006). Some embrace any virtual communication medium as online communities, such as an email distribution list or a chat room (Fisher, 2003), while others consider such virtual communication medium itself is not good enough to be called as an online community (Foster, 1997).

Despite this conceptual ambiguity, however, researchers seem to be in agreement that an online community is a fundamentally socio-technical structure (Bruckman, 2004; Ekeblad, 1998; Juszczyszyn, 2006; Kling & Courtright, 2004; Moor & Erp, 2004). Online communities are socio-technical structures in that there is an interplay of technical means and social relationship between participants (Kling & Courtright, 2004). Congruent with this duality of an online community, Preece et al. (2000; 2003) synthesized the characteristics of an online community based on two dimensions: *usability* and *sociability*. Usability is associated with technological medium of connection in a community, such as software design or the user interface. The ease of

which the software is adapted in a community may affect the atmosphere and efficiency of work. Sociability refers to the human social dynamics among members, and the policies that guide them.

Historical Development of Online Communities

As identified, an online community is framed by people, policy, and purpose, known as "sociability," and software, interface design, and connection tools, known as "usability". Hence sociability and usability are no doubt two major components in the development and evolution of communities. I will therefore illustrate the historical development of online communities in terms of usability and sociability.

Development of usability. Technological innovation has profound impact on advancing the ways in which people communicate and form social organizations (Kollock & Smith, 1999; Preece et al., 2003). Within such innovations, I will focus on the development of computer network systems that directly support social interaction and community building on the Internet, in order to see how a community can form around a particular technology to facilitate distribution, and sharing among users.

The oldest, and still the most frequently used, form of interaction on the Internet is *email* (Kollock & Smith, 1999; Preece et al., 2003). It was developed in the beginning of 1970s, as a supplementary feature of the Advanced Research Projects Agency Network (ARPANET), the first computer network commissioned by U.S. Defense Advanced Research Projects Agency (Rheingold, 2000). Early email systems only allowed one person to send a note to just one other person. However, it soon evolved to go beyond one-to-one interaction communication patterns (Preece et al., 2003). Based on this advancement, listservers were created in 1975, enabling

people to direct a series of messages and responses to a list, hence helping to develop a form of group discussion (Kollock & Smith, 1999).

Then, in the late 1970s, computer conferencing systems emerged. These were known as *bulletin board systems* (BBSs) (Rheingold, 2000). Most BBSs allow participants to create topical groups in which a series of messages, similar to email, can be lined in sequence. At the same time, *Usenet* was created as yet another computer conferencing system. Usenet is a massive distributed database that is passed through an informal global network system (Kollock & Smith, 1999). This distributed database consists of different subject areas clustered in hierarchies known as newsgroups, which is widely regarded as the first form of online communities (Ridings, 2006).

In early 1980s, synchronous interaction systems started to appear. *Text chat* was one of the most popular of the forms of synchronous interaction on the Internet. Unlike computer conferencing systems (e.g., BBSs or Usenet), these text chat systems grant the server administrator substantial control over system access, since it utilizes a centralized server (Kollock & Smith, 1999). Even non-commercial chat systems, such as Internet Relay Chat (IRC) (Preece et al., 2003) had an administrator who controlled the flow of communication and membership. Another synchronous interaction system in 1980s was *instant messenger*. It caught on in the forms of ICQ and AOL instant messenger. It entails similar attributes to text chat as it allows synchronous rapid interactions among individuals, but differs in that individuals can control who participates in a particular conversation.

Finally, the World Wide Web (WWW) came into existence in 1991, as released by CERN, the European Organization for Nuclear Research (Preece et al., 2003), with the first web browser NCSA Mosaic, released in 1993 (Bruckman & Jensen, 2002). Supporting both

asynchronous and synchronous communication, web sites can embrace most of the interaction methods that were identified thus far, such as email, discussion groups, chat services, and instant messaging (Kollock & Smith, 1999). They are integrated in most of the communities on the web today, accompanied by other fine enchantments such as graphical characters known as avatars, sound, streaming video, search engines, emoticons, private conversation spaces, user profiles, and graphics (Preece et al., 2003).

Development of sociability. In recent years, researchers have discussed social factors as critical attributes in online communities. These include group facilitation (Kao & Rerrer, 2006; White, 2006), trust building (Chim, 2006; Mezgár, 2006; Park, 2006), and membership/identity formation (Baim, 2006). Kim (2000; 2003) argued that these issues on social dynamics are timeless factors that ultimately ground all types of communities, whether physical or virtual. She perceives online communities as communities that happen to exist online. Hence, the focus should be on the means to facilitate the relationship and interaction among members, just as in physical communities: "People are people, even in cyberspace" (Kim, 2000, p. 11). I will illustrate the progress of online communities in perspective of the factors that influences the sociality of online communities, such as the change of demographics, the extent of use, and user perception.

The earliest online communities in 1970s were created as support systems for particular groups of people with specific purposes (Preece et al., 2003). The first network community, ARPANET was mainly used to enhance researchers' collaboration for a special project (Kendall, 2003). Likewise, the first computer conferencing system was initiated for the U.S. policymakers to use as a communication medium for dispersed decision making (Rheingold, 2000). Casual

communication between groups of individuals was never part of the intention when online communities were first initiated.

Despite this origin, the usefulness of the online network rapidly spread and grew to be a communication tool for regular citizens who have various interests (Kendall, 2003). Soon, countless online social groups, such as the BBSs and Usenet emerged. This manifests the beginning of a true democracy of informational technology described by Rheingold (2000) as the depicted "grassroots use of technology" (p. 22). Especially as online communities are maintained by volunteers, there is no authority and censorship that can enforce boundaries or monitoring of group behavior (Rheingold, 2000; Wellman et al., 1996).

In the early days, however, these citizen-oriented online communities tended to be dominated by a population that comprised wealthy, educated, white, and male adults (Pew Internet & American Life Project, 2001). Although this group is still influential, the population of online communities has significantly diversified since then. As online communities are organized based on "shared interests," rather than participants' social characteristics, people started gathering from all types of social groups (Wellman et al., 1996). Today, the participation of those who are female, young, non-white, and living on modest incomes continues to increase, such that the female population in online communities, in fact, grew to be almost similar to that of the male population (Pew Internet & American Life Project, 2001).

This cyber social universe has immensely expanded with the rise of the World Wide Web in 1990s. In the beginning, this rapid growth concerned many people in that active involvement in online communities disassociate people from real life engagement and local communities, which will eventually lead them to feel depressed and isolated (Putnam, 2001). However, national survey results from the Pew Internet & American Life Project (2001) showed the

opposite. The results suggested that the online community is not only a vibrant social universe where many enjoy meaningful contacts with others, but is also a bonding agent that fosters their connections to local communities. Wellman (2002; 1996) described this social aspect of online communities as *glocalization*. That is, the online community fosters a global link by connecting people worldwide, while it deepens social ties within local communities.

In all, online communities grew from a network service for government projects to become an ordinary citizen's gathering place, serving populations of diverse demographical backgrounds. Due to its inhibited and voluntary nature, and with the advent of technologies, online communities now enrich our world globally and locally. In this way, online communities become a virtual third place in today's society, separated from home and work (Pew Internet & American Life Project, 2001).

Online Communities in Support of Teachers

Consistent with other types of online communities that were introduced earlier, the first online communities that support teachers were Usenet newsgroups. Since then, online communities have been developed to support teachers in various ways, such as providing resources for the classroom, connecting teachers with others, and providing a collaborative environment for teachers. Some distinctive discussions on the use of today's online communities include facilitating teachers' ongoing professional development and supporting beginning teacher retention.

First, multiple researchers have discussed the tremendous potential of online communities as an effective supporting tool for teacher professional development (Aurell, 2002; Jones et al., 2001; Lock, 2006; Treacy et al., 2002). For instance, scholars have claimed that, by using ubiquitous resources in online communities, teachers can learn based on their needs and at

their own pace (DeWert et al., 2003; Lock, 2006). This just-in-time aspect of online communities can support teachers' "just-in-time needs" (Lock, 2006, p. 675) by providing "just-in-time answers" (Charalambos et al., 2004, p. 137).

There were many attempts to execute such potentials. Various online communities for the purpose of teacher professional development were created with different goals and in different contexts. For example, Tapped In (tappedin.org) was created in 1997 to focus on providing more equitable access to professional development opportunities (Schlager, Fusco, & Schank, 2002). Bridge (teachersbridge.org) focused particularly on providing teachers with a place for collaboration and connection (Moore & Chae, 2004). Some online communities were developed to support certain subject areas. For example, Inquiry Learning Forum (ilf.crlt.indiana.edu) focuses on supporting math and science educators by providing a better understanding of inquiry-based teaching and learning (Barab, MaKinster, Moore, & Cunningham, 2001). Math Forum (mathforum.org) is another thriving online community committed to the goal of enhancing mathematics teaching and learning (Renninger & Shumar, 2002, 2004).

Another distinctive discussion thread on the use of today's online communities came about in response to the increasing rate of beginning teachers' attrition (The National Commission on Teaching and America's Future, 2002). Online communities have been discussed as a way to meet a variety of beginning teachers' needs (e.g., DeWert et al., 2003; Moore & Wise, 2004; Stuckey. et al., 2001). Their potential to connect new teachers to the teaching profession, while helping to break down isolation among teachers have shown to be tremendous in these studies. In all, online communities today provide an opportunity for teachers to be more engaged in their teaching practices. At the same time, they expand the teachers' horizons by connecting the world's teaching professionals.

Designing Online Communities

As discussed earlier, societies' interest in online communities has been tremendously increased to nearly 100 million online community users in the U.S. alone (Pew Internet & American Life Project, 2005). Such immense interest inspired many inquiries on how to best design these online communities and led to many discussions to identify the principles to guide the design of general online communities. The following paragraphs provide descriptions of three well-known attempts to suggest design guidelines for online community development.

Kim (2000) presented *Nine Timeless Design Strategies* to guide the design process of an online community. She organized nine design strategies that characterize successful online communities based on her 10 years of experience in building such communities. She perceives online communities as communities that happen to exist online. Hence, the focus of community building should be premised on the means to facilitate the relationship and interaction among members, similar to that in physical communities: "People are people, even in cyberspace" (Kim, 2000, p. 11). Naturally, her strategies were organized around the fundamental aspects of community building, such as the social and cultural dynamics, shared purpose, and the roles, rituals and events that bind people together as a group. According to Kim (2000), the nine strategies include: (1) *Define and articulate your purpose*, (2) *Build flexible, extensible gathering places*, (3) *Create meaningful and evolving member profiles*, (4) *Design for a range of roles*, (5) *Develop a strong leadership program*, (6) *Encourage appropriate etiquette*, (7) *Promote cyclic events* and (8) *Integrate the rituals of community life*, (9) *Facilitate member-run subgroups*. For each strategy, Kim (2000) provided with specific tactics, tips, and potential technologies to implement them, so that the model can be used as a "strategic handbook" (Kim, 2000, p. xi) for the developers.

Williams and Cothrel (2000) conducted a meta-analysis on four successful online communities in the business domain, to identify key elements for a successful design. A total of twelve lessons were learned as a result of their investigation. Similar to Kim's (2000) model, William and Cothrel (2000) identified elements that were focused more on the issues of social interactions, rather than technical applications. The 12 lessons include: (1) *Create a critical mass of functionality,* (2) *Collect and use feedback from members,* (3) *Harness the power of a personal connection,* (4) *Prime the pump with communication,* (5) *Help members help each other,* (6) *Acknowledge the voluntary nature of participation,* (7) *Fit the tools to the community,* (8) *Play on all motives for participation,* (9) *Reinforce the community's focus,* (10) *Provide the materials that collaboration requires,* (11) *Concentrate on communities that matter* and (12) *Form communities around people, not applications.* These lessons served as design principles, and were presented with examples of strategies and specific applications that were previously used in each community. William and Cothrel (2000) intended to provide these 12 key lessons along with the implementation strategies so that developers would have a broader understanding of how online communities can be established and maintained, and hence be able to easily apply them to their own communities.

Charalambos et. al. (2004) identified 16 characteristics of successful online communities by integrating their experiences in online community development and consulting developers of other online communities. They pointed out that, while these lists do not provide rigid step-by-step instructions, such characteristics can serve as highly useful guidelines for developers of online communities. Similar to Kim's (2000) notion in an online community, Charalambos et al. (2004) also understand the online community as a place where real people connect to each other, just like members of any off-line communities: "There is nothing 'innate' or 'essential' about a

‘face-to-face’ community compared to an ‘online’ community; both are as ‘real’ as any communities are” (p.136). Thus, for them, an online community is again all about interpersonal connections and their strategies are organized around how to best facilitate such connections. According to them, successful online communities are those that have the following characteristics: (1) *They consist of people who cannot meet face-to-face because of place and time,* (2) *The tasks on which members work online are clearly defined,* (3) *A common sense of responsibility exists among participants,* (4) *Easy access to technology is available to all members,* (5) *The tools for communication are accessible and usable,* (6) *There is good leadership and co-ordination of online activities,* (7) *There are capable moderators that provide facilitation and support,* (8) *Ongoing interaction among members is based on constructive dialogue,* (9) *A joint vision and ownership are equally shared among the members,* (10) *There is mutual support among its members and sub-groups,* (11) *The rules that govern participation are clearly defined,* (12) *A system is in place monitoring member participation and behavior,* (13) *It is a safe environment where participants can freely express their opinion,* (14) *Activities are evaluated regularly and feedback is provided in a timely manner,* (15) *There is a certain degree of structural dependence that establishes the need for members to interact and share resources* and (16) *Smaller groups within the community provide a peer-support group.*

Common features. Thus far I have discussed three models that suggest guidelines for the design of online communities. Although the way researchers gather relevant data differ (experience, meta-analysis, and consultation), all three models present two critical common features.

First, the authors of all three models were keen to point that they intended to offer guidelines and conditions, rather than rules and recipes. They seemed to accept the idea that

there cannot be one universal formula for building an online community: “There are no scientific formulae and algorithms on how to build and structure an online community. There is no step-by-step approach that guarantees successful community building” (Charalambos et al., 2004, p. 138). They advocated however, that the usefulness of offering practical guidelines can inspire developers by showing effective ways to exploit the full potential of an online community. The authors recommended that developers learn the lessons from their proposed guidelines and use them as “inspiration to help you meet (their) goals, improve and develop (their) communit(ies), and better serve the needs of (their) members” (Kim, 2000, p. xii).

Second, the authors of all three models support the notion that online community design is about making interpersonal connections rather than mixture of technological attributes. Most of the design principles articulate the infrastructure of an online community as one with vibrant social dynamics among the participants. They emphasized that the online community is just another community that exists online, thus it is “echoed in physical communities” (Kim, 2000, p. xi). In a physical community, “being part of a community involves building connections among what is being learned and what is important to the participants and creating relations among participants with similar goals” (Charalambos et al., 2004, p. 136). The authors consider this social aspect of community as true for any type of community, whether or not it is online.

In summary, online communities have grown to play important parts of today’s life. Naturally, interests among researchers in the means to design better online communities increased. In response to such an inquiry, researchers have attempted to learn critical principles in the design of an online community in order to produce design guidelines for developers. The authors of all three models discussed argued that these models serve as guidelines, rather than a

design manual. They also supported the idea that an online community design should focus on creating an infrastructure that supports social dynamics.

Teacher Professional Development

This final discussion is on teachers' professional development. As this study aims to develop an online community model in the context of teacher professional development, this section serves to provide the relevant contextual information for the research topic.

Historical Shifts in Teacher Professional Development

"Teaching is not what it was" (Hargreaves, 2000, p. 152). Images of teacher professionalism and the nature of teaching practices constantly evolve in response to respective social changes. Hargreaves (2000) identified four broad historical phases in the changing nature of teachers' professionalism and professional learning. Such phases include the pre-professional age, the age of the autonomous professional, the age of the collegial professional, and the fourth age of the post-professional, which is also referred to as the postmodern age (the current age). I will briefly discuss each phase of professional development based on this categorization, with a focus on the reasons for these changes.

Pre-professional age. Teaching practice in the pre-professional age is often referred to as "transmission teaching," which means traditional, routinized teaching in the factory-like system of mass education. With large groups and small resources, teachers had to focus on overall the instructional flow of the lesson so as to reach its intended conclusion. This stands in contrast to a focus on individual students' learning. Pedagogical expertise was simply passed on from the expert to the novice.

In this context of pedagogical certainty, teaching was seen as demanding from a management's perspective, but simple from a technical standpoint. Once a beginning teacher had

mastered it, follow-up support would not be necessary. And hence, they require little training or ongoing professional learning. Hargreaves noted that such notion is still pervasive in the current teaching era. Thus, it is important to "confront these images of professionalism that deny the difficulty and complexity of today's teaching in an age of cultural diversity and new technology" (Hargreaves, 2000, p. 157)

The age of the autonomous professional. The status of a teacher was significantly improved in the age of the autonomous professional. Along with substantial salary raise and university level teacher education, teachers enjoyed unprecedented autonomy over curriculum development and decision-making. However such autonomous professionalism also encouraged individualism and privitism that "isolation" soon became a metaphor in the culture of teaching. This separated teachers from the community and subordinated teachers' professional learning to the academic agenda.

The age of the autonomous professional also represented the times when singularity of teaching was challenged. With the emergence of numerous innovative pedagogies, the debate between traditional methods and progressive methods proliferated (Lieberman, 1998). These idealistic pedagogies, however, often did not come with its implementation plan for the classroom application. Furthermore, teacher preparation programs could not address real classroom situations adequately, as most beginning teachers experienced practical discrepancy upon graduation. The age of professional autonomy led to higher standings of professionalism. Yet at the same time, it was characteristic that teachers had insufficient preparation to cope with the large-scale changes.

The age of the collegial professional. Individual teacher autonomy was becoming less sustainable as a way of responding to the increased complexities of schooling. Many teachers

were caught up in the proliferation of proposals to reform and were experiencing increasing role expansion and diffuseness (Ball & Cohen, 1999). Instead of external experts who were not accustomed to the school context, they started turning more to each other for professional learning, for a sense of direction, and for mutual support. In short, the notion of teacher professionalism grew to be collegial and collective, from an autonomous to an individual image, in order to cope with the increasing complexity of their work.

However, when collegiality is forced by the governmental or relevant institutional bodies, teachers tended to resist it. Such forced collegialities were often designed and facilitated by outsiders, allowing teachers little control over activities and topics. Thus the key to a successful collegial professionalism was building "strong professional communities in teaching that (were) authentic, well supported, and include fundamental purposes, and benefit teachers and students alike, without using collaboration as a device to overload teachers, or to steer unpalatable policies through them" (Hargreaves, 2000, p. 166).

The age of post-professional or postmodern. Teachers today face truly complex challenges and they need a type of support that can help them cope with the challenges. Embedded in the postmodernity of the social era (Hargreaves, 2000), teachers are now required to adapt themselves to a more open and evolving environment where they have to deal with various dimensions of social change (Darling-Hammond, 1998).

Hargreaves (2000) therefore, suggests that professionalism today should embrace these uncertainties and complexities, and value multiple intelligences, diverse learning (and teaching) styles, and a process-based rather than content-based curriculum.

In short, postmodern professionalism is one "where teachers deal with a diverse and complex clientele, in conditions of increasing moral uncertainty, where many methods of

approach are possible, and where more and more social groups have an influence and a say" (Hargreaves, 2000, p. 175). He also emphasized that such postmodern professionalism can only be manifested through a conscious social movement of committed people, teachers and others who work together toward its realization.

Conclusion. As illustrated in Table 1, teacher professionalism has shifted in terms of its image and nature over the years. The evolvement seems natural, but we should always consciously channel our efforts to advance teacher professionalism. Instead of waiting for professionalism to evolve, a strong and mindful intervention from committed people in the form of partnerships should shape the direction and manifestation of professionalism.

Table 1

Four Phases of Historical Change in Teacher Professionalism

	Age of pre-professional	**Age of the autonomous professional**	**Age of the collegial professional**	**Age of post-professional/ postmodern**
Professionalism	Restricted	Individual	Collective	Inclusive
Pedagogy	Pedagogical certainty	Polarized pedagogy	Complex pedagogy	Pedagogical uncertainty
Social Move	Pre-Modernity	Modernity	Transition Period	Post-Modernity

Definition of Professional Development

While there is a growing agreement in today's literature regarding the elements of effective professional development for teachers, the conceptualization of the term "teacher professional development" still remains inconclusive (Smyth, 1995). Many researchers have tried to introduce some boundaries to the term. It appears that the conceptualization of professional development have taken several different paths. Some view professional development as a largely individual enterprise while others sees it as a social/contextual affair.

At the same time, there are others who see it as an integrated systemic concept. I will review the definitions of teacher professional development based on these three conceptual boundaries.

Individual view. Researchers who hold the individual view toward teacher professional understand it as a "developmental process that allows teachers to expand and elaborate their professional knowledge base" (Guskey & Huberman, 1995a, p. 7). Such a view does not imply that teachers are completely isolated without partnership with others. Rather, the individual view simply assumes that this development is teacher-centered, as Hargreaves (1995) pointed, "teacher collaboration and shared leadership are not gifts that should be awaited from administrators" (p.19).

Hargreaves (1995), who has advocated a postmodern perspective on teacher education and professionalism, defined professional development as an integration of "technical competence of teaching, the place of moral purpose in teaching, political awareness, acuity, and adeptness among teachers, and teachers' emotional attachments to and engagement with their work" (p. 26). This view emphasizes what individual teachers can bring to teaching and directs professional development in terms of its social and moral purposes.

Another advocate of self-directed professional development, Husby (2005) conceptualized teacher professional development as "an individual, self-directed format for learning" (p. 2) and went on to describe the goal of self-directed professional development as one which is aimed: "to lead educators to identify areas for professional improvement, and then to assist them in guiding their own development, and then to assist them in guiding their own development in a particular growth area" (p. 2).

Borko & Putnam (1995) conceptualized teacher professional development based on a cognitive psychological perspective and defined professional development as "the expansion and

elaboration of teachers professional knowledge" (p. 35). That is, professional development programs should create an environment where teachers can enrich their knowledge base, thus advancing professional development.

Social/contextual view. The social/contextual view emphasizes the strong influence of contextual factors, especially current societal conditions, organizational press, and the demands of an ever-expanding professional knowledge base (Guskey & Huberman, 1995a). This view is not necessarily contradictory to the individual view. The only difference lies in their foci on professional development.

Smyth (1995) defined professional development as a "process of exposing and highlighting contradictions in experience and intervening to assist teachers in reconstructing experiences" (p.87). He emphasized that the purpose of teacher development should not be shaping teachers. Instead, he argued that teachers should experience and negotiate meanings by themselves. Hence, teacher development becomes a liberating experience for teachers. Sharing this view, Guskey (1995) conceptualized professional development as a highly contextualized process whose success rests in "finding the optimal mix of process elements and technologies that can be carefully applied in a particular setting" (p. 126). He argues that there is no right answer, but rather, multiple answers. Thus, searching for abstract elements that can be applied across contexts would not be effective.

Systemic/ integrated view. Teacher professional development can also be viewed as a "dynamic process that spans one's entire career in the profession, from preparation and induction to completion and retirement" (Guskey & Huberman, 1995b).

Mevarech (1995) questioned if the typical outcomes produced from professional development are only limited to teachers' classroom practice and pedagogical-content

knowledge. She argues that teacher professional development is a much more complex process with teachers' personal dimensions and therefore, defined it as "a process of change in teachers' mental models, beliefs, and perceptions regarding children's minds and learning" (p. 152). Huberman (1995) defines teacher professional development as a teacher's "life cycle" (p.193) that has several evolving phases. He argues that such a cycle is more effective when it is open and collective, so that teachers have more opportunities to be stimulated or challenged.

Fullan (1995) took an integrated view, not in an individual or social fashion, but as a whole systemic dimension. He defined professional development as "the sum total of formal and informal learning pursued and experienced by the teacher in a compelling learning environment under conditions of complexity and dynamic change" (p.265). He argued this new mindset for professional development among teachers should contain moral purpose, pursue continuous improvements in professional work cultures, and be embedded in the continuum of career-long teacher education.

Obstacles to Quality Teacher Professional Development

High-quality professional development helps teachers develop the skills they need (National Commission on Teaching & America's Future [NCTAF], 1996). However, teachers' efforts to participate in high quality professional development are often limited by a wide range of barriers. The barriers identified in literature appear to range from internal factors such as teachers' feelings or motivation, to more external factors such as financial hardship or time. Also, there are some myths of professional development that hinder the implementation of professional development as well.

Some of the most frequently mentioned barriers are funding and time (National Commission on Teaching & America's Future [NCTAF], 1996). These are the two most

fundamental factors for any type of school plan. However, when schools experience financial hardships, the budget for teacher professional development is usually the first to be cut. Likewise, time is never enough for professional development because it is not embedded in teachers' work schedules and teachers have to allocate extra time outside their schedules.

Another burdensome barrier is the lack of rewards for teachers' outstanding work. Teachers need to be acknowledged for taking on a piece of challenging work or achieving great accomplishments in knowledge or teaching skills. Thus, the existing small and inconsistent incentives might constitute a serious barrier.

A new professional development agenda that is disconnected with context is also a serious obstacle. Such a program has very little impact on teaches' practice or subject knowledge (Advisory Committee on Mathematics Education, 2002). This often happens when a school invites external experts who do not have any contextual sense of the operations. Another issue with a new professional development plan is that they often do not entail follow-up support for the continuum toward a new level of knowledge. Follow-up support is critical in order to ensure that learned practice is appropriately implemented in the classroom (Guskey, 1999; Hawley & Valli, 1999). This one-shot workshop type of professional development with no common goal or long-term plan has been criticized. However, these are still pervasively used (NCTAF, 1996).

The district's top-down, push approach of professional development is also a barrier as it allows teachers very little control over change or school's professional development (Helsby, 1995). Teacher-centered/owned development is suggested as one of the key ingredients for a successful professional development (Loucks-Horsley et al., 1998). However, when asked about the extent of which teachers perceive of ownership of the program, only a small number of people reported that they experience some degree of ownership (NCTAF, 1996). Without proper

ownership over their own development, teachers may not be sufficiently motivated or inspired to participate in the program.

An isolated culture of teaching practice can be a barrier as well. According to Hargreaves (2000), teacher isolation originated from the age of the autonomous professional in 1970s. Although many teachers desire to collaborate so as to receive help in their classes and teaching practices in this time of complexity, inadequate time and financial management on the part of relevant governmental bodies are still substantial problems.

Finally, there are myths of professional development. Speck and Knipe (2001) propose three myths in professional development:

- All teachers need the same professional development programs
- All teachers come to the system prepared to meet the challenges of today's youth
- All teachers recognize the need to change their practices as new content and teaching strategies emerge

NCTAF (1996) also suggested five myths of teaching that include:

- Anyone can teach.
- Teacher preparation is not much use.
- Teachers don't work hard enough.
- Tenure is the problem.
- Unions block reform.

These myths appear simple. But teaching work is a substantial distraction to professional development, especially when there is a need to plan a thoughtful, coherent, and long-term plan (NCTAF, 1996).

Summary

In this chapter, I discussed four relevant areas that guided my research question. First, I reviewed scholarly discussions on situated learning by analyzing seminal works that are highly influential in the field. This was then followed by a discussion of the concept of a generic community that provides a broad perspective of the study area. In the subsequent section, the focus was narrowed to the online community, which was the primary research theme of this study. Specifically in this section, I reviewed the concept of an online community and its historical development. This was followed in the third section by the use of online communities in support of teachers. In the final section, I discussed teachers' professional development to provide contextual information for the research topic.

In the next chapter, I build on the preceding literature review of these relevant topics to present a detailed design of the study that would help identify what constitutes a successful online community for teachers' professional development.

CHAPTER 3

METHOD

Overview

The purpose of this study was to develop a conceptual model for the design of a successful online community to support teachers' professional development. It first identified the critical elements of a successful online community that supports teachers' professional development. Second, it sought the specific implementation strategies and possible online community features for each element. Finally, these findings led to the development of a conceptual model for an online community. Given this purpose, I sought to address the following research questions:

- What constitutes a successful online community to support teachers' professional development?
    1. What are the critical elements to consider for designing a successful online community for teachers' professional development?
    2. What are the appropriate strategies to implement each identified element?
    3. What are the possible online community features to implement such elements and strategies?

This chapter discusses the study design, sample selection, as well as data collection and analysis methods. This chapter concludes with a discussion of issues related to validity, reliability, and ethical considerations of the study.

Design of the Study

In this dissertation, a qualitative Delphi study design was used. Delphi is a collective human intelligence process among experts that serves the purpose of handling a complex problem systematically (Linstone & Turoff, 2002; Wilhelm, 2001). This collective communication process entails a series of data collection phases to distill knowledge. In other words, data are collected and synthesized from experts. Such synthesized information and feedback on opinions derived from earlier responses are reflected in the material for the next round of data collection. This process is repeated, each time with information accumulated from the previous round. The process is thus, referred to as *knowledge distillation*. Of note, this collaboration process among experts does not require them to meet face-to-face. The responses from each participant are kept anonymous in order to ensure equal opportunities for each participant to express individual judgments on the subject matter, without being overpowered by a dominant participant.

Historically, Delphi was devised at the height of the cold war in the 1940s and 1950s. The United States Air Force sponsored the RAND Corporation to conduct 'Project DELPHI' to generate forecasts for military purposes. Their research method was based on obtaining the most reliable consensus of opinion from a group of experts (Dalkey & Helmer, 1963). Dalkey and Helmer, the researchers of 'Project DELPHI,' later systematized this method and publicized it. Because it was devised to forecast the impact of technology on warfare, the goal of Delphi has been understood as a process to forecast, assuming that the "uncertainties of the future call for intuitive probabilities" (Dalkey & Helmer, 1963, p. 459).

Since then, Delphi has been further developed to be used in more versatile ways to serve more than just technical forecasting purposes (Delbecq, Van de Ven, & Gustafson, 1986;

Linstone & Turoff, 2002). Its exceedingly wide range of applications in recent years includes social, scientific, health, business, and educational research endeavors (Wilhelm, 2001). For example, in social science, Delphi has been employed to determine key workplace competencies and attitudes required for success in the business arena (Satterlee, 1999; Tokar & Brown, 1996; Wilhelm, 1999; Yuche & Stewart, 2001), to develop the most appropriate practices for child and family care (Davis et al., 2004; Morrow-Howell, Burnette, & Chen, 2005; Swennenhuis, Vermeer, Rispens, Teunissen, & Wensing, 2004), to identify trends and issues affecting economic development (J. W. Fisher, 2001; Thomas & Safrit, 2002), to assess and validate educational programs (Garavalia & Gredler, 2004; Tigelaar, Dolmans, Wolfhagen, & van der Vleuten, 2004), and even to conduct research in regards to educational technology and its integration into the school (Clark, 2006; Pollard & Pollard, 2004; D. L. Williams, Boone, & Kingsley, 2004).

Delphi's data collection method has also grown more diverse. I specifically identified this study as a *qualitative* Delphi study as Delphi can use both quantitative and qualitative data collection methods. It was originally understood to rely heavily on quantitative measures using a series of surveys. Although statistical analyses are still popular in many studies using Delphi, different methodological attempts have been largely employed, including open-ended interviews (Facione, 1990; Volman, 2005), round-table discussions (Brace-Govan, Farrelly, Joy, Luxton, & Davey, 2001; J. W. Fisher, 2001; Volman, 2005), and mixed-methods (Asla & Pearce, 2001; Koster, Brekelmans, Korthagen, & Wubbels, 2005). Noticeably, these modified forms of Delphi have utilized qualitative research methods, not just as a supplementary technique for statistical data, but also as a primary research tool. These arguments establish Delphi as a general research method that can work as a powerful qualitative research methodology as well (Facione, 1990).

My research questions were aimed at investigating the constitutions of an effective online community for teachers' professional development. To address these questions, I found Delphi to be most suitable in the following ways. First, the properties of my research application led to the need to employ Delphi. Linstone and Turoff (2002) listed several situations that call for the utilization of Delphi. One of these situations particularly fits my research context: the "problem does not lend itself to precise analytical techniques but can benefit from subjective judgments on a collective basis" (p. 4). This study is focused on identifying what constitutes an effective online community. It is a highly complex theme that does not lend itself to precise analyses. Given this complexity, I adopted the Delphi approach because it allowed me to execute collective problem solving.

Second, identifying what constitutes a successful online community for teachers' professional development calls for a reliance on expert knowledge. Individuals who have exclusive experience in using such communities will be able to discuss the critical elements necessary for a successful online community for teachers, as well as the relevant implementation strategies. This is precisely why many studies that explored critical factors of teaching practices utilized the Delphi method (e.g., Ali, 2005; Bitter-Rijpkema, Martens, & Jochems, 2002).

Finally, expert involvement may increase the reliability of the research outcome (Ali, 2005). As Delphi allows sufficient time for experts to ponder upon the matter and ensures that every expert has an equal opportunity to express his or her judgment, the results reflect well thought-out and rational opinions. The rigorous and logical outcome from experts' collaboration is useful in constructing a conceptual model that is reliable and trustworthy.

Expert

As discussed thus far, this study employs a Delphi as its research method. A Delphi involves a collective communication process among *experts* to solve the complex problems through collaboration. In a Delphi study, participants are not randomly selected. Instead, they are restricted to people who are considered as *experts* in a particular topic area. This process adds unique characteristics to the study and works as a primary drive in the progress of the research. In this regard, this section explores the concept of an *expert* by looking at how experts are identified, their characteristics, as well as the advantages and disadvantages of utilizing experts as participants in a study.

According to a common dictionary definition, an *expert* simply refers to "a person with a high degree of skill in or knowledge of a certain subject" (American Heritage Dictionary, 2006). However, researchers have persistently attempted to define and analyze its meaning over the years. One of the most prominent definition of an *expert* was suggested by Hoffman (1998). He distinguished the levels of expertise into seven stages: naivette, novice, initiate, apprentice, journeyman, expert, and master. An *expert*, among these seven, indicates:

> The distinguished or brilliant journeyman[1], highly regarded by peers, whose judgments are uncommonly accurate and reliable, whose performance shows consummate skill and economy of effort and who can deal effectively with certain types of rare or tough cases. Also, an expert is one who has special skills or knowledge derived from extensive experience with sub-domains (p. 85).

The definition appears to point to a description of a highly intelligent person. However, Hoffman's distinction is based on the assumption that expertise is domain-limited. That is, such a

[1] Journeyman: "Literally, a person who can perform a day's labor unsupervised, although working under orders" (Hoffman, 1985, p. 85)

description is true only within the boundaries of a certain subject domain. In fact, he emphasized that expertise is not the same thing as intelligence when he stated that:

> Traditional intelligence tests are intended to assess and predict performance in a particular context. A given experts may possess low general intelligence or low ability outside their domain of expertise (p. 83).

This domain-specific nature of an *expert* seems to be supported by other researchers. For example, Glaser and Chi (1988) included this idea among the characteristics of experts that they listed.

- Experts excel mainly in their own domains,
- Experts perceive large meaningful patterns in their domain,
- Experts are faster than novices at solving problems with little error,
- Experts have superior short-term and long-term memory,
- Experts see and represent a problem in their domain at a deeper and more principled, level ,than novices; novices tend to represent a problem at a superficial level,
- Experts spend a great deal of time analyzing a problem qualitatively, and
- Experts have strong self-monitoring skills (p. XIX)

According to Chi (2006), these qualities of experts enable them to excel in many areas, including generating the best solution, recognizing the patterns/problems, executing qualitative analyses, possessing self-monitoring skills, selecting appropriate strategies, and making good use of resources. He also pointed out that there are some weaknesses that the experts often hold. These include domain-limited expertise, overly-confident attitudes, overlooking the surface/concrete features, inaccurate predictions of novice performances, signs of inflexibility, and biases.

Understanding that experts may possess all these characteristics, I wondered, "How did I know my participants were experts" (Hoffman, 1998, p. 84). Chi (2006) suggested three approaches to identify an expert. One method is to examine the results that a candidate has previously produced. A second method is to measure how well a candidate performs his or her tasks. The last method is to use an "independent index" (p. 21) that comprises a list of indications of one's expertise. These three approaches suggest that, in order to select an expert, one must rely on a certain measure of the candidate's performance.

In summary, experts are people who have exceptional abilities in their own domain area. They are more capable than novices in many ways, including problem solving. At the same time, they also have their own weakness as experts, such as domain-limited knowledge or bias. To identify a true expert, one should have utilized a performance measure of the products that they produced, their ability to perform relevant tasks, or using various established criteria to ascertain their levels of expertise.

Previous Studies

Two prior studies led to the design and execution of this research. The first study was conducted from 2004 to 2005 (Moore & Chae, 2007), and employed qualitative interviews. Its purpose was to understand how beginning teachers actually utilized online resources and communities in their professional practices. However, the study results revealed that beginning teachers do not necessarily go to online communities to seek support for their problems. It appears that online communities do not attract beginning teachers' attention when other online resources are vying for very limited amounts of teachers' time. This may suggest that the way current teachers' online communities are structured does not quite coordinate with beginning teachers' actual needs.

Inspired by this need of the structure of an online community that reflects beginning teachers' needs more effectively, a second study was executed in 2006. The purpose of this second study was to establish a systemic understanding of beginning teachers' needs in using online communities. Using these results, the study sought to develop a conceptual model to suggest an ideal structure of an online community for beginning teachers.

However, during the data collection process, we came to understand that it was necessary to include only interviewees with exclusive experience with online communities. We conducted our first five interviews with randomly selected beginning teachers. From their responses, we learned that it was very difficult to obtain focused and relevant responses if the interviewee was not very experienced the environment of an online community for teachers. Because of our random sampling, it was very likely that the sampled interviewees would not have had a full understanding of the study topic. In addition, our research question was very specific on the structure of an online community. Therefore, our sample required participants with prior *expertise* for their responses to be useful.

This dissertation study was strongly influenced by these two earlier studies. The first study inspired my question on what would make an effective online community for teachers. My experience from the second study led me to use Delphi, a collective communication process among experts in the respective area, to obtain focused responses from interviewees for this content-specific subject matter.

Participant Selection

A criterion sampling (Patton, 2002) strategy was used to select participants that have particular characteristics suitable for the research. The use of criterion sampling, as a type of purposive sampling, is to deliberately select sample units that meet the pre-selected criterion

(Patton, 2002). As communication among experts is an essential part of the Delphi method, solicitation of the appropriate experts is undoubtedly critical to the success of a study (Ludwig, 1997; Wilhelm, 2001). Hence, the selection process must be governed by explicit criteria (Wilhelm, 2001), and not a random choice.

As this study aimed to develop a conceptual model for designing a successful online community that supports teachers' professional development, my research was sensitive to two major practices: online communities and teachers' professional development. Thus, it is logical to have experts who have expertise in both areas. In the process of selecting such experts, two groups were identified: those who design/develop online communities for teachers, and the teachers who use such communities. Designers/developers of an online community for teachers' professional development are most likely to have the expertise in both areas of online communities and teachers' professional development. Similarly, teachers who are highly experienced in utilizing such a community will also have well-developed expertise in both areas.

It was critical to have both developers and users in order to attain a more comprehensive and holistic picture of a conceptual framework of an online community. While online community developers have sufficient expertise to provide information about meanings, the end-users (teachers) can provide practitioners' authentic and practical viewpoints that developers might overlook, and hence, increase the validity of the study. Consequently, I used the following criteria for inclusion in the study:

1. The selection criteria for the expert group of designers/developers are:
    1) The participant has (had) been involved in designing and developing an *existing* online community for teachers' professional development, and

2) The participant has published or presented at least two articles on the issue of online communities for teachers' professional development.

2. The selection criteria for the expert group of K-12 school teachers are :
    1) The participant was serving as a teacher in K-12 school during the time of selection, and
    2) The participant has been actively participating in the online communities for teachers' professional development at least for last 2 years, by taking a leadership role, such as a facilitator of a group, an online mentor, or a designer of a community.

Most importantly, across these requirements for both groups, all expert panelists must have a keen interest in the problem topic. In this way, the focus of the research can be maintained through the course of the study (Delbecq et al., 1986).

As groundwork for selecting the participants for this study, I first explored existing well-known online communities for teachers. This environment scanning step was critical to ensure that I was sufficiently well-informed about the current situation to conduct the study. Through this process, I found various online communities for teachers, learned their characteristics, identified the developers, and self-rated their qualities based on their relations to this study.

The selection process began after sufficient knowledge was gained from the groundwork. Potential participants were identified using different methods. For soliciting the expert group of developers, I searched three different sources. First, the developers of online communities who were identified during the groundwork were considered as the most important. At the same time, I referred to scholarly literature to identify experts who have been actively engaged in the topic area. In addition, I consulted contemporary scholars and professionals who were involved in the development of online communities, to acquire recommendations for appropriate candidate

teachers. Through this initial search, I was able to construct the shortlist of potential participants. I then specifically checked their history of publication to verify if the participant met the criteria of sample selection of this study. As a result, 14 potential participants were identified. Finally, a customized invitation email to each individual was sent and five developers consented to participate in the study (see Appendix A for participant recruitment email for developers).

Upon confirming five participants from the expert group of developers, I asked them to recommend a teacher participant whom they considered as an active user of online communities for teachers. Three developer participants were each able to recommend a teacher based on their knowledge, whom they thought was an appropriate candidate. Upon my request, all three agreed to participate in the study. In order to have an even equal number of participants as the group of developers, I revisited well-known online communities I identified during the groundwork phase, and sought potential teacher participants who appeared actively involved. As a result, I identified four teachers as potential candidates and sent out customized invitation emails to each (see Appendix B for participant recruitment email for teachers). Two consented to participate in the study.

In summary, the confirmed participants in this study comprised 10 respondents, including five from the developer group and five from the teacher group.

Data Collection

Data Collection Method

The primary data collection method of this study was interview. As this Delphi study is a group collaboration process among experts who are geographically dispersed, interviewing the participants (experts) on the focused matter was the most appropriate method. In addition, as this

study did not have a physical research site, other qualitative study methods, such as field notes, observation, or journal writing were found to be unsuitable.

A research interview is a process in which a researcher and participant engage in a meaningful conversation focused on questions associated to a research study (deMarrais, 2004). There are several types of interviews, including highly structured, semi-structured, and unstructured (Merriam, 1998). They vary based on the level of control exerted by the researcher during the interview and the degree of structure (Esterberg, 2002). This study employed a semi-structured interview protocol that is designed to capture the elements of successful online community for teachers' professional development. Being considerably less rigid than structured interviews, the semi-structured interviews explore a topic more openly and allow participants to respond in their own words while keeping the pre-established sequence of questions.

Due to probable geographical dispersion among participants, data collection in this study was planned to be conducted primarily through phone interviews. However, taking under consideration that these experts might be heavily occupied with their profession, multiple interview options were offered in order to conserve their time. Eight out of 10 participants chose to have their interviews via the telephone. One participant asked for a face-to-face interview and another participant selected email as the interview method.

Data Collection Procedure

Once the expert panel was confirmed, the rounds of data collection began. Inspired by Fowles (1978)'s model for the Delphi method, this Delphi study comprised 14 steps that were grouped in four major sessions: Background survey, the first round, the second round, and the final round. The data collection took approximately five months, comprising a total of 20

interviews, along with three rounds of feedback sessions. Table 2 presents the specific procedures and the timeline of this study.

Table 2

Data Collection Procedure

Sessions	**Tasks**	**Date**
Expert selection	Invitation email sent out with timeline	Sep 13, 2007
	All participants confirmed	Oct 1, 2007
Background Survey	Background survey sent out with the protocol for the first round interview	Sep 27, 2007
	All background surveys received	Oct 3, 2007
First round interview	First round of interviews began	Oct 3, 2007
	Results from first round of interviews sent out for feedback	Oct 17, 2007
	All feedback received	Oct 29, 2007
	Protocol for the second round of interviews sent out along with modified results from first round of interviews	Oct 31, 2007
Second round interview	The second round of interviews began	Nov 2, 2007
	Results from the second round of interviews sent out for feedback	Dec 21, 2007
	All feedback received	Jan 17, 2008
Final round	Final model emerged and sent out for feedback	Jan 21, 2008
	7/10 feedback received	Jan 30, 2008
	The final model revised	Jan 30, 2008

Background survey. As illustrated in Table 2, the first session was the background survey (see Appendix C for developers' background survey and Appendix D for teachers' background survey). The online questionnaire was administered to every participant approximately one month prior to the start of the interview. The survey first asked some information about their affiliations, years of experiences, duties, roles, and the types of contribution/participation in the respective community. However, the primary purpose of this online questionnaire was to gain a sense of how each participant perceives online communities for teachers and their conditions for success. The survey asked, *how would you define a successful online community for teachers? What would make you think a particular community is successful?* I used the responses gathered from this survey to plan the subsequent interviews in a more effective way.

This survey was also intended to provide an opportunity for the participants to think of the study topic ahead of their interview time. Overall, the background survey was used as an effective orientation tool to understand every participant's perspective on online teacher communities.

First-round interview. The majority of the first round of interviews lasted for approximately 40 minutes. I called each participant at the interview time that they previously consented. During each phone interview, I followed a series of steps. After thanking him or her for agreeing to be interviewed, I read through the consent form on the phone (see Appendix E for consent script). I used the Polycom conferencing speaker and two digital recorders, to record all telephone conversations.

Before the first interview with each participant, I carefully examined the response received from the background survey. It provided me with an idea of how I might approach each

participant. Based on the information from the background survey, I developed an interview scenario for each participant with possible probing questions (see Appendix F for an example of interview scenario).

With individualized scenarios ready, I began interviewing each participant. The first round of interviews started with an encompassing question, “What do you think makes a successful online community?” instead of asking specific questions about elements, strategies, and actual design ideas. This way, participants were able to express themselves more freely without being limited and possibly confused about various terms. The background survey results showed that the participants might perceive these terms (elements, strategies, and online community features) differently. I would later categorize the mixed responses into each domain, including elements, strategies, and online community features.

Once all of the first interviews were completed and transcribed, I began analyzing the content. The content was categorized into a chart that comprised 13 elements (Appendix G). This was sent to each participant to request for feedback. I added a note that their feedback might focus on any area they wished to cover in further detail, such as themes, categories, format, and wording. I received feedback from all participants in approximately 12 days after sending out the results from the first interview. After all of their feedback was received, I modified the chart (Appendix H) and developed the second interview protocol based on the results (Appendix I). Then the protocol and the modified results from the first interview were sent back to the participants, so that they could prepare themselves for the second interview.

Second-round interview. The second round of interviews took approximately 50 minutes for most of the participants. Similarly, I called the participants at the time they agreed upon prior to the interview. As such, all the participants were ready with the modified chart and protocol at

hand. During the first interview, the participants mainly discussed critical elements and strategies in the design of a successful online community for teachers' professional development. Thus, I designed the second interview in such a way that we could focus on the actual design ideas beginning with the question, "How might we put these ideas into practice?" All participants wished to focus on the elements of their choice from the chart and suggested possible features of an online community as actual design ideas. In addition, they shared their thoughts about the structure of the chart, such as categorization and relationships. Once all second interviews were completed and transcribed, I analyzed the content. Based on the analysis of results from the second round of interviews, the chart was modified with a newly-added section on potential online community features. This was sent to the participants for feedback (Appendix J).

Final round. All participants sent their feedback on the results from the second round of interviews. Based on their feedback, the final model was developed (Appendix K). Although the final model was sequentially based on the two previous rounds of interviews and the feedback from interviewees, all data collected were carefully checked to ensure that the final model took into account all the factors that were brought up till this point.

The final model was distributed for a final round of feedback from the participants. Seven participants provided feedback and the final model was fine-tuned (see Figure 2).

Data Analysis

In qualitative research, the data analysis runs simultaneously with the data collection process (Merriam, 1998). Because new concepts and themes constantly emerge, the researcher needs to adjust the direction of the data collection based on the flow. Likewise, in this study, the data analysis began with the first round of interviews, followed by ongoing analyses throughout the study.

Specifically, this study follows the data analysis method that was introduced by Ruona (2005). She organized the qualitative data analysis process into four stages, comprising *data preparation, familiarization, coding,* and *generating meaning*. In a unique way, she introduced a means to execute the data analysis process by using word processing software. According to Ruona (2005), the use of a basic word processing software is highly effective in organizing the content. It also allows the researcher to:

- Quickly and thoroughly recode the data as themes emerge and evolve and make other global changes,
- Open multiple windows to view different data sets simultaneously, and
- Customize the tables according to your specific questions and approach (p. 250)

This method guides researchers to develop a simple and straightforward data analysis process. It is also highly procedural, thus allowing easy systematizing of the data. As this study sought to develop a well-categorized model at the end, this method was found to be a suitable for analysis.

Data Preparation

Each interview was first transcribed into the plain text. Then, I created a table with a header row to include headings such as *Theme, ID, Q, Page, Data,* and *Notes* (see Appendix L for sample table). They were used for:

- *Theme*: To record emerging themes in the data.
- *ID*: To label the participant that is speaking. I used an initial of each participant for ID.
- *Q*: In this column, I put one of the three main inquiries of this study: elements, strategies, and design ideas for designing a successful online community for teachers' professional development. This enabled me to devise a model based on the main inquires in this study.

- *Page*: I added the page number of each data recorded in the data column so that I would be able to quickly locate and track information within the data.
- *Data*: For the actual text from the data, divided into meaningful segments.
- *Notes*: I recorded my personal thoughts and reflection on the data in this column.

In the end, a table with six columns was prepared to be used as a template for the subsequent data analysis process.

Familiarization

This is an initial data analysis period that enables a researcher to be actively engaged with the data. As I incorporated this into my study, I first read the transcription of each interview multiple times until I felt fully familiar with it. While reading it, I highlighted meaningful segments (a phrase, sentence, or passage) and made notes if there were recurring themes. Then I copied and pasted these segments into the data column of the table that was created during the preparation period. I repeated this process for all interview transcriptions and finally, 10 separated data tables per interview round were created (see Appendix L for sample table)

Coding

This process involves "further segmenting data into categories/themes" (Ruona, 2005, p. 255). When I coded my data, I first compiled a list of the themes that emerged from the familiarization stage. Once this list of themes was established, I entered the appropriate themes for each segment of data in the data table. Ruona's (2005) original method suggests tagging the themes with a code number. For this study, however, I found it more efficient to code the data directly with themes, rather than with numbers associated with the themes. Because there were only 13 themes established from the initial analysis, I did not see a need to tag them with numbers, which would normally be used to systematize a large number of themes.

After the first round of feedback was received, the interviews progressed to the second round. At this stage, the list of themes constantly changed. I realized some of the data that I initially thought would fit into one category seemed to fit better in another. Strauss and Corbin (1998) noted that, in a qualitative study, the data analysis is "a free-flowing and creative one in which analysts move quickly back and forth between types of coding in response to the analytic task" (p. 58). In view of this, I continued to edit my coding system as it evolved through the course of my data collection.

Generating Meaning

This stage involved merging all data to generate meaningful results. Once each interview had been coded with themes, I began comparing them to "identify core consistencies and meaning" (Patton, 2002, p. 453). I organized them into a diagram using *Inspiration* software (Appendix M). Once they were presented in a pictorial figure, it became much easier to compare them. I moved them around to see if they could be merged or separated. I also colored them differently to distinguish the items. After multiple attempts at re-organizing the categories, I finally merged all of the data together into a master model that was composed of the elements, strategies, and the online community features. I adhered to this process for the first and second rounds of interviews. Since the final round involved receiving feedback on the results from the second round as well as feedback on the final model, I did not follow the same data analysis steps. Instead, I developed a checklist of feedback received, made the necessary modifications accordingly, and subsequently checked if all feedback content were reflected.

With ongoing analysis through every round of data collection, the model was constantly fine-tuned and integrated into a conceptual model, which will be presented in the Chapter Four.

Establishing Trustworthiness

Lincoln and Guba (1985) argued that it is inappropriate to use conventional criteria to examine the quality of a qualitative research. Conventional criteria, such as validity and reliability are conceptualized based on the quantitative assumption that there is single causality for an issue. Unlike the quantitative paradigm that views the world in static states (Firestone, 1987), the fundamental assumption of a qualitative study is that reality is holistic, complex, and evolving. Hence, there is no generalizable reality. Lincoln and Guba (1985) suggested a new concept called *trustworthiness* as appropriate criteria for qualitative inquiry. They described that trustworthiness is a response to "How can an inquirer persuade his or her audiences that the findings of an inquiry are worth paying attention to, worth taking account of?" (p. 290). To this end, they suggested four means to establish trustworthiness. These are credibility, transferability, dependability, and confirmability.

Credibility

According to Lincoln and Guba (1985), in order to establish credibility, the reconstructions of data must be credible to the respondents. Also the study should satisfy the readers as they will assess the credibility based on their perspectives. Thus, the study must be ensured of providing the credibility for both respondents and ultimately the readers of the study. Having these considerations in mind, I used three strategies to establish credibility.

Triangulation. The first strategy was triangulation. Triangulation is an approach that uses multiple sources, methods, investigators, or theories in order to confirm the findings (Denzin, 1970). Multiple sources involve "multiple copies of one type of source (such as interview respondents) or different source of the same information" (Lincoln & Guba, 1985, p. 305). Specifically, this study triangulated data sources from multiple rounds of data collection

including the background survey, the first round and second rounds of interviews, and the final round of feedback.

Another effort of triangulation of this study was to have both developers and user groups represented in the expert group. A more comprehensive framework was built using both providers (developers) and consumers (users) of teachers' online communities. This is more useful than relying on one-sided perspectives from the stakeholders. In particular, including the user group among the participants led to concrete and practical viewpoints that developers might overlook.

Member checking. I used member checking as another strategy to establish credibility. Member checking refers to "taking data and tentative interpretations back to the people from whom they were derived and asking them if the result is plausible" (Merriam, 1998, p. 204). In this study, member checking was incorporated in the procedure of the data collection itself. Due to the characteristics of the Delphi method, there is a feedback session at the end of every round of interview. The interview responses of each round were synthesized and distributed to the participants in order to verify my interpretations. The responses were then modified based on the participants' feedback and reflected in the interview questions for the next round of the study. Information was circulated between each participant and myself throughout the study. In addition, after every round, the participants were asked to do a final check to ensure that their responses were adequately captured. In sum, constant member checking occurred throughout the data collection process in this Delphi study.

Journal writing. A journal consists of personal reflective notes that "record (a) variety of information about (the) self and (the) method" (Lincoln & Guba, 1985, p. 327). As the study includes four rounds of interactive data collection, it was critical to make notes that document

my personal progress. I kept my journal using the Microsoft Office OneNote 2007, a note-taking and information-management program that allows to capture ideas and information in electronic form (Microsoft, n.d.). This software helped me easily track my thoughts, reflections, and questions, especially on the grounds of certain decision making points in the process.

Dependability and Confirmability

In a research study, dependability is defined as a review of the quality of the integrated processes of data collection, data analysis, and theory generation. Confirmability is a qualitative measure that reflects how well the inquiry's findings are supported by the data collected (Lincoln & Guba, 1985). Lincoln and Guba (1985) suggested a major technique for establishing both dependability and confirmability: inquiry audit. It is a thorough examination process for both the process and the product of a study. In order to provide an audit trail so that researchers including myself can track down subsequently, I kept all the raw data including electronically recorded materials, written notes, data reconstruction, and synthesis products. Additionally, I kept a journal that consisted of my personal reflective notes. As the study included four rounds of interactive data collection, it was critical to make notes to document my personal progress as the study evolved.

In this study, I followed suggestions from Lincoln and Guba (1985) to include an independent audit of my research methods by a competent peer. My auditor, Stephanie Jones, is a professional school library media specialist and a doctoral student in Instructional Technology. She is also in the process of completing her Ph.D. dissertation on the topic of school library media specialists' career choices using Life History, a major qualitative research methodology. After I completed my data analysis, my auditor thoroughly examined my audit trail comprising the original transcripts, data analysis documents, feedbacks from the participants, and the text of

the dissertation itself. She examined the level of dependability in my study by checking if my arguments were complete, thus allowing readers to follow and understand the derived conclusion. She also assessed the extent of confirmability in my study by reviewing if my study had clearly illustrated the way in which I arrived at my interpretations of the data. Through this thorough process, my auditor reviewed the confirmability and the dependability of this study and determined that they were handled with excellence.

Transferability

In a research study, the level of transferability refers to the degree in which the findings of the study can be applied or transferred beyond the bounds of the project (Lincoln & Guba, 1985). According to Lincoln and Guba (1985), transferability is, in conventional sense, not possible to establish in qualitative study. It may be possible only by providing a thick description that enables readers to make their own transferability judgments. While it is difficult to address this transferability within the design of the study, I attempted to make thick and rich descriptions in the presentation of my research process and results as comprehensively as I could.

Researcher's Biases

As a researcher who had been involved in projects related to teachers' online communities, I realized that I have pre-established thoughts about how an effective online community for teachers should look like. In other words, I already had a mental picture of an ideal online community for teachers' professional development prior to conducting the study. Thus, I had to be cautious about leading the interviewees to the characteristics of an ideal online community system that I have pre-envisioned through my years of experience. To adequately reflect the participants' expert perspectives in creating a model for the design of a successful

online community for teachers' professional development, I paid careful attention to my own assumptions about the research topic consistently.

Another bias I was aware of is my epistemology. When I enrolled in the doctoral program, my research orientation was largely oriented toward an implicit positivist inclination. I thought the primary goal of research on teacher education was to "change" teachers by educating them properly. Over time, I adopted a different perspective. Now my primary approach toward teacher learning is to "understand" and "support" teachers, so as to ensure that their voices are reflected and documented in my research. This is what this study ultimately pursues: the means to develop an effective supporting tool for teachers. However, despite this paradigmatic change as a researcher, I did recognize that I needed to recognize that completely dropping a positivist perspective would be difficult, if not impossible, to accomplish. Therefore, I paid close attention to my own epistemological orientation by keeping a journal. Making reflective notes throughout the whole research process was very useful in helping me watch my personal biases.

Ethical Consideration

To ensure that the participants were treated in an ethical manner, I set up a list of precautions regarding ethical issues related to research with human subjects. The first pertained to an informed consent form. As the interviews were done via phone, the consent form was read to the participants to seek their respective agreement. In the consent script, it was clearly stated that the interview would proceed only with the participant's consent, that they might end their participation at any time. Furthermore, they did not have to answer any questions they did not feel comfortable to answer.

Second, as a precaution to protect participants from disclosures, digitally recorded interview files were stored in my computer hard drive with password protection. I am the only

person who has access to the digital files for transcription and coding purposes. These files will be destroyed five years upon the completion of the study.

Finally, I was concerned about the protection of the participant's privacy. For most studies, participants' identities would remain confidential to protent their privacy. However, since this is a Delphi study, I asked about their preferences on this issue and all participants kindly allowed me to include their names on the list of contributors in publications developed from this study. Nevertheless, the name of each participant is not associated with the specific content and each particpant was simply address as "an expert."

Summary

This chapter presents the study method that was implemented to identify what constitutes a successful online community. A qualitative Delphi study design was employed. Due to the characteristics of a Delphi study design, 10 experts who met the pre-established criteria of expertise in the field of online communities for teachers' professional development were selected as participants. Two different groups of experts including a developer group and a user group were selected in order to obtain more comprehensive data. Subsequently, with the experts selected, four rounds of data collection were conducted. Data collection rounds included a background survey and three consecutive rounds of interviews. With the information gathered from the background survey, the first round of interviews was focused on identifying the elements and strategies for the design of a successful online community. The findings from the first interviews were sent to the participants for their feedback. The second round of interviews was framed around the feedback received. The second round focused on identifying actual design examples pertaining to each element. The findings were again sent to participants for their feedback. Using the results of each interview and the feedbacks received, a final model that

comprised elements, strategies, and actual design ideas emerged. This was again sent to the participants for their feedback. The data collection took approximately five months and a total of 20 interviews were conducted. The findings are presented in the next chapter with specific descriptions of the conceptual model that emerged after the final round of data collection.

CHAPTER 4

FINDINGS

Overview

The purpose of this study was to develop a conceptual model for the design of a successful online community to support teachers' professional development. It first identified the critical elements of a successful online community that supports teachers' professional development. Subsequently, the specific implementation strategies and actual design ideas for each element were sought. Finally, these findings led to the development of a conceptual model for an online community. Given this purpose, I sought to address the following research questions:

- What constitutes a successful online community to support teachers' professional development?
    1. What are the critical elements to consider for designing a successful online community for teachers' professional development?
    2. What are the appropriate strategies to implement each identified element?
    3. What are the specific design examples to deploy such elements in a real online community environment?

Following this short overview of the study, this chapter integrates the findings to present a conceptual model for the design of a successful online community to support teachers' professional development. The resultant model represents what 10 experts in this area recommended as critical elements for consideration in the design of a successful online

community for teachers' professional development (Figure 2). For each element, experts also suggested the appropriate strategies and possible online community features as actual design ideas. An integrated model of all three dimensions (elements, strategies, and online community features) is presented in Table 3, which is a detailed version of Figure 2.

Briefly, Figure 2 and Table 3 both serve as a conceptual model for the design of a successful online community for teachers' professional development. Figure 2 illustrates the categorization of critical elements to consider in the design process and Table 3 elaborates Figure 2 by presenting the relevant strategies and online communities features to employ with respect to each element.

It may be important to explain the definition of experts in this study before presenting the findings. First, in this study, all participants interviewed were experts in one of two ways. One group of experts comprised developers of online teacher communities, and the other group of experts included teachers, who were users of such communities. In this study, these participants from both groups are referred to collectively as *experts*. Second, in this chapter, the term, *experts* refer to the experts who participated in this study as a panel, and not the entire expert population in this field. For instance, the statement, "experts showed strong support on this idea," refers to the strong support expressed from experts who participated in this study, and not the entire expert population in the world.

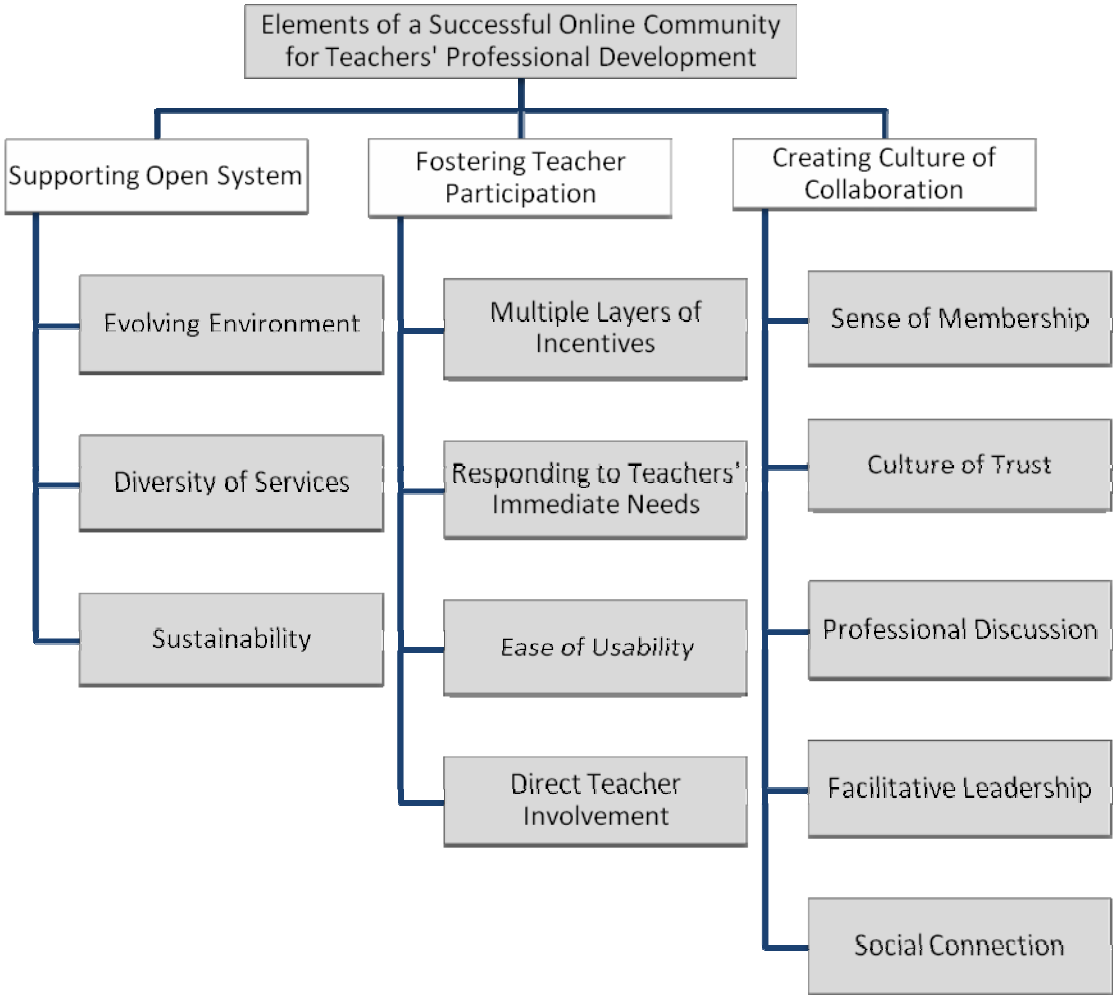

Figure 2. A conceptual model for designing a successful online community to support teachers' professional development (including elements only).

Table 3

A Conceptual Model for Designing a Successful Online Community to Support Teachers' Professional Development (including elements, strategies, and online community features)

I. Supporting Open System		
Evolving Environment	**Diversity of Services**	**Sustainability**
Description: A successful online community for teachers' professional development needs to be highly responsive to emerging needs. It calls for a flexible and open system that can easily accept the needs of modification and evolve so that it can best support teachers with current information and more customized services as much as possible.	**Description:** A successful online community for teachers' professional development needs to provide diverse services and resources in multiple formats so that it can support large numbers of users in more helpful ways.	**Description:** A successful online community for teachers' professional development needs to actively find ways to best sustain itself over time.
Strategies: • Provide roles and means of participation that can change over time. • Constantly assess the needs of teachers • Ensure that the flow of information is fast and dynamic. • Frequently upgrade relevant technologies to meet the needs of the community. • Ensure that the goals and mission of the projects are constantly negotiated**.**	**Strategies:** • Make multiple roles and means of participation available. • Provide multiple formats and venues for entry. • Organize a large number of events in which teachers can participate. • Support all stages in teachers' careers, including the induction, certification period, and retirement periods. • Support both professional discussions (where there are specific solutions for specific tasks) and social connection (where teachers unwind and relax). These however, require careful monitoring to prevent them from becoming extreme. • Support both authoritative subject-matter content, such as research-based curriculum material, and resources like lesson plans developed and shared by teachers.	**Strategies:** • Pursue a self-sustainable community so that it can run after initial leaders leave and funding runs out. • Build a sustainable environment without reliance on high ongoing costs. • Implement ongoing promotion and advertising efforts. • Research and apply marketing strategies from business models. • Maintain a critical mass to sustain the community • Make leadership transferrable. • Ensure that new and fresh ideas are regularly introduced. • Occasionally provide a variety of fun and enjoyable events in addition to routine activities. • Reach out to local communities or schools to provide services.
Possible online community features: • Timely response from the facilitator • Longitudinal tracking of users • Forum or discussion thread in which community members can always suggest something. • Question or issue of the week/month are constantly posted and renewed based on teachers' requests.	**Possible online community features:** • Timely response from the facilitator • Room for every kind of discussion • Special support pages tailored to specific needs such as beginning teachers, male teachers, teachers aspiring to be principals, and retired teachers. • Forum or discussion thread in which community members are invited to make suggestions • Synchronous and asynchronous communication tools	**Possible online community features:** • Some fun statistics or *Trivia* that is renewed weekly • Online events or contests • Online feature that allows change of ownership of the group easily • System that constantly encourages members to take on leadership roles

II. Fostering Teacher Participation			
Multiple Layers of Incentives	**Responding to Teachers' Immediate Needs**	**Ease of Usability**	**Direct Teacher Involvement**
Description: A successful online community for teachers' professional development needs to provide multiple incentives for teachers so that they view its use beneficial and valued.	**Description:** A successful online community for teachers' professional development needs to provide just-in-time resources that are immediately applicable to teaching practices.	**Description:** A successful online community for teachers' professional development needs to be very easy to use so that teachers will feel comfortable and confident about exploring what it can offer.	**Description:** A successful online community for teachers' professional development needs to have classroom/credentialed teachers involved in the process of design and development.
Strategies: • Provide opportunities for teachers to reflect on their own teaching and learning. • Provide opportunities for professional development. • Offer both intrinsic and extrinsic rewards. • Provide opportunities for mentoring and for participants to be mentored. • Provide collaboration opportunities to facilitate inter-participant connections. • Support both emotional and professional needs.	**Strategies:** • Provide resources that meet specific needs imposed on the teachers by the education system and new policies. • Provide resources that support everyday classroom needs, such as lesson plans, classroom management, tips, ideas, and assessment tools. • Provide both innovative and standard resources for recurring and seasonal events. • Present information from politically neutral positions (i.e. provide non-judgmental information).	**Strategies:** • Provide easy access to the site. • Ensure that access is available through the school's firewall. • Provide a user-friendly environment. • Protect private information. • Have the presence of a skilled facilitator or moderator. • Ensure that there is a balance between simplicity of the structure and comprehensiveness of support • Organize resources based on subjects, grade levels, and cross-curricular applications. • Try a scenario-based approach to provide for more contextual support. • Make arrangements such that community leaders/developers experience activities in the community from users' perspectives.	**Strategies:** • Involve classroom/credentialed teachers in the decision- making process from the beginning. • Be sure to reflect feedback from general population, not just from technology innovator teachers. • Announce news and changes of the community to teachers so that they are aware of the updates and are given opportunities to make comments.
Possible online community features: • A space where people can sign up to look for a mentor or offer mentoring to someone • A searchable information archive where teachers can access and reflect on what has been discussed • Community service hours that can be used for required credits to renew teacher certificates • Online conferences • Information on grants for classroom resources and teacher professional development opportunities • Advertisements of companies that provide advantages for teachers	**Possible online community features:** • A space where people report issues on which support is needed • Lesson plan repository • Ready-made handouts for each grade and subject level • A quality-rating system by users • Weekly virtual "office hours" where an individual is available to answer specific questions and provide support	**Possible online community features:** • Specific and visual tutorials • Online and offline training opportunities • Spam control • A real-time help desk • Pilot tests of newly installed functions • A discussion board or forum where teachers can report problems • A platform for community leaders/developers to actually become true community members, rather than just playing monitoring roles	**Possible online community features:** • A space where members can make suggestions for change • A system that allows and encourages group members to have debriefs of discussions and a system that allows community developers to review these debriefs • Monthly newsletters with tips and information about new features and community activities.

Sense of Membership	Culture of Trust	Professional Discussion	Facilitative Leadership	Social Connection
Description: A successful online community for teachers' professional development needs to nurture an environment where teachers can feel a sense of membership. It is about a sense of accountability to the group that teachers contribute to the growth of the community.	**Description:** A successful online community for teachers' professional development needs to have well-cultivated trust among members.	**Description:** A successful online community for teachers' professional development needs to provide an environment where teachers can collaborate to have a meaningful discussion on professional issues such as dilemmas teachers face.	**Description:** A successful online community for teachers' professional development needs to provide a facilitative leadership that can help others make connections. Proving the direction without fully taking the reins will help develop and support a culture of collaboration.	**Description:** A successful online community for teachers' professional development needs to provide a place for teacher renewal and rejuvenation, where teachers can unwind and connect.
Strategies: • Have a skilled facilitator or moderator present. • Acknowledge explicitly the contributions of various individuals or groups of participants so that members can feel like other people use their ideas. • Provide an opportunity for members to meet face-to-face. • Make the agenda of the community explicit: With given boundaries, teachers will have a better understanding about the community. They will know what to expect. • Understand that it takes time to build a community: Be patient. • Create a dynamic environment where every member of the community can offer something. • Emphasize equal participation.	**Strategies:** • Have a skilled facilitator or moderator present. • Offer an opportunity for the members to collaboratively set the norm for the acceptable manners. • Make security and anonymity issues known • Provide an opportunity for members to meet face-to-face. • Allow to create private small groups where users feel safe • Make the agenda of the community explicit: With given boundaries, teachers will have a mutual understanding of what to expect from each other. • Understand that it takes time to establish a culture: Be patient.	**Strategies** • Have a skilled facilitator or moderator present. • Offer pre-made discussion protocol for productive and constructive collaboration. • Have the members of the group set the norms before starting the discussion so that discussion will have some boundaries. • Have a place where people can post their issues that they wish to discuss • Create an environment where there can be many small groups. • Develop a model of a sample discussion so that other members can see how professional discussions can occur.	**Strategies:** • Have a skilled facilitator or moderator present. • Train community leaders. • Make leadership easily transferrable: Provide opportunities for teachers to take up leadership roles. • Create a mentoring system with the available expert teachers. • Acknowledge explicitly the contributions of various individuals or groups of participants.	**Strategies:** • Have a skilled facilitator or moderator present. • Provide emotional support, such as stress management. • Provide a buddy support system where teachers can meet like-minded teachers. • Create a virtual spa for teachers to relax. • Create a fun-filled and family-like environment. • Ensure that there is known security or known anonymity within the community.
Possible online community features: • An online matching service with searchable profiles where teachers can express the type of support and group they need • A live help desk • An online forum for community building activities • An avatar that shows individual contributions • A system that shows the number of hits that are made on each resource	**Possible online community features:** • A live help desk • Small groups that can be created with specific needs • A guideline for professional discussion explaining the pre-cautions and manners • A guideline for the issue of security and anonymity	**Possible online community features:** • Small groups that can be created with specific needs • A guideline for professional discussion explaining the pre-cautions and manners	**Possible online community features:** • A live help desk • An online training tool • An online feature that allows a change of ownership of the group easily • A system that constantly encourages and provides scaffolding for members to take on leadership roles	**Possible online community features:** • Small groups that can be created with specific needs • A bridge that connects such small groups for interactive discussions. • Customized individual pages • A space where people can sign up to look for a mentor or offer mentoring to someone

As illustrated, the experts recommended 12 elements as important considerations in the design of a successful online community for teachers' professional development. They are: *evolving environment, diversity of services, sustainability, multiple layers of incentives, responding to teachers' immediate needs, ease of usability, direct teacher involvement, sense of membership, professional discussion, facilitative leadership,* and *social connection*. These 12 elements were grouped into three areas including supporting open system, fostering teacher participation, and creating culture of collaboration based on their characteristics.

Following the illustration of the model presenting all elements along with the strategies and actual online community features for each element, I describe how the experts of this study recommended each element and their reasoning.

Supporting Open System

Three identified elements –*evolving environment*, *diversity of services,* and *sustainability* – represent the structural characteristics of a successful online community for teachers' professional development. It appeared that these structural elements assume that an online community is an open and complex entity, where components are growing, diverse, and need to be sustained. Thus, a bigger category called "supporting open system" was created to include these three elements.

To clarify the term used, a system is commonly defined as a group of interacting, interrelated, or interdependent elements forming a complex whole (American Heritage Dictionary, 2006). Systems can take the form of mechanical, biological, or social systems and they are generally classified as open or closed systems. Open systems refer to systems that interact with other systems (American Heritage Science Dictionary, 2006), whereas closed systems refer to systems that have relatively little interaction with other systems. Because the

essence of these three elements seemed to be touting structural openness in an online community for teachers' professional development, this broad category was thus labeled as "supporting open system."

Evolving Environment

The experts[2] stressed that a successful online community for teachers' professional development needs to be an *evolving environment.* This means that it should be highly responsive to emerging needs and grow toward the direction to better fit these needs. That is, in order to best support teachers with current information and more customized services, an online community should be structured in a way that can easily accept the needs of modification and evolve as it progresses. One expert gave an example of how an online community can respond to a pressing matter or external need:

> *Professional development site for teachers has to be nimble. It has to be able to adapt quickly to the changing pressures and the changing philosophies out there. For example, knowing what we know about how many teachers do not stay in the teaching profession, it would be better gearing our materials towards that 2- to 4-year teaching professional to help teach them out of any circumstances they might be in where they really need assistance.*

The need for constant updates and modifications were expressed through the discussions of other elements as well. For example, while discussing the *sense of membership* issue, several experts mentioned "evolving identity" or "fluid membership." That is, the identity of a community member from participant to facilitator to community leader.

[2] In this Delphi study, all discussions were collective efforts of the interviewed experts. Thus it is less meaningful to ascertain the exact number of the participants who expressed certain view. If a single expert advocated certain viewpoint, his/her opinion was fine-tuned by other experts through subsequent rounds of interviews and participant feedback.

Likewise, when discussing the element of *responding to teachers' immediate needs*, the experts stressed how teachers' needs are constantly changing and the importance of supporting them based on their evolving needs.

As such, the idea of keeping things evolving is deeply grounded in many of the elements identified in this study. This shows that, an evolving environment is a critical structural characteristic that needs to be taken into consideration when designing a successful online community for teachers' professional development. In a word, the experts advised online community developers to *keep it moving*.

Diversity of Services

Another important structural element is diversity of services. Most of the experts strongly suggested that a successful online community for teachers' professional development needs to provide *diverse services* and resources in multiple formats so that it can support large numbers of users in helpful ways. The experts emphasized that teacher populations vary and they all have different views and needs:

> *Community can look very different for different people—it enables people to carve out a way of participating that's of most interest to them*

The experts interviewed explained this view by presenting some example cases: A beginning teacher might need a support for his/her immediate needs to prepare for a class tomorrow, whereas an experienced teacher might look for the resources for more long-term goal. Also, some teachers might come to the online community to seek emotional support, while other teachers might prefer more professional discussions to resolve the struggles.

As a strategy to facilitate diversity in a community, several experts suggested providing a huge number of events that teacher can participate. They explained that teachers would attend if

one of the events caters to their interests: “that way, it is sort of getting their feet wet in the community and understand the community.” Therefore, developers should design a community in a way that can provide a diverse range of services to reach out the general teacher population characterized by diverse needs.

Sustainability

Finally, the experts interviewed discussed the issue of *sustainability*. They believed that a successful online community for teachers’ professional development needs to actively find the best ways to sustain itself. Like other structural characteristics, experts considered that the issue of sustainability is related to all the other elements. That is, a highly sustainable community might be the result of combined elements identified for designing a successful online community for teachers’ professional development.

Although effectiveness of sustainability is the result of all these elements, one particular aspect seemed to stand out: funding. The experts mentioned there are a lot of online communities that have ceased to function because of a lack of funding. Thus, they suggested that a community should seek to become a *self-sustainable community* so that it can continue to operate after initial leaders leave and funding runs out. The experts also suggested building a sustainable environment without reliance on high ongoing costs.

Another thought that was given important consideration in regards to sustainability was the issue of *critical mass*. The experts interviewed pointed that online community developers should be aware that there needs to be a critical mass whereby sustainability requirements will be met. At this point, there will be enough people accepting the idea of an online community. However, the experts also emphasized that a community should not trade off the quality of services for a high number of members.

Finding a way to both get enough people there and to have them exhibiting enough excellence or quality in their response (interaction) is a big challenge

In all, the developers should always be aware of the sustainability issue and design a community in such a way that it can evolve into a self-sustainable community.

Fostering Teacher Participation

In exploring what makes a successful online community for teachers' professional development, the experts focused heavily on the elements that may foster teacher participation.

Multiple Layers of Incentives

Based on the interview findings, one of the most frequently recommended elements in designing a successful online community for teachers' professional development was providing *multiple layers of incentives*. Providing multiple dimensions of benefits, according to the experts, would tremendously help teachers who are in very different situations perceive its use as beneficial and valued. In this way, participation becomes fostered.

According to the experts interviewed, multiple layers of incentives can be provided in extrinsic or intrinsic ways. As extrinsic incentives, the experts suggested tangible rewards, such as community service hours that can be used for required credits to renew teacher certificates, or information on grants for classroom resources. Meanwhile, intrinsic incentives were particularly touted among the experts from the user (teacher) group. For example, providing a simple opportunity for teachers to interact with colleagues can be a great incentive for the teachers. The experts from the user group mentioned that there are many teachers out there who are longing for conversations with their peers, especially with the colleagues specialized in the same subject area:

Teachers can often become isolated in their classrooms. They don't have the opportunity to meet with colleagues in their field or even sometimes to talk with other adults all day. For some subjects, or for some rural schools, you are the only physics teacher, you are the only music teacher, and you need support from the teachers in your own area

As such, incentives such as these can support teachers' emotional needs to a great extent. Another intrinsic reward that was strongly recommended was providing an opportunity to reflect on what participants have learned and experienced. According to the experts, although teachers are offered various learning experiences from school or workshop, they barely have a chance to revisit them for follow-up reflections:

It's like going to a conference attending 500 meetings in three days, and then coming home and having no feedback to what you have experienced

Thus, providing the tools that enable teachers to review their learning and discuss what worked and what did not work with their colleagues can be a great intrinsic incentive, which naturally supports their professional needs.

In short, if provided in multiple layers, incentives are likely to support many teachers who have a multitude of complex needs. In the view of teachers' growing needs along their career paths, it can be a critical factor that may keep their participation active.

Responding to Teachers' Immediate Needs

This is another element highly emphasized by most of the experts interviewed in this study. They explained that a successful online community for teachers' professional development should provide just-in-time resources that are immediately applicable for teaching practices.

While it is important for an online community to provide the resources to support teachers' long-term teaching goals, such as developing critical thinking skills or enhancing students' problem solving abilities, the experts claimed that many teachers are in greater need for resources that they can use for classes the next day. An expert from the user (teacher) group explained this aspect by throwing a realistic question:

> *Well, all thinking side and investigation side of online community are good, but what do I do when I have 30 kids staring at me 180 days a year, and an hour at a time?*

In response to such a question, the other experts recommended that an online community should provide resources that support everyday classroom needs, such as lesson plans, classroom management tips, activities, and assessment tools. Along with supporting teachers' everyday classroom needs, experts also advised that an online community may need to provide timely resources in view of current pressures that are exerted on teachers. For example,

> *We have this exam that our K-12 students take. In the summer and the fall, when students take exam, teachers are very interested in that. But if you ask them in January to participate in an online professional development for things that they will implement next September, they probably won't be as interested because it's not as timely as that moment. They have some other timely concerns at that particular time*

Likewise, when there are important system-wide changes in relation to the teachers' profession, such as a new license renewal policy or assessment standard, the online community needs to provide related resources and support to address them.

In short, teachers are constantly faced with time-sensitive issues. An online community, in order to be an effective supporting tool, should always be aware of these current needs and function to provide adequate resources to help teachers cope with them.

Ease of Usability

The experts believed that a successful online community for teachers' professional development needs to be very easy to use so that teachers will feel comfortable and confident about exploring what a community has to offer. This was particularly touted by experts from the user (teacher) group. Most of them have previously experienced difficulties in using it and felt that existing online communities have yet to embrace this usability issue.

> *I think that in our rush to be on the professional development bandwagon in providing resources, we don't pay enough attention to what those actual teachers might need at any given time*

Several experts discussed the issue of accessibility noting that some online communities are organized in a way that it was too complicated for users to find information. Thus, they emphasize that the structure should be simple enough to be easily accessed and explored. When it comes to the usability of the resources however, the experts recommended that it should be comprehensive enough to address the entire teacher population's needs: "Resources should be all grade friendly, all discipline friendly, and most of all teacher-friendly."

An expert noted that it is critical to embrace these two aspects together. In her discussion of the topic, she explained that the comprehensiveness of support should not be diminished for the sake of providing simple and easy-to-use services for the teachers:

> *Sometimes user-friendly service could require very simple instruction and simple contents. But it may not be enough to support teachers' needs. There should a balance between simplicity of the structure and comprehensiveness of resources: Think "how much is too much". You don't want to confuse teachers by adding too many different elements or categories but you also want to provide enough good resources of*

components. So it has to be simple enough but also it has to be complex enough to support relevant content

In sum, poor usability can seriously deter teachers' participation in the community. In order to design a successful online community for teachers, the designers should ensure that there is ease of usability, while at the same time, straddle a good balance between simplicity in structure and comprehensiveness in resources.

Direct Teacher Involvement

Finally, a successful online community for teachers' professional development needs to involve classroom/credentialed teachers involved in the design and development processes. The experts interviewed pointed that in many cases, teachers themselves are not part of the community leader group. Community leaders will have teachers in their design team at the beginning of the development process. However, they will lose the direct teacher involvement as the community grows. Community leaders may have teachers in their consultant group, but not in their actual decision making team. Some experts noted that this is problematic because the people who receive grants to build an online community for teachers are not teachers in most cases:

People who got grants (to develop an online community for teachers) have their own ideas and the teachers have a different idea…it should be about teachers and for the teachers

Necessity of direct teacher involvement was particularly advocated by the experts from the user (teacher) group. I asked the following question during the first round of interviews:

Imagine you are given an opportunity to design an online teacher community from scratch. You are a director and everything is up to your decision. There is no limitation

of funding. If this is the case, what are the things you will ensure to happen to make it successful?

When asked this question, all experts from the user group planned an online community by first recruiting the teachers to design the whole structure of an online community. For example:

First, I would get all the teachers who will be part of the community together for a week in a really lovely setting to meet, talk about what matters to us, and play together. To build community and figure out how we want our online community to function, both in content (what we interact about) and process (the ways in which we interact.) We'll have a lot of discussions, read together, hear about each others' backgrounds and educational interests, strengths and challenges, areas of expertise and what we want to learn about.

It was obvious that they believed teachers should play a critical role in the entire development process, especially in the decision-making aspects, and not merely as a consulting panel. Therefore, in order to design a successful online community for teachers' professional development, community developers should ensure that classroom/credentialed teachers will form a critical part of the decision-making process from the beginning.

Creating a Culture of Collaboration

Among the critical elements for designing a successful online community for teachers' professional development, four identified elements exemplify the issues related to the creation of a culture of collaboration.

Sense of Membership

A successful online community for teachers' professional development needs to nurture an environment where teachers can experience a sense of membership and that they are

important to the community. It is about a sense of accountability to the group such that teachers can contribute to the growth of the community as a critical member. According to the experts, a sense of membership can considerably influence members' levels of commitment and contribution to the community:

> *You feel like you are connected to these people that you're in a community with and you're connected to them so much that you don't want to miss any opportunities to support them. This is really about feeling of accountability. Feeling of accountability to the group means each person in the group feels like they're a part of the community and feeling accountable to the group, feeling sense of membership*

Without such feeling of membership and accountability to the community, an expert explained, it will be just like a department store where everything is completely operated by paid staffs and the customers just drop-by and buy things. Rather, a community should resemble a food co-up store, where all the members are entitled to reduced prices and support the food that the co-op buys by working at the store. Contributing their time as a part of their co-op experience creates stronger community ties than other stores.

When this sense of membership is well-nurtured, an expert noticed the changes of terminology that the members of the community are using:

> *In the early stage, when they are sharing ideas, they tend to say like, I did something, I did something, I did something. But gradually as it moves towards a more developed stage of community, it becomes pronouns like we. It may indicate a sense of membership was developed*

As such, developers should design a community in a way that the members can realistically develop their own sense of membership so that a community grows with collaborated contributions from its members.

Culture of Trust

Another issue that was often mentioned related to culture of collaboration was an issue of trust. According to the experts, a successful online community for teachers' professional development needs to have a well-cultivated culture of trust among its members. It is not about merely giving users a safe place and allowing them to be anonymous. Rather, experts pointed, it is more about building a "culture" that supports mutual trust and respect in relationship among members: "It's moving past the idea that they can close their door and do whatever they want in their group and no one will ever see it."

Several experts stated that a sense of trust deeply immersed in the culture of community is the prerequisite condition for all other elements to function:

> *In order to get teachers to feel like they can share with one another and give meaningful feedback to one another, there has to be culture of trust among the group so that they don't feel like they're putting themselves in a place of danger when they're giving feedback to one another*

For example, during professional discussions with a goal of resolving a dilemma that a teacher brought to the group, the dialogue could result in a heated debate. In this case, according to an expert, the members of that group would not be able to argue respectfully if mutual trust was not pre-established.

Of note, the experts often mentioned that it takes time to establish a culture of trust in a community as it is the way people live and communicate. Therefore, developers may need to

stay patient and persistent during the process. In all, developers should try to cultivate trust among members so that members will have an open and constructive collaboration in community.

Professional Discussion

A successful online community for teachers' professional development needs to provide an environment where teachers can collaborate to have meaningful discussions on professional issues such as the dilemmas teachers might face.

The experts pointed out that, while an online community can be a place for teachers to socially connect and enjoy each other's virtual company, it is still highly critical to provide an environment where there could be serious professional discussions for those who are actively seeking answers to various professional inquiries they might have.

As strategies to ensure address this need, some experts suggested that online communities provide a set structure, such as a conversation protocol:

> *Structure really guides the type of conversation that takes place—it enables to go down deeper into the layers of the problem. Protocol can take the discussion through a very specific set of steps from looking at a piece of student work or a dilemma instead of jumping to the solution before ever really looking at what is actually here*

In sum, experts agree that an online community should intentionally ensure that the community will support professional discussions and to effectively facilitate them in an open and fun-filled virtual environment.

Facilitative Leadership

The experts suggested that a successful online community for teachers' professional development needs to provide a facilitative leadership that can help users make connections with

each other. They advised that providing the direction, without fully taking the reins will help develop and support a community culture. For many users, the online community is fairly a new experience in which they are unaware of all the advantages that it has to offer.

A lot of them have never done this before…you have to have a lot of explaining going as to what it is and how it's helpful for the new teachers

Thus, community leaders should be an:

Active host who would make the new people feel welcome and unafraid to participate, and the role model who is extremely involved—the one who facilitates and guides the participants. Enthusiasm builds by being around somebody who is enthusiastic

Another aspect of leadership that experts considered significantly was the transferability of leadership. They noted that an ideal community should encourage members to take on the leadership role by providing on-going leadership opportunities to teachers. This, according to experts, will also help the environment become more sustainable because more people will be using it for different purposes. "You can't have just one person at the center of a community."

In short, the leadership of a successful online community for teachers' professional development should be designed in a facilitative way by helping teachers feel consistently welcome, guiding them as they explore the experience, and encouraging them to take on ownership of it.

Social Connection

A successful online community for teachers' professional development needs to provide a place for teacher renewal and rejuvenation, where teachers can unwind and connect with like-minded teachers. The experts suggested that providing such emotional support is as critical as meeting their professional needs. They explained that:

We are human beings. Many cases people are drawn to such a community through this kind of emotional support

By providing opportunities for social connection, teachers will be able to have a chance to manage their stress levels in a friendly family-like environment. An expert proposed that an online community should ultimately be an online virtual spa where:

Teachers can go and find that renewal, find that reconnection to their creativity that brought them to teaching in the first place as far as new ideas for them and nurture themselves so that they are better able to nurture their students

As a strategy to provide such social connection opportunities, the experts interviewed suggested the creation of a buddy system where teacher can find mentors and fellow teachers who share similar interests. For example, a community can provide a space where people sign up to look for a mentor or a place where people offer mentoring to another user.

Meanwhile, a question was raised during the discussion on how to incorporate this fun and friendly aspect into an online community that is geared toward professional learning and development. Some experts suggested the design of a community that supports the creation of many other small communities that are unique and specific. The answer was not clearly defined for this question. However, the experts pointed out that it is critical to be aware that a successful online community should be a place that provides both professional and emotional support.

Summary

In this chapter, the findings were presented in the form of a conceptual model for designing a successful online community for teachers' professional development. The final model suggested 12 critical elements for consideration in its design. These are: *evolving environment, diversity of services, sustainability, multiple layers of incentives, responding to*

teachers' immediate needs, ease of usability, direct teacher involvement, sense of membership, professional discussion, facilitative leadership, and *social connection*. These 12 elements were grouped into three dimensions: (1) supporting an open system, (2) fostering teacher participation, and (3) creating a culture of collaboration based on their characteristics. For each element, experts also suggested appropriate strategies and possible online community features as actual design ideas. In chapter five, a summary of the findings, discussions on the critical matters, implications of the study results, recommendations for future research, and the conclusion are presented as a closing for the study.

CHAPTER 5

SUMMARY, DISCUSSION, RECOMMENDATION AND CONCLUSION

Overview

This chapter concludes this study by presenting a summary of the findings, discussion of critical issues, implications of the study results, recommendations for future research, and a formal conclusion. I first summarize the findings with reference to the related literature. Then, I discuss the critical issues that stood out through the entire study process. Next I suggest the implications for current practice and the recommendations for future study. Finally this chapter is concluded by presenting the limitations of the study and formal conclusion.

Summary of Findings

A qualitative Delphi study was used to identify the elements that constitute a successful online community. The final model suggested 12 important elements for consideration in the design of a successful online community for teachers' professional development. In this section, these elements are summarized with reference to the related literature.

Evolving Environment

An evolving environment is highly responsive to emerging needs and grows towards fitting these needs more clearly. Darling-Hammond (1998) emphasized that teachers are now required to adapt themselves to a more open and evolving environment where they have to deal with various dimensions of social change. Understanding the need to provide the support in a way that can help teachers cope with these constant changes, an online community for teachers' professional development should be designed so that it can easily accept the needs of

modification and evolve as it progresses. Kim (2000) also strongly supported this idea and explained that a successful online community should be a flexible and extensible place that is responsive to changes. Taken together, an online community that continuously evolves is in a better position to support teachers' changing needs with up-to-date information and more customized services.

Diversity of Services

An online community needs to provide *diverse services* and resources in multiple formats so that it can support large numbers of users in various helpful ways. The experts in this study emphasized that teacher populations vary and they all have different views and needs. A diversity of services is a particularly valuable lesson to keep in mind in the light of complexities and uncertainties that teachers face today. As teachers' needs, contexts, and status grow to become more complex, professional development support should be given in a way that values diversity of learning, such as multiple intelligence, diverse learning styles, and various teaching methods (Hargreaves, 2000). Thus, developers should design a community in a way that can provide a diverse range of services to reach out to the general teacher population characterized by a wide range of needs in various different situations.

Sustainability

The experts in this study indicated that a successful online community for teachers' professional development needs to be active in finding the best ways to sustain itself. Like other structural characteristics, experts explained that the issue of sustainability is related to all the other elements. That is, a highly sustainable community might be the combined result of other elements identified in the design of a successful online community for teachers' professional development.

Although effectiveness of sustainability is the result of all these elements, one particular aspect seemed to stand out: funding. Many researchers have argued that the critical success factors of online community building for teacher professional development revolve around the means to create social dynamics between members, rather than merely enhanced technology applications (Charalambos et al., 2004; Kim, 2000; Williams & Cothrel, 2000). However, there are many online communities for teacher professional development that have ceased to function solely because of a lack of funding and in many of these cases, technology has failed to facilitate their success (Kowch & Schwier, 1997). Technology requires hardware, software, and access. These elements can be expensive. Thus, the experts suggested that a community should seek to become a *self-sustainable community* without reliance on high ongoing technological costs. In this way, communities will have a greater possibility of continuing to operate after initial leaders leave and funding runs out. Havelock (2004) also supported this aspect by noting that developers of teachers' online community must understand and be proficient with online technologies before they can engage in the development. In sum, developers should always be aware of the sustainability issue. Their design efforts should be aimed at building a self-sustainable community.

Multiple Layers of Incentives

Multiple layers of incentives involves the provision of multiple dimensions of benefits to help teachers, who are in very different situations, understand the benefits and value of the community. In this way, participation becomes fostered. This corresponds with research on teacher professional development. Many researchers in this area have pointed to the lack of rewards for teachers' outstanding work as a barrier for teachers' professional development (Advisory Committee on Mathematics Education, 2002; Hargreaves, 2000; Helsby, 1995;

National Commission on Teaching & America's Future, 1996). Teachers need to be acknowledged for taking on a piece of challenging work or achieving great accomplishments in their knowledge and teaching skills. Therefore, an online community should show clearly the benefits that teachers might receive by participating in them (Schlager et al., 2002). According to experts, multiple layers of incentives in using an online community for teachers' professional development can be provided in extrinsic or intrinsic ways. As extrinsic incentives, the experts suggested tangible rewards, such as community service hours that can be used for required credits to renew teacher certificates. Examples of intrinsic incentives could be as simple as providing follow-up support on group discussions with a summary of what was learned. In fact, providing follow-up support is critical in order to ensure that learned practices are appropriately implemented in an online community (Guskey, 1999; Hawley & Valli, 1999). Based on the preceding discussion, it follows that incentives, if provided in multiple layers, are likely to support many teachers who have a multitude of complex needs. In the view of teachers' growing needs along their career paths, it can be a critical factor that may keep their participation active.

Responding to Teachers' Immediate Needs

A successful online community may provide just-in-time resources that are immediately applicable to teaching practices. While it is important for an online community to provide the resources to support teachers' long-term teaching goals, experts claimed that many teachers are in greater need for resources that they can use for their classes on the subsequent day. That is, teachers' "just-in-time needs" (Lock, 2006, p. 675) should be constantly supported by providing "just-in-time answers" (Charalambos et al., 2004, p. 137). Parr and Ward (2006) arrived at a similar conclusion in their study of building online communities between teachers in 10 isolated schools. They found that in order to participate, "teachers should perceive a need and recognize

that the online community is a viable solution to that need" (Parr & Ward, 2006, p. 775). Kim (2000) emphasized this as a critical element in the design of a successful online community by explaining that "communities come to life when they fulfill an ongoing need in people's lives" (p. xiii). In short, teachers are constantly faced with time-sensitive issues. An online community, in order to be an effective supporting tool, should allow users to be constantly aware of these current needs and function to provide adequate resources to help teachers cope with them.

Ease of Usability

A successful online community for teachers' professional development needs to be very user-friendly, so that teachers will feel comfortable and confident about exploring what it has to offer. This was particularly touted by experts in this study from the user (teacher) group. Most of them have previously experienced difficulties in using these communities, and felt that these have yet to embrace this usability issue. According to NCTAF (1998), time is never enough for professional development because it is not embedded in teachers' work schedules and teachers have to allocate extra time outside their working hours. Thus, if teachers encounter the difficulty during any type of participation in an online community, chances are they might never come back to try for second time. An effective community should be easily accessible to facilitate efficient use of teachers' limited time. In sum, poor usability can seriously deter teachers' participation in a community. In order to design a successful online community for teachers, designers should ensure that there is ease of usability.

Direct Teacher Involvement

Direct teacher involvement means that communities should involve teachers in the design and development processes. The experts interviewed pointed that in many cases, teachers themselves are not part of the community leader group. This lack of teachers' direct involvement

has been a barrier in many professional development projects. The district's top-down, push approach of professional development is considered a serious problem because teachers have very little control over change or school's professional development as a result (Helsby, 1995). Teacher-centered/owned development is suggested as one of the key elements of successful professional development (Loucks-Horsley et al., 1998). Without proper ownership over their own development, teachers may not be sufficiently motivated or inspired to participate in any program, including those in an online community. Baek and Barab (2005) took this issue seriously when they designed their community (Inquiry Learning Forum). In their proposal, they suggested that there could be two different design approaches in terms of teacher involvement in the online community development: *Design for* and *Design with (teachers)*. In this context, *Designed for* indicates an approach whereby designers assume leadership in the design process. In contrast, *Design with* is an approach in which the teachers undertake ownership in the process (Baek & Barab, 2005, p. 169). The experts in this study recommended that a successful online community should follow the *Design with* approach so as to best incorporate teachers' voices in the design process.

Sense of Membership

A successful online community for teachers' professional development needs to nurture an environment where teachers can experience a sense of membership and feel that they are important to the community. It is about a sense of responsibility and accountability to the group such that teachers can contribute to the growth of the community as critical members. According to the experts in this study, a sense of membership can considerably influence members' levels of commitment and contribution to the community. Charalambos et al. (2004) also emphasized this sense of responsibility among the participants toward the assigned task and peers as a key

characteristic of successful online communities. As such, developers should design a community in a way that the members can realistically develop their own sense of membership so that a community grows with collaborative contributions from its members.

Professional Discussion

Professional discussions are important activities in an online community for teachers' professional development. Therefore, an environment where teachers can collaborate to have these meaningful discussions on issues such as the dilemmas teachers might face becomes another key element in a successful community. The experts in this study pointed out that, while an online community can be a place for teachers to socially connect and enjoy each other's virtual company, it is still highly critical to facilitate professional discussions for those who are actively seeking answers to various professional inquiries they might have. According to Hargreaves (2000), many teachers desire to collaborate so as to receive help in their classes and teaching practices, particularly in view of the complex situations teachers face today. Therefore, an online community should intentionally ensure that the community will support professional discussions and to effectively facilitate them in an open and fun-filled virtual environment.

Facilitative Leadership

The experts in this study suggested that a successful online community for teachers' professional development needs to provide a facilitative leadership that can help users make connections with each other. Similar to other researchers, the experts advised that by providing the direction, without fully taking the reins, will help develop and support a community culture (Cufaude, 2004). This facilitative leadership can be very useful especially in managing an online community for teachers' professional development. For example, for many teachers, the online community is fairly a new experience in which they are unaware of the wide range of benefits it

has to offer. A facilitative leader can help new users make connections with others so that they would feel welcome. Also an online community may have a diverse group of members, thus making it difficult to manage. In view of this, a facilitative leader can direct them in a way to maximize various contributions (Cufaude, 2004). As such, facilitative leadership can help manage an online community. The leadership of a successful online community for teachers' professional development should be designed in a facilitative way by helping teachers feel constantly welcome, guiding them as they engage in community activities, and encouraging them to take on ownership of their participation.

Social Connection

To facilitate social connection, online communities may provide a place for teacher renewal and rejuvenation, where they can unwind and connect with their peers and like-minded teachers. It has been argued that isolated teaching culture has been known as a barrier for successful professional development. Many suggested that participation in online communities provides teachers with emotional support and encouragement and diminishes their feelings of isolation and helplessness (DeWert et al., 2003; Stuckey. et al., 2001). Emotional support through social connection is as critical as providing an opportunity for professional support. Emotional support is essential for continuous motivation, especially for beginning teachers. In a study by DeWert et al. (2003), 67 percent of new teachers reported that they felt more confident as teachers after participating in an online community involving other teachers. In brief, by providing opportunities for social connection, teachers will be able to have a chance to manage their stress levels in a friendly environment.

Discussion

The discussion of this study comprises three critical reflections that stood out through the entire study process. These are: recipe versus (vs.) guiding tool, simplicity vs. comprehensiveness, and developers vs. teachers.

Recipe vs. Guiding Tool

This topic of this reflection concerns the purpose of this study: modeling. This study sought to produce a model based on collective efforts from experts. The process led to the need for clarifications. At the beginning of the study, several experts raised a question suggesting that it would not be possible to build an online community that meets all the elements provided in this model. They explained that every online community for teachers' professional development is created based on its respective context. Therefore, my attempt to create an encompassing model that can satisfy every online community may not be plausible. This inquiry shows that some might doubt the usefulness of identifying the success factors and conceptualizing a design model of an online community for teachers' professional development due to the contextual differences between them. Barab et al. (2003) claimed that "designing for virtual communities involves balancing and leveraging complex dualities from the *inside* rather than applying some set of design principles from the *outside*" (p. 237). They argued that a truly useful guideline can only come about by specifically looking at their own communities.

With such an inquiry, I clarified that the intention of this study is not aimed at providing a guaranteed recipe for every possible online community. Rather, this study sought to identify a list of critical considerations in designing an online community for teachers, so that designers can use as a guiding framework. A conceptual model comprising design elements, strategies, and actual online community features would support their efforts to make better decisions throughout

the entire design process. In a word, this is not to provide a trajectory for a success story. Rather, it is a guiding framework that developers can refer to when designing a successful online community for teachers' professional development. This view was supported by many scholars. Charalambos et al. (2004) claimed that, while "there are no scientific formulae and algorithms on how to build and structure an online community. There is no step-by-step approach that guarantees successful community building," (p. 138), developers of an online community for professional development have a lot to benefit from the lessons learned through existing knowledge and practices. Stuckey (2004) presented a similar view by stating that "while it is accepted in the literature is that there is no formula, nor recipe for community development, there are a number of well-founded practical and theoretical guidelines available for us to learn from." Kim (2000), whose model is now widely accepted as a practical guide for the design of a successful (generic) online community, strongly advocates the notion of having a set of guidelines when designing an online community. She has used her own model for many years in her consulting practice, and introduced it to the public, stating that "I've found it incredibly useful to have a framework to help me address the basic design, technical and policy issues that arise in community building. This framework has helped me become a more effective and creative community designer; my hope is that it will do the same for you" (p. xi).

As such, having a guiding model as a framework could be immensely helpful in the design of an effective community. In fact, the need of a systemic model of online communities for teachers' professional development has been raised by many. Lock (2006) stated that "the realization of online learning communities to facilitate teacher professional development is a matter of carefully and deliberatively designing dynamic learning environments that foster a learning culture" (p.663). Di Petta (1998) suggested that for a community of professionals

working together, the development of "appropriate models of community and skills that will enable us to refine our professional lives in relation to these new environments" (p. 64) is required. Bradshaw *et. al.* (2002) also stressed that while the use of online communities has considerable potential in professional learning possibilities, "much needs to be learned in terms of how to structure and facilitate such communities if their potential is to be fully exploited" (p.19). As such, it becomes clear that a successful online community for teachers' professional development calls for *deliberate design by identifying what constitutes its structure.*

It was my intention that this model will provide an opportunity for the developers to reflect critically on what they have planned or done in their development and management efforts pertaining to their respective online communities for teachers' professional development. The means to which this model can be specifically used is introduced in the Implications section of this chapter (p. 99).

Simplicity vs. Comprehensiveness

Another topic that was extensively discussed during the interviews was the categorization of the elements. While all experts in this study agreed that the elements identified in study are interrelated, some suggested merging a few elements due to their similar characteristics. The term "modeling" seemed to suggest that the final result should be clear and precise, so as to provide a logical presentation of the items.

However, simplicity may not be the best solution in this case. From the findings, each element seemed to stand out by itself and each would lose their own nuance if placed under another category. Though some elements are highly interrelated to each other, I wanted to attribute equal importance to each element that was mentioned often and importantly by the experts. For example, every element in the model somehow relates to the issue of sustainability.

This is because, if all these elements are functioning well, sustainability will naturally occur. However, I decided to have *sustainability* in the model as one distinct element. In this way, I attributed importance to this element so that designer/developers would not overlook it.

The intention of this study was to provide a comprehensive model with a series of critical considerations for the design of a successful online community for teachers. Thus, it seemed prudent to list every possible element, so that developers can be reminded of the some of these critical considerations that might otherwise be neglected. In the subsequent interviews, the experts supported the development of a comprehensive model with highly interrelated elements, as opposed to a simplistic one. As one expert noted, "Ultimately, it's a system and you can't really take out one piece."

Teachers (users) vs. Developers

Ten experts in the area of online communities for teachers' professional development participated in this study recommended critical considerations for the design of such communities. Five experts were developers of similar existing online communities and the other five were teachers who used these communities extensively. Although the study results were based on a collaborative effort of all experts, there were some unique aspects that were found to be associated with experts from the teacher group.

The experts from the teacher group tended to focus more on practical issues such as *ease of usability* or *responding to teachers' immediate needs* than the experts from the developer group. When asked, "What do you think makes a successful online community for teachers' professional development?" at the beginning of the first interview, responses from most experts in the teacher group directly led to the usability issue. They have all previously experienced difficulties in using these communities and felt that ease of usability is the most critical element

for such a community to be successful. Similarly, most teachers considered *responding to teachers' immediate needs* as a highly critical element because it concerns the practical issues in their everyday teaching. Teachers' "just-in-time needs" (Lock, 2006, p. 675) should be consistently supported with "just-in-time answers" (Charalambos et al., 2004, p. 137). Parr and Ward (2006) came to a similar conclusion in their study on building an online community among teachers in 10 isolated schools. In order for them to participate, "teachers should perceive a need and recognize that the online community is a viable solution to that need" (Parr & Ward, 2006, p. 775). Although these practical issues were also discussed with importance during the interviews with developers, they were not brought them as extensively. This suggests that developers did not perceive these as critically as teachers did.

As another unique aspect, the teacher experts showed their desire for *direct teacher involvement* in the design process of online community. I asked the following question during the first round of interviews:

> *Imagine you are given an opportunity to design an online teacher community from scratch. You are a director and everything is up to your decision. There is no limitation of funding. If this is the case, what are the things you will ensure that will happen to make it successful?*

When asked this question, all experts from the teacher group planned an online community by first recruiting teachers to design the whole structure of an online community. They did not mention the possibility of consulting university faculty or online community specialists. It was therefore clear that they believed teachers should play a vital role in the entire development process, especially in the decision-making aspects, and not merely serve on a consultation panel. This corresponds to critical discussions in the field of professional

development. Teacher-centered/owned development is suggested as one of the key ingredients for successful professional development (Loucks-Horsley et al., 1998). The district's top-down, push approach of professional development is considered a barrier for high quality professional development as it gives teachers very little control over professional development (Helsby, 1995). About direct teacher involvement, experts from the developer group were very supportive and in agreement. They explained that it is a highly critical element that determines the success of an online community for teachers' professional development. However, they did not distinctively mention that all planning should begin with the recruitment of teachers to *design* the community.

The experts from both groups (teachers and developers) in this study possess comprehensive understanding and experience in both areas of online community and teachers' professional development. Some of them currently hold two positions: as a developer and a teacher. Hence, there were no critically conflicting arguments between the two groups. However, it was noticeable that teacher experts were more inclined toward the practical aspects of the online community, compared to the experts on development.

Implications for Practice

The purpose of this study was to develop a model for designing a successful online community for teachers' professional development. The intention of this study lends itself to the development of a practical model that designers can use and apply readily. Thus, the implications for practice are focused on how developers who design, or plan to design, a community, might use the resultant model from this study.

Developers who plan to create an online community for teachers' professional development can use this model as a planning tool to formulate the vision, identify the audience,

prioritize the features, and plan the staffing needs. According to Kim (2000), community building is a team effort, thus this type of model can be useful to all people in management, marketing, production, programming, and design—all of whom will have input during the strategic planning phase. If a community is already established, developers can still use this model as a reference framework for further development or modifications. For example, they may think that *social connection* might be a useful feature to add in their current community.

As such, the developers who wish to design a successful online community for teachers' professional development can use the resultant model from this study as a guiding framework, whether they are in the process of initiating or modifying their community. I recommend that developers ask the following questions when reviewing the model so as to come up with ideas for their own communities:

1. *Which element/strategies/possible online community features should be important considerations in their own communities?*
2. *What might they have overlooked?*
3. *What might be potentially useful in their prospective communities?*
4. *How can ideas in the model be contextualized for their own communities?*

I recommend for developers to pay extra attention on the last question. Configuring the specifics based on the community's own context is the critical process to best serve the audiences' needs. With the lessons learned from the guiding model, developers may apply the model to create their own list of critical considerations that fit their unique contexts and needs.

Recommendations for Future Research

In this section, I discuss three recommendations for further research. These were based on my learning experiences through the phases of this study, including selecting participants, collecting data, and preparing the data for analysis.

Recommendation One

In my search for participants, I encountered a few online communities for teachers' professional development that appeared to be successful, such as Math-Forum (Renninger & Shumar, 2002, 2004), LM-Net (Eisenberg & Milbury, 1994), Tapped-In (Schlager & Fusco, 2004; Schlager et al., 2002). Their contextual environments were found to be completely different. However, they all seemed to have some common features or characteristics that facilitated their success.

In this regard, I recommend a cross-case study to investigate and compare the critical success factors of each community. Data can be collected through a triangulation of methods including analyzing the web documents, surveying members of these communities, interviewing the respective developers, and observing the activities occurring in the community. This study will produce meaningful data to show the common success factors across the investigated communities. Such data will also provide different and more in-depth insights on what makes an online community for teachers' professional development successful.

Recommendation Two

From my survey of existing online communities, I came to the understanding that many renowned online communities have ceased to function due to financial difficulties. Communities are usually built through funding from national agencies (such as NSF and the Department of Education). After a few years of operation, they may fail to receive alternative means of financial

support by the end of the initial funding period. Naturally, an inquiry of how to sustain online community for teachers has been raised.

Of note, for generic online community, there have already been many studies conducted in terms of sustainability issue (e.g., Mergel & Langenberg, 2006; Ran & Julita, 2005). However little was discussed on the issue of sustainability for the online community for teachers' professional development. Thus, future studies need to investigate the means to sustain online communities for teachers. Specifically, these studies may address research questions such as, "*What affects the sustainability of online communities for teachers?" and "*How *can we promote the sustainability of online communities for teachers?"*

Recommendation Three

A model comprising 12 design elements emerged from the findings to provide critical considerations in designing a successful online community for teachers' professional development. Although this study found that these 12 elements were deeply inter-related, specific relationships among them were not reviewed. Each element might have a unique connection with another element. For example, element A could be more influential on element B than element C. Likewise, elements A, B, and C could be prerequisite conditions in the implementation of elements D, E, and F.

In this regard, I recommend a follow-up Delphi study with another group of experts in the respective area. They could have a session purely devoted to investigate the relationship among the elements. Their empirical relationships with each other may lead to meaningful data that will form the foundation for a roadmap of a successful online community for teachers' professional development.

Limitations of Study

According to the literature in the field of expert and expertise, in order to identify an expert, one should have utilized a performance measure of the work they produced, their ability to perform relevant tasks, or using various established criteria to ascertain their levels of expertise (Chi, 2006; Hoffman, 1998). Under these guidelines, this study utilized a firm criterion to identify and solicit the experts to be interviewed. The criterion used relied on a measure of work that the experts had previously produced: *Prior to the data collection phase, each potential expert must have published two research articles on topics related to online communities and teacher professional development in order to qualify as an expert in this study*.

However, not all developers of good online communities for teachers have published research articles. In other words, even though an online community appeared promising, if there was no evidence to support the level of expertise among developers' (i.e. published articles), they were excluded from the potential participant list. Due to this restriction, the participants were recruited from six existing communities only. In fact, three experts are from the same community. Taken together, in this study, the use of clear criteria to identify experts qualifies it as a legitimate Delphi study. However, at the same time, this also limited the number of communities that the participants represent. This is viewed as a typical barrier for most Delphi studies as there are usually small number of recognized experts with the proof of their expertise (Ali, 2005; Skulmoski, Hartman, & Krahn, 2007).

Another factor that might have influenced results is the different levels of contribution from the experts. While all experts participated in both rounds of interviews and nearly everyone provided the feedbacks on the results subsequent to each round of data collection, their levels of contribution was not always equal. However, this does not mean that some experts contributed

more, or provided better responses, than others. Rather, this phenomenon serves to explain that each participant's expertise was given in a different way at different times through the course of data collection. Some experts actively participated in the first interview, but appeared slightly reserved during the second round. In a similar fashion, others were very active during the second round, and intensely focused during the final feedback sessions. Overall, the quality of data balanced out.

The difference in their levels of contributions might not have been due to their personal commitments and schedules. It was more about that the participants' respective areas of expertise that differ. Therefore, their contributions, that were based on their experience and knowledge were expressed at different times. For example, one of the experts from the teacher group was not highly enthusiastic during the first interview. However, she was very active in the second round, which dealt with actual design examples for each element identified during the first interview session. As an experienced teacher, she offered many different types of tactics and examples that could be applied to an online community environment. As such, different levels of contributions were given during different times of the data collection, thus balancing the quality of data. However, it must also be noted that not having the same level of contribution from every expert through three rounds of interviews might be viewed as a limitation in terms of productivity, because uniformly high levels of contribution from every participant throughout all interview rounds might have produced better results.

Conclusion

The motivation to conduct this study originated from two initial thoughts. First, it was based on a simple realization from the literature that teachers today face highly complex challenges and they need a kind of support that can help them cope with such complexities

(Darling-Hammond, 1998; Hargreaves, 2000). Acknowledging the potential of online communities as an effective supporting tool for these teachers, I embarked on a journey to investigate what constitutes a successful online community for teachers' professional development. These findings were organized and presented as a model for developers to use as a critical design guideline. In the resultant model, 12 elements were identified as critical conditions to consider for designing a successful online community for teachers' professional development. These elements varied widely and illustrated diverse points for consideration during the design process. In a way, this broad range of defined elements reflects the current complexity in teachers' environments, and thus, reinforces how support can be designed in a way to address the relevant issues.

Another critical motivation of this study was the desire to look at the online community from systemic perspective. There have been many discussions about the potentials of online communities as effective tools to support teachers' professional development, but little has been reviewed about how to transform this idea into a realistic plan for practitioners. The literature also suggests that a successful online community for teachers' professional development calls for deliberate design by identifying what constitutes its structure (Bradshaw et al., 2002; Lock, 2006). The resultant model in this study presents the critical elements to consider in the design of an online community. Each element is systemically linked to the implementation strategies and actual online community features as examples of design ideas.

In summary, this study has successfully responded to both inquiries by presenting a model that offers comprehensive considerations with systemic structures. I hope this model will be substantially helpful and insightful to developers who wish to design a successful online

community for teachers' professional development by reminding them about the critical considerations.

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APPENDIX A

Participant Recruitment Email (for developers)

Dear [individual's name],

I am a doctoral candidate in Instructional Technology at the University of Georgia, and would like to request your assistance in designing a conceptual model of an effective online community to support teachers' professional development. My dissertation study, under the direction of Dr. Julie A. Moore, is a Delphi study of experts in the field of online teacher professional development with the goal of developing a conceptual model of effective online communities to support teacher learning. Your expertise will be extremely helpful to this project. As a token of my appreciation, please accept a **$50** gift certificate after the final interview.

Current scholars and scholarly literature identify you as an **expert** in teacher professional development and online communities. After reading your article [**article name**], I am convinced that your expertise will be extremely valuable. As such, I hope you will agree to participate in a this study. Participants will be expected to take part in two phone interviews (email or face-to-face if you prefer) lasting up to 45 minutes. I will also ask for your feedback on my write-up of each interview. The approximate schedule for the interviews is attached to this letter.

In honoring your critical contribution as an expert, I would like to offer you an opportunity to be printed on the list of **contributors in any publication** developed from this study. However the decision is completely up to you.

This study does not attempt to provide a guaranteed recipe for every online community. Rather, it seeks to identify critical considerations of an online community to serve as a guiding framework for designers. Importantly, this conceptual model of an online community will provide an opportunity for designers to see the community from a holistic view, thus enhancing their understanding of its integrated structure.

If you are interested in participating in this study and sharing your expertise, please email me at boyoungc@uga.edu by the end of September 8, 2007. I look forward to hearing from you soon. Thank you very much!

Sincerely,

Boyoung Chae

APPENDIX B

Participant Recruitment Email (for teachers)

Dear [individual's name],

I am a doctoral candidate in Instructional Technology at the University of Georgia, and would like to request your assistance in designing a conceptual model of an effective online community to support teachers' professional development.

In this study, I will interview 5 researchers/designers of online communities for teachers, and 5 teachers who are highly experienced in utilizing online communities for teachers. Upon my request, Dr **[individual's name]** in **[community name]** has recommended you as an expert teacher who may offer insightful contributions to this study. As a potential participant, I strongly believe your expertise will be extremely helpful to this project.

As such, I hope you will agree to participate in this study. Participants will be expected to take part in two phone interviews (email or face-to-face if you prefer) lasting up to 45 minutes each. I will also ask for your feedback on my write-up of each interview. Please find attached an approximate schedule for the interviews. As a token of my appreciation, please accept a **$50 gift certificate** after the final interview.

In honoring your critical contribution as an expert, I would like to offer you an opportunity to be printed on the list of **contributors in any publication** developed from this study. However, this decision is left entirely to you.

This study does not attempt to provide a guaranteed recipe for every online community. Rather, it seeks to identify critical considerations of an online community to serve as a guiding framework for designers. Importantly, this conceptual model of an online community would provide an opportunity for designers to see the community from a holistic view, thus enhancing their understanding of its integrated structure.

If you are interested in participating in this study and sharing your expertise, please email me at boyoungc@uga.edu by the end of September 24, 2007. I look forward to hearing from you soon. Thank you very much!

Sincerely,

Boyoung Chae

APPENDIX C

Online Background Survey for Designers

Name: _____

Current Position: _____

Institution: _____

How long have you been involved in researching/ developing online communities for teachers?

_____

In which online teacher communities have you been involved?

_____

What are your main duties or contributions in each community?

_____

How would you define a *successful* online community for teachers? What would make you think a particular community is successful?

_____

_____

Thank you for your time!

APPENDIX D

Online Background Survey for Teachers

Name: _____

Teaching subject and grade: _____

Name of school that you currently work: _____

Years of teaching: _____ years

How long have you been using/participating online communities for teachers?

_____

In which online teacher communities have you been involved?

_____

What are your main activities or contributions in each community?

_____

How would you define a *successful* online community for teachers? What would make you think a particular community is successful?

_____

_____

Thank you for your time!

APPENDIX E

Participant Consent Script

To Read to Interviewee:

Thank you for your interest in participating in this study. I appreciate you giving time out of your busy schedule. My name is Boyoung Chae for a study at the University of Georgia entitled, "Conceptual Model for Designing a Successful Online Community for Teachers' Professional Development."

The purpose of this study is to design a conceptual model of an effective online community to support teachers' professional development. It first identifies the critical elements of a successful online community that supports teachers' professional development. Subsequently, the specific implementation strategies and design principles for each element will be sought. Finally, the study suggests a conceptual model of an online community, based on the identified elements.

As a precaution to protect you from disclosures, digitally recorded interview files will be stored in my computer hard drive with a password protection. Only I will have an access to the digital files for transcription and coding purposes. These files will be destroyed five years after the completion of the study.

Finally, I would like to offer you an opportunity to be printed on the list of contributors in any publication developed from this study. If you do not want your name printed on the list of contributors, your name will not be attached or referred to in any publication or presentation developed from this study.

Your participation in this study is completely voluntary. You can stop your participation at any time and you do not have to answer any questions you do not wish to answer.

Questions or concerns about your rights as a research participant should be directed to The Chairperson, University of Georgia Institutional Review Board, the contact information is (706) 542-3199; email address irb@uga.edu

Do you have any questions?

Do you agree to participate in this study? _____ Yes _____ No

Do you want your name to be printed on the list of contributors? ____Yes _____No

APPENDIX F

Example of Interview Scenario

(Turn on the recorder)

1. Greetings:
    - Thank you Dr Schlager. It is such an honor to talking to you. And thanks again for your support on this study. I'm very grateful.
    - I've got this standard script that I need to read to you before start interviewing. So if you can bear with me for a second

(Read consent script)

2. During the background survey, you have conceptualized a successful online community for teachers is where "mutual trust, openness, respect for diverse perspectives, risk-taking are core values; where instructional improvement in service of student learning is the focus; where incentives match obligations; where leadership is distributed and earned not imposed"
    - Would you say those three things are the critical conditions/elements for successful online community teachers?
    - One of the things you mentioned, I was very intrigued by ( ) part. Could you give me some more explanation about that?
    - You have mentioned successful online communities for teachers is where "mutual trust, openness, respect for diverse perspectives, risk-taking are core values" Are those 4 things somehow related? Why would you say they should be the core value?
    - You have emphasized ( ) a lot. Could you explain a little more about it?
    - What else could be the critical elements?
3. So far you have identified the elements for successful online communities for teachers. What do you consider to be effective design strategies to implement each identified element?
4. Imagine that you've been given an opportunity to design an online community for teachers' development. Everything is up to your decision. And you want to make it successful, of course. What are the things you will ensure to make it happen?

APPENDIX G

First Interview Result

Elements/Principles of a *Conceptual Model for Designing a Successful Online Community for Teachers' Professional Development*				
Evolving Environment	**Grouping Based on Subject/Grade Level**	**Diversity of Community**	**Direct Teacher Involvement**	**Social-Networking**
• Multiple roles and participations that can change over time • Constant assessment of needs: Should be organized in a way that constantly demonstrates what teachers need • Fast flow of information • Technology is upgraded to meet the needs of the community • Goals and mission of the projects are negotiated • Longitudinal tracking of users	• Resources that are organized by the subject/grade level (e.g., When typing 'atom', users get an entire series of lesson plans, info., and quizzes) • System that is organized in a way that teachers in their own subject/grade levels can get together	• Multiple roles and ways of participations to meet their needs better • Diversity of interactions (message boards, chat rooms, blogs) • Different formats and venues for entry • A large number of events that teachers can participate	• Direct teacher involvement in the design process from the beginning • Ongoing teacher involvement in designing the flow and selecting content	• From real people to real people connections • Dynamic environment where the experienced can help the inexperienced • Stress management • A buddy system/support system • A virtual spa where teachers can go and relax with other like-minded teachers • Fun and enjoyable environment
Culture of Trust	**Strong Ongoing Leadership**	**Physical Contact**	**Multiple Layers of Incentives**	**Ease of Usability**
• Helpful facilitators • A lot of small groups where users feel safe • Face-to-face meetings	• Active host/community leaders to make beginners feel welcome • Well-trained leaders • Active facilitators and mentoring system with expert groups of teachers (e.g., Live help desk)	• Start as face-to-face group to build a culture of trust	• Opportunity to reflect on their teaching and learning (e.g., Information archive) • Opportunity for professional development (e.g., online conferences, grant info.) • Provide individual group space • Monetary incentives for facilitators	• Ease of access (e.g., tutorial, training opportunities) • Access through school firewall • User-friendly environment (e.g., spam control) • As few clicks as possible
Responding to Teachers' Immediate Needs	**Special Support for Beginning Teachers**	**Promotion**		
• Just-in-time resources for teachers' needs • Immediately applicable resources	• Support for lesson plans and first day teaching			

APPENDIX H

Modified First Interview Result with Feedbacks

Elements/Principles of a *Conceptual Model for Designing a Successful Online Community for Teachers' Professional Development*				
Evolving Environment	**Ease of Usability**	**Responding to Teachers' Immediate Needs**	**Direct Teacher Involvement**	**Social-Networking**
• Multiple roles and participations that can change over time • Constant assessment of needs: Should be organized in a way that constantly demonstrates what teachers need • Fast flow of information (e.g., timely response from the facilitator) • Technology is upgraded to meet the needs of the community • Goals and mission of the projects are negotiated • Longitudinal tracking of users	• Ease of access (e.g., tutorial, training opportunities) • Access through school firewall: provide support for gaining access • User-friendly environment (e.g., spam control, no ads, protection of personal information) • As few clicks as possible	• Just-in-time resources for teachers' needs • Immediately applicable resources • Resources that meet the particular needs being imposed on the teachers by the education system and new policies	• Direct teacher involvement in the design process from the beginning • Ongoing teacher involvement in designing the flow and selecting content (e.g., Group room where members can make suggestions for change)	• From real people to real people connections • Dynamic environment where every member of a community can offer something. • Stress management • A buddy system/support system • A virtual spa where teachers can go and relax with other like-minded teachers • Fun and enjoyable environment
Sense of Membership	**Strong Ongoing Leadership**	**Culture of Trust**	**Multiple Layers of Incentives**	**Promotion**
• Helpful facilitators • A lot of small groups where users feel safe • Face-to-face meetings • Being open to giving and receiving warm/ cool feedback. • Feeling an accountability to the group so that you want to be present in every discussion that takes place	• Active host/community leaders to make beginners feel welcome • Well-trained leaders • Active facilitators and mentoring system with expert groups of teachers (e.g., Live help desk)	• Physical contact: Start as face-to-face group to build a culture of trust • Code of conduct is enforced • Members choose how much information to divulge on individual ID pages	• Opportunity to reflect on their teaching and learning (e.g., Information archive) • Opportunity for professional development (e.g., online conferences, grant info, online professional development program.) • Provide individual group space • Monetary incentives for facilitators	• Ongoing promotion and advertising
Grouping Based on Subject/Grade Level	**Diversity of Community**	**Special Support for Beginning Teachers**	**Sustainability**	
• Resources that are organized by the subject/grade level (e.g., When typing 'atom', users get an entire series of lesson plans, info., and quizzes) • System that is organized in a way that teachers in their own subject/grade levels can get together (e.g., a chat room). Yet, collaboration across disciplines is encouraged (e.g. reading across the curriculum)	• Multiple roles and ways of participations to meet their needs better • Diversity of interactions (message boards, chat rooms, blogs) • Different formats and venues for entry • A large number of events that teachers can participate • A system that allows anyone to submit the feedbacks	• Support for lesson plans and first day teaching (e.g., Support groups for new and first year teachers	• Self-sustainable community even after initial leaders and funding runs out.	

APPENDIX I

Second Interview Protocol

With your excellent ideas and incredible support, we have thus far, identified critical elements in the design of a successful online community for teachers' professional development. The question now is: **how might we put these ideas into practice?**

We have discussed specific design strategies for each element during the first interview. However, I would like to have an opportunity to fully focus on developing actual design ideas to implement those elements.

For example, we can include a feature called *Live Help Desk* in online community. This feature will be a nice design example for several elements we identified during the first interview, including social connection, multiple layers of incentives, teacher direct involvement, and teachers' immediate needs'.

In a word, the primary question for our second interview is:

- **What will be specific design examples to deploy such elements in a real online community environment? What features can be added?**

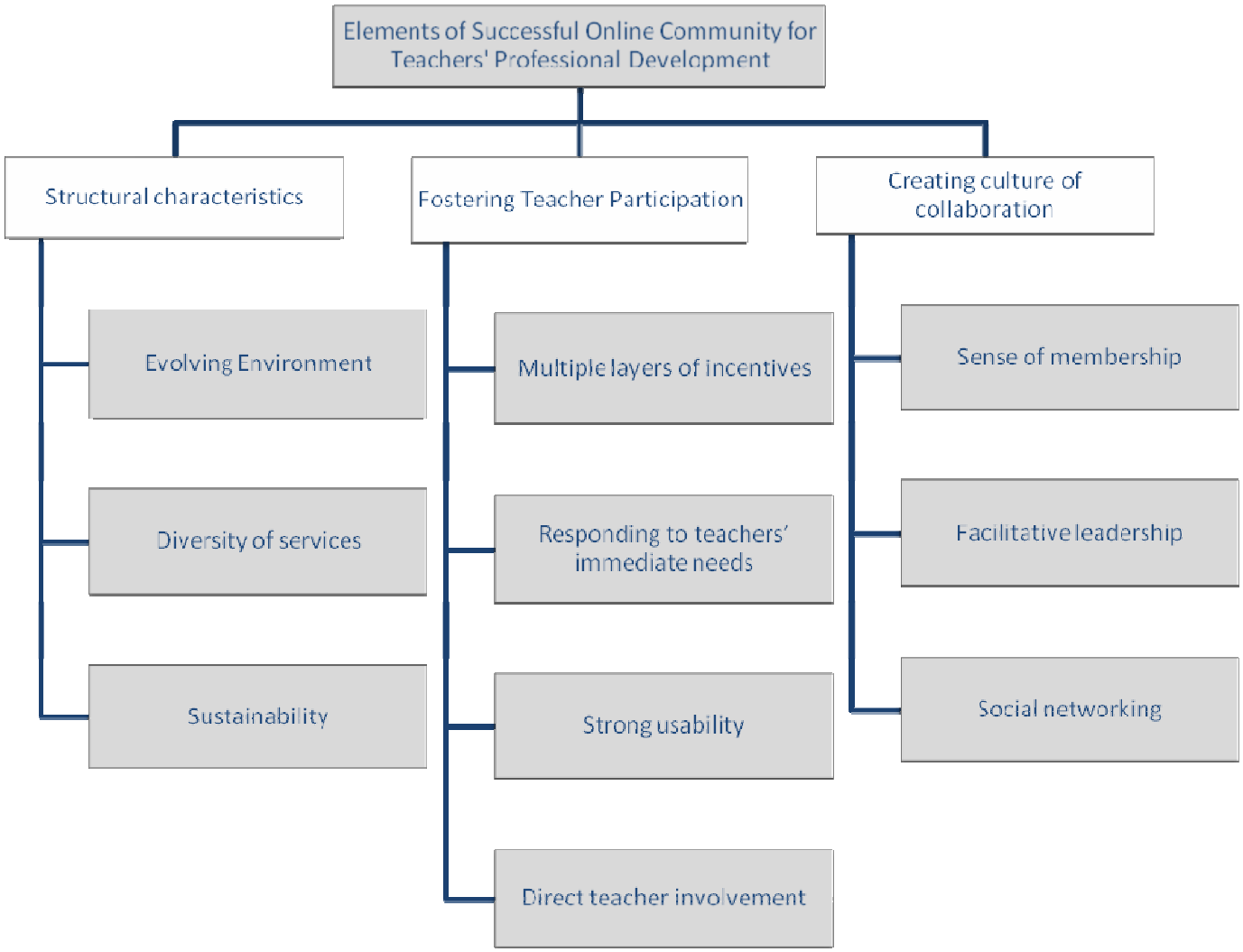
APPENDIX J

Second Interview Result

Elements for the Design of a Successful Online Community for Teachers' Professional Development

2nd Interview Data Analysis [Draft]

Boyoung Chae


Elements of Successful Online Community for Teachers' Professional Development
Structural characteristics
Fostering Teacher Participation
Creating culture of collaboration
Evolving Environment
Diversity of services
Sustainability
Multiple layers of incentives
Responding to teachers' immediate needs
Strong usability
Direct teacher involvement
Sense of membership
Facilitative leadership
Social networking

I. Structural Characteristics		
Evolving Environment	**Diversity of Services**	**Sustainability**
Description: A successful online community for teachers' professional development may need to be highly responsive to emerging needs. It calls for a flexible and open system that can easily accept the needs of modification and evolve so that it can best support teachers with current information and more customized services as much as possible.	**Description:** A successful online community for teachers' professional development may need to provide diverse services in multiple formats so that it can support large numbers of users in more helpful ways.	**Description:** A successful online community for teachers' professional development may need to actively find ways to best sustain itself over time.
Strategies: • Provide roles and means of participation that can change over time. • Constantly assess the needs of teachers • Ensure that the flow of information is fast and dynamic. • Constantly upgrade relevant technologies to meet the needs of the community. • Ensure that the goals and mission of the projects are constantly negotiated**.**	**Strategies:** • Make multiple roles and means of participation available. • Provide multiple formats and venues for entry. • Organize a large number of events that teachers can participate. • Support all stages in teachers' careers, including the induction, certification period, and retirement periods. • Support both professional discussions (where there are specific solutions for specific tasks) and social connection (where teachers unwind and relax). These however, require careful monitoring to prevent them from becoming extreme.	**Strategies:** • Pursue a self-sustainable community so that it can run after initial leaders leave and funding runs out. • Build a sustainable environment without reliance on high ongoing costs. • Implement ongoing promotion and advertising efforts. • Research and apply marketing strategies from business models. • Maintain a critical mass to sustain the community • Make leadership transferrable. • Ensure that new and fresh ideas are regularly announced. • Occasionally provide more fun and enjoyable events rather than the routine activities. • Reach out to local communities or schools to provide services.
Possible online community features: • Timely response from the facilitator • Longitudinal tracking of users • Forum or discussion thread in which community members can always suggest something. • Question or issue of the week/month are constantly posted and renewed based on teachers' requests.	**Possible online community features:** • Timely response from the facilitator • Room for every kind of discussion • Special support pages for beginning teachers, male teachers, teachers who want to be principal, and teachers who retired. • Forum or discussion thread in which community members can always suggest something • Synchronous and asynchronous communication tools	**Possible online community features:** • Some fun statistics or *Trivia* that is renewed weekly • Online events or contests • Online feature that allows change of ownership of the group easily • System that constantly encourages members to take on the leadership roles

II. Fostering Teacher Participation			
Multiple Layers of Incentives	**Responding to Teachers' Immediate Needs**	**Ease of Usability**	**Direct Teacher Involvement**
Description: A successful online community for teachers' professional development may need to provide multiple incentives for teachers so that they will find using it a beneficial use of their time.	**Description:** A successful online community for teachers' professional development may need to provide just-in-time resources that are immediately applicable for teaching practices.	**Description:** A successful online community for teachers' professional development may need to be very easy to use so that teachers will feel comfortable and confident about exploring what a community can offer.	**Description:** A successful online community for teachers' professional development may need to have real teachers involved in the process of design and development.
Strategies: • Provide opportunities for teachers to reflect on their own teaching and learning. • Provide opportunities for professional development. • Offer both intrinsic and extrinsic rewards. • Provide opportunities for mentoring and participants to be mentored. • Provide collaboration opportunities to facilitate inter-participant connections.	**Strategies:** • Provide resources that meet specific needs imposed on the teachers by the education system and new policies. • Provide resources that support everyday classroom needs, such as activities, tips, ideas, and assessment tools. • Provide resources for recurring and seasonal events. • Present information from politically neutral positions (i.e. provide non-judgmental information.	**Strategies:** • Provide easy access to the site • Ensure that it can be accessed through the school's firewall • Provide a user-friendly environment. • Protect private information. • Have the presence of a skilled facilitator or moderator. • Ensure that there is a balance between simplicity of the structure and comprehensiveness of support: Think "how much is too much" • Organize resources based on the subjects and grade levels. • Try a scenario-based approach to provide for more contextual support. • Make arrangements such that community leaders/developers experience activities in the community from users' perspectives.	**Strategies:** • Involve real teachers in the decision-making process from the beginning. • Be sure to reflect feedback from slow adopter teachers along with technology innovator teachers. • Announce news and changes of the community to teachers so that they are aware of the updates and allow them to make comments.
Possible online community features: • A space where people can sign up to look for a mentor or offer mentoring to someone • A searchable information archive where teachers can reflect on what they have learned and discussed • Community service hours that can be used for required credits to renew teacher certificates • Online conferences • Information on grants that teachers can apply for • Advertisements of companies that provide discounts or other advantages for teachers	**Possible online community features:** • A space where people report the issues on which they need support • Lesson plan repository • Ready-made handouts for each grade and subject level • A quality-rating system by users	**Possible online community features:** • Specific and visual tutorials • Online and offline training opportunities • Spam control • A real-time help desk • Pilot tests of newly installed functions • A discussion board or forum where teachers can report problems • A platform for community leaders/developers to actually become true community members, rather than just playing monitoring roles	**Possible online community features:** • A space where members can make suggestions for change • A system that allows and encourages group members to have debriefs of discussions (where teachers will discuss what worked and what did not work) and a system that allows community developers to review these debriefs • Monthly newsletters with tips and information about new features

III. Creating a Culture of Collaboration		
Sense of Membership	**Facilitative Leadership**	**Social Connection**
Description: A successful online community for teachers' professional development may need to nurture an environment whereby teachers can feel a sense of membership and that they are important. It is about a sense of accountability to the group so that teachers contribute to the growth of the community.	**Description:** A successful online community for teachers' professional development may need to provide a facilitative leadership that can help others make connections. Proving the direction without fully taking the reins will help develop and support a community culture.	**Description:** A successful online community for teachers' professional development might need to provide a place for teacher renewal and rejuvenation, where teachers can unwind and connect.
Strategies: • Have a skilled facilitator or moderator present. • Create an environment where there can be many small groups. • Provide an opportunity for members to meet face-to-face. • Make the focus and agenda of the community explicit: With given boundaries, teachers will have a better understanding about the community. They will know what to expect as well as what they can get from the community. • Cultivate the culture of trust. • Understand that it takes time to build a community: Be patient. • Create a dynamic environment where every member of the community can offer something. • Emphasize equal participation.	**Strategies:** • Train community leaders. • Make leadership easily transferrable: Provide opportunities for teachers to take up leadership roles. • Have a skilled facilitator or moderator present. • Create a mentoring system with the available expert teachers. • Acknowledge explicitly the contributions of various individuals or groups of participants.	**Strategies:** • Have a skilled facilitator or moderator present. • Provide emotional support, such as stress management. • Provide a buddy support system where teachers can meet like-minded teachers. • Create a virtual spa for teachers to relax. • Create a fun and family-like environment. • Ensure that there is known security or known anonymity in the community.
Possible online community features: • An online matching service with searchable profiles where teachers can express the type of support and group they need • A live help desk	**Possible online community features:** • Timely response from the facilitator • A live help desk • An online training tool • An online feature that allows a change of ownership of the group easily • A system that constantly encourages members to take on leadership roles	**Possible online community features:** • Small groups that can be created with specific needs • A bridge that connects such small groups for interactive discussions. • Customized individual pages • A space where people can sign up to look for a mentor or offer mentoring to someone

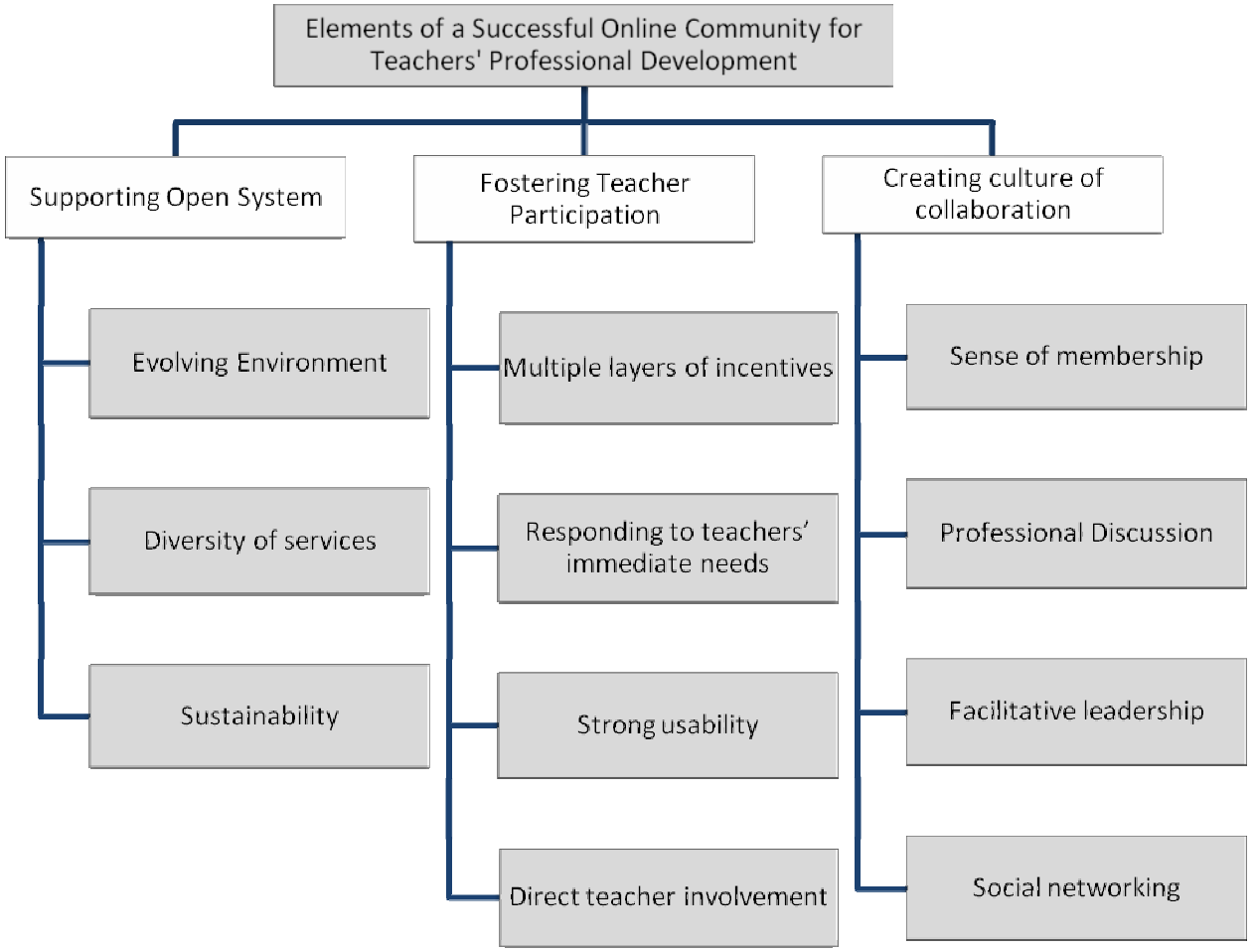
APPENDIX K

Final Model (Modified Second Interview Result with Feedbacks)

Elements for the Design of a Successful Online Community for Teachers' Professional Development

Final Model [draft]

Boyoung Chae


Elements of a Successful Online Community for Teachers' Professional Development
Supporting Open System
Fostering Teacher Participation
Creating culture of collaboration
Evolving Environment
Diversity of services
Sustainability
Multiple layers of incentives
Responding to teachers' immediate needs
Strong usability
Direct teacher involvement
Sense of membership
Professional Discussion
Facilitative leadership
Social networking

I. Supporting Open System		
Evolving Environment	**Diversity of Services**	**Sustainability**
Description: A successful online community for teachers' professional development needs to be highly responsive to emerging needs. It calls for a flexible and open system that can easily accept the needs of modification and evolve so that it can best support teachers with current information and more customized services as much as possible.	**Description:** A successful online community for teachers' professional development needs to provide diverse services and resources in multiple formats so that it can support large numbers of users in more helpful ways.	**Description:** A successful online community for teachers' professional development needs to actively find ways to best sustain itself over time.
Strategies: • Provide roles and means of participation that can change over time. • Constantly assess the needs of teachers • Ensure that the flow of information is fast and dynamic. • Frequently upgrade relevant technologies to meet the needs of the community. • Ensure that the goals and mission of the projects are constantly negotiated**.**	**Strategies:** • Make multiple roles and means of participation available. • Provide multiple formats and venues for entry. • Organize a large number of events in which teachers can participate. • Support all stages in teachers' careers, including the induction, certification period, and retirement periods. • Support both professional discussions (where there are specific solutions for specific tasks) and social connection (where teachers unwind and relax). These however, require careful monitoring to prevent them from becoming extreme. • Support both authoritative subject-matter content, such as research-based curriculum material, and resources like lesson plans developed and shared by teachers	**Strategies:** • Pursue a self-sustainable community so that it can run after initial leaders leave and funding runs out. • Build a sustainable environment without reliance on high ongoing costs. • Implement ongoing promotion and advertising efforts. • Research and apply marketing strategies from business models. • Maintain a critical mass to sustain the community • Make leadership transferrable. • Ensure that new and fresh ideas are regularly introduced. • Occasionally provide a variety of fun and enjoyable events in addition to routine activities. • Reach out to local communities or schools to provide services.
Possible online community features: • Timely response from the facilitator • Longitudinal tracking of users • Forum or discussion thread in which community members can always suggest something. • Question or issue of the week/month are constantly posted and renewed based on teachers' requests.	**Possible online community features:** • Timely response from the facilitator • Room for every kind of discussion • Special support pages tailored to specific needs such as beginning teachers, male teachers, teachers who want to be principal, and teachers who retired. • Forum or discussion thread in which community members are invited to make suggestions • Synchronous and asynchronous communication tools	**Possible online community features:** • Some fun statistics or *Trivia* that is renewed weekly • Online events or contests • Online feature that allows change of ownership of the group easily • System that constantly encourages members to take on leadership roles

II. Fostering Teacher Participation			
Multiple Layers of Incentives	**Responding to Teachers' Immediate Needs**	**Ease of Usability**	**Direct Teacher Involvement**
Description: A successful online community for teachers' professional development needs to provide multiple incentives for teachers so that they view its use beneficial and valued.	**Description:** A successful online community for teachers' professional development needs to provide just-in-time resources that are immediately applicable for teaching practices. This does not mean quick-fixes.	**Description:** A successful online community for teachers' professional development needs to be very easy to use so that teachers will feel comfortable and confident about exploring what a community can offer.	**Description:** A successful online community for teachers' professional development needs to have classroom/credentialed teachers involved in the process of design and development.
Strategies: • Provide opportunities for teachers to reflect on their own teaching and learning. • Provide opportunities for professional development. • Offer both intrinsic and extrinsic rewards. • Provide opportunities for mentoring and for participants to be mentored. • Provide collaboration opportunities to facilitate inter-participant connections.	**Strategies:** • Provide resources that meet specific needs imposed on the teachers by the education system and new policies. • Provide resources that support everyday classroom needs, such as lesson plans, classroom management, tips, ideas, and assessment tools. • Provide both innovative and standard resources for recurring and seasonal events. • Present information from politically neutral positions (i.e. provide non-judgmental information).	**Strategies:** • Provide easy access to the site. • Ensure that access is available through the school's firewall. • Provide a user-friendly environment. • Protect private information. • Have the presence of a skilled facilitator or moderator. • Ensure that there is a balance between simplicity of the structure and comprehensiveness of support: Think "how much is too much" • Organize resources based on subject, grade level, and cross-curricular application. • Try a scenario-based approach to provide for more contextual support. • Make arrangements such that community leaders/developers experience activities in the community from users' perspectives.	**Strategies:** • Involve classroom/credentialed teachers in the decision- making process from the beginning. • Be sure to reflect feedback from general population, not just from technology innovator teachers. • Announce news and changes of the community to teachers so that they are aware of the updates and are given the opportunity to make comments.
Possible online community features: • A space where people can sign up to look for a mentor or offer mentoring to someone • A searchable information archive where teachers can access and reflect on what has been learned and discussed • Community service hours that can be used for required credits to renew teacher certificates • Online conferences • Information on grants for classroom resources and teacher professional development opportunities • Advertisements of companies that provide advantages for teachers	**Possible online community features:** • A space where people report issues on which support is needed • Lesson plan repository • Ready-made handouts for each grade and subject level • A quality-rating system by users • Weekly virtual "office hours" where an individual is available to answer specific questions and provide support.	**Possible online community features:** • Specific and visual tutorials • Online and offline training opportunities • Spam control • A real-time help desk • Pilot tests of newly installed functions • A discussion board or forum where teachers can report problems • A platform for community leaders/developers to actually become true community members, rather than just playing monitoring roles	**Possible online community features:** • A space where members can make suggestions for change • A system that allows and encourages group members to have debriefs of discussions and a system that allows community developers to review these debriefs • Monthly newsletters with tips and information about new features and community activities.

III. Creating a Culture of Collaboration			
Sense of Membership	**Professional Discussion**	**Facilitative Leadership**	**Social Connection**
Description: A successful online community for teachers' professional development needs to nurture an environment whereby teachers can feel a sense of membership and that they are important. It is about a sense of accountability to the group so that teachers contribute to the growth of the community.	**Description:** A successful online community for teachers' professional development needs to provide an environment where teachers can collaborate to have a meaningful discussion on the professional issue such as dilemmas teachers might face.	**Description:** A successful online community for teachers' professional development needs to provide a facilitative leadership that can help others make connections. Proving the direction without fully taking the reins will help develop and support a community culture.	**Description:** A successful online community for teachers' professional development needs to provide a place for teacher renewal and rejuvenation, where teachers can unwind and connect.
Strategies: • Have a skilled facilitator or moderator present. • Acknowledge explicitly the contributions of various individuals or groups of participants so that members can feel like other people use their ideas. • Provide an opportunity for members to meet face-to-face. • Make the focus and agenda of the community explicit: With given boundaries, teachers will have a better understanding about the community. They will know what to expect as well as what they can get from the community. • Cultivate the culture of trust. • Understand that it takes time to build a community: Be patient. • Create a dynamic environment where every member of the community can offer something. • Emphasize equal participation.	**Strategies** • Have a skilled facilitator or moderator present. • Offer pre-made discussion protocol for productive and constructive collaboration. • Have the members of the group set the norms before starting the discussion so that discussion will have some boundaries. • Have a place where people can post their issues that they wish to discuss • Create an environment where there can be many small groups.	**Strategies:** • Have a skilled facilitator or moderator present. • Train community leaders. • Make leadership easily transferrable: Provide opportunities for teachers to take up leadership roles. • Create a mentoring system with the available expert teachers. • Acknowledge explicitly the contributions of various individuals or groups of participants.	**Strategies:** • Have a skilled facilitator or moderator present. • Provide emotional support, such as stress management. • Provide a buddy support system where teachers can meet like-minded teachers. • Create a virtual spa for teachers to relax. • Create a fun and family-like environment. • Ensure that there is known security or known anonymity within the community.
Possible online community features: • An online matching service with searchable profiles where teachers can express the type of support and group they need • A live help desk • An online forum for community building activities • An avatar that shows individual contributions • A system that shows how many hits are made on your lessons or ideas on the website	**Possible online community features:** • Small groups that can be created with specific needs • A guideline for professional discussion explaining the pre-cautions and manners	**Possible online community features:** • A live help desk • An online training tool • An online feature that allows a change of ownership of the group easily • A system that constantly encourages and provides scaffolding for members to take on leadership roles	**Possible online community features:** • Small groups that can be created with specific needs • A bridge that connects such small groups for interactive discussions. • Customized individual pages • A space where people can sign up to look for a mentor or offer mentoring to someone

APPENDIX L

Sample Coding Page

Theme	**ID**	**Q**	**Page**	**Data**	**Notes**
Multi-layers of Incentives	M.S.	Strategies	4	The benefits to them and the incentives for participation aren't always clear and well stated and aligned with the obligations that they're expected to sign up for.	
Multi-layers of Incentives	M.S.	Element	4	You need to have incentives all along the way to get people to climb that ladder	
Multi-layers of Incentives	M.S.	Strategies	4	A huge number of events that teacher can participate—teachers would come if one of the events is of their interest—that way sort of get their feed wet in the community and understand the community	Could belong to sustainability/diversity as well
Evolving environment	M.S.		3	It's really a progression or a set of, you know, we like to sometimes call them a "pathway" or destination from a total novice to participant to contributor to leader	Not sure
Usability	M.S.	Strategies	5	Planning before you actually roll out the community is extremely important for your own understanding of how that year is going to unfold	
Diversity	M.S.	Strategies	17	Provide as many different communication modes as possible and allow the community to figure out how best to use those technologies	Could belong to multiple-layers of incentives as well
Ongoing leadership	M.S.	Element	5	Have a strong and ongoing leadership, especially at the beginning	
Evolving environment	M.S.	Element	7	Evolving identity—from participant to facilitator to community leader	Could belong to diversity
Usability	M.S.	Strategies	7	Spend the first 9 months to find your expert community leader and have the community leader start the community with the rest of the staffs—let all of them experience the community before you bring it to the teacher cohort	
Usability	M.S.	Strategies	6	I think training of community leaders is essential--"If you want to be a help desk person, then you have to follow a help desk person around and start doing help desk."	

APPENDIX M

Concept Mapping using Inspiration