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From the Members' Perspective:
Participants' Perception of the Moderator Role
in Educator Communities of Practice

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Abstract

**From the Members' Perspective:
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The community of practice (CoP) social/collaborative learning model has been widely adopted since its introduction by Jean Lave and Etienne Wenger in 1991, with growth spurred on as practitioner groups increasingly leverage technology to overcome geographically dispersed memberships. The purpose of this study was to address a gap in the literature which identifies the CoP moderator role as an overarching success factor but has not provided research results into the moderator role from the perspective of the membership. Survey methodology was employed to identify the perceived value a sample of 84 members of three educator CoPs assigned to specific moderator actions and characteristics identified in the literature as corresponding to CoP success, and to examine the influence member demographics may have on the member value perceptions. Findings indicate CoP members uniformly value moderator actions and characteristics that cultivate a culture of inquiry, mutual engagement, sustainability, and that support an architecture of participation; these perceived valuations do not appear to be influenced by member demographics. This study has sought to contribute to the body of literature concerned with the support and management of communities of practice particularly in the education sector and contributes to a new line of research into the impact of the moderator role on CoP effectiveness and success.

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DEDICATION

This paper, as well as the work in the years leading up to it, is dedicated to two people who have shaped my world. The first is my late father, Lt. Col. Walter R. Slowinski, son of an immigrant marble mason who taught me persistence and resilience, was my best pal and favorite political discussion partner, and who taught me to throw, catch, ride, putt, and stay loose in the pack. I still hear your voice when I sit in the Suzzallo graduate reading room, Dad.

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From the Members' Perspective:

Participants' Perceptions of the Moderator's Role in Educator Communities of Practice

The community of practice (CoP) social/collaborative learning model has moved from theory to implementation in a variety of sectors fairly quickly since first being introduced by Etienne Wenger & Jean Lave in 1991. The CoP model, which describes groups of practitioners collaborating with the intention to learn, share practice, build social capital, and benefit from community knowledge around specific topics of common interest (Brown & Duguid, 1991; Fontaine, 2001; Iriberry & Leroy, 2009; Lesser & Storck, 2001; Wenger & Lave, 1991; Wenger, 1998), is also frequently credited with presenting opportunities for knowledge-building and innovation by bringing together new ideas and people (Brown & Duguid, 1991; Wenger, McDermott, & Snyder, 2002). Additionally, advances in technology and online connectivity have allowed the use of the CoP model to expand beyond its origins in face-to-face environments to online or mixed mode settings, generating opportunities to create community where proximity is not possible (Wenger, White, & Smith, 2009) and contributing to the growth in use of the CoP model.

As the use of communities of practices has increased, research regarding many of the aspects of the CoP model has also increased including the literature identifying factors for their success. And while there is some divergence as to the ranking and importance of the components reported as success factors for CoP, and work yet to be done to better understand how to form, grow, sustain and evolve CoPs, one factor that is cited across the literature as key to sustainable, effective communities is that of a skilled moderator

(Attwell & Elferink, 2007; Bourhis & Dube, 2010; Gairín-Sallán, Rodríguez-Gómez, & Armengol-Asparó, 2010; Hew & Hara, 2006; McDonald & Star, 2012; Wenger et al., 2002).

This study, which focuses on technical educator CoPs, endeavors to identify the value that CoP members place on various moderator actions and characteristics previously identified from relevant literature as having a positive impact on CoP effectiveness and to determine the extent to which member demographics have an influence on how CoP members perceive these moderator actions and characteristics. As a practitioner who has been called upon to assist emergent communities of practice and one who has been tasked with either initially taking on the role of moderator or advising on the recruitment and training for such a role, determining the value members place on these moderator activities and traits will be useful in informing my practice.

Background

The community of practice framework, initially presented by Wenger and Lave (1991), has been widely utilized since the mid-1990s by multinational corporations and others in the business sector to capture and manage knowledge, foster innovations, and develop social capital. Examples of this include IBM's use of their Communities tool to connect workgroups (Muller, Ehrlich, Matthews, Perer, Ronan, Guy, & Street, 2012) or the use of CoPs by World Bank and American Management Systems as foundations for knowledge management (Wenger & Snyder, 2000). This sector has also led the way in combining web-based technologies and the CoP model to create socially situated learning environments for geographically dispersed teams (Abd-Elaziz, Ezz, Papazafeiropoulou, Paul, & Stergioulas, 2012; Ardichvili, Page, & Wentling, 2002; Jarrahi & Sawyer, 2012). Much of the research that has been done in the corporate sector has focused on the

relationship between CoP activity and organizational innovation, knowledge management, and determining whether or not CoP presence results in a return on investment.

The education sector has also made use of the CoP framework, especially in the service of instructor improvement (Babinski, Jones, & DeWert, 2001; Gareis & Nussbaum-Beach, 2008; Kao & Tsai, 2009); examples of CoPs in this arena would be include those whose intention is to provide community for educators looking to stay current in their discipline-centric content knowledge, or CoPs whose members share pedagogical approaches such as problem-based learning or who address issues such as accessibility and ADA compliance in online course materials.

The interest in communities of practice as a vehicle for improving education is also evidenced by the recommendations and initiatives issued from the U.S. Department of Education (U.S. Department of Education, 2011), and the “Framing the Future” work recently completed by the Australian Government Office for Learning and Teaching (McDonald & Star, 2012) , both of which encourage the development and use of CoPs for educator development and instructional improvement. As a result, much of the research on CoPs in the education sector focuses on their use for collaborative educator professional development and the elements that foster success in this effort.

Factors identified in this body of literature that are noted as contributing to successful CoPs can be categorized as those that 1) foster and support critical inquiry, 2) cultivate and encourage mutual engagement, 3) support and develop community sustainability, and 4) present an architecture that supports member participation. Across these categories, one key element is indicated as essential throughout the literature: that of a skilled moderator or facilitator, with some studies alluding to specific actions or

characteristics of successful moderators. The literature review for this study draws upon this existing research to determine the most mentioned moderator actions and characteristics that support the factors of success in the four categories mentioned above. A survey was then developed to measure CoP members' general perception of the value of these moderator actions and characteristics. Additionally, there appears to be little to no research as of yet that has investigated how CoP member demographics may influence their value perception of moderator actions and characteristics. This study is also an initial foray into that territory.

Problem Statement

Educator communities of practice are increasingly being deployed within academia, and online-based CoPs have become popular as arenas for educator professional development and as venues for distributed expertise, collaborative knowledge building and professional social networking. The online environment in particular is charged with providing peer connectivity regardless of proximity, and the emerging literature points to community moderators or facilitators as key to the success of these communities. However, distinct activities and characteristics of a CoP's moderator, such as "technologically adept" or "creates connections", have only recently begun to be delineated (Australian Learning & Teaching Council, 2011; Anne Bourhis, Dubé, & Jacob, 2005; Gairín-Sallán, Rodríguez-Gómez, & Armengol-Asparó, 2010; Kimball & Ladd, 2004; Tarmizi & de Vreede, 2005). Very little is known as to the impact of these actions and characteristics, especially from the perspective of members.

Purpose of Study

The review of the literature indicates that there is still much to be learned about launching, growing, sustaining and evolving communities of practice, including their use as professional development arenas for educators. A short list of success factors, grouped into four categories, has been drawn from existing research for the purposes of this study; this exercise indicated that the role of moderator or facilitator in communities of practice is persistently noted as a key element for CoP success. Given that research about this role is limited, this study seeks to determine the value CoP members place on various moderator actions and characteristics as suggested by the literature, and how select member demographics may influence these value perceptions; a limited number of demographics were selected for inclusion in the study in an effort to limit respondent fatigue and distraction. The following research questions will frame the study:

1. What value do members of educator communities of practice place on particular moderator actions?
2. What value do members of educator communities of practice place on particular moderator characteristics?
3. Do member demographics – age, gender, years of CoP membership, technology experience - influence the value ranking of moderator actions and characteristics, and if so, how?
4. Are there moderator actions or characteristics not noted in the literature that are valued by members?

Significance of the Study

The overarching research question that guides this study is that of how to improve the support and management of communities of practice. The proposed study is a response to the lack of in-depth knowledge concerning the role of the moderator (or facilitator or coordinator, as these terms are used interchangeably) in a CoP that exists at least in part online and specifically concerns the perceptions of members about actions and characteristics that moderators bring to their work; the results are intended to inform practitioners and future research. While it is outside the scope of this study, the question of how members' perceived valuations may correlate with the effectiveness of the moderator's work are anticipated as a natural continuation of this research. And while this study focuses on the education sector and intends to provide insights that could increase the effectiveness of management and moderation for this sector's CoPs, the knowledge gained may be beneficial as applied to CoPs in other sectors as well and, as such, may be considered relevant to the overall body of CoP research.

Theoretical Framework

The Community of Practice Structural Framework, as developed by Etienne Wenger (Wenger, 1998; Wenger, et al., 2002) and used to describe the dimensions of a community of practice, provides the primary theoretical framework for this study. The three dimensions this framework describes are common to all communities of practice; in fact, the absence of one or more of the dimensions allows one to surmise that the group in question is not a community of practice. The three dimensions are as follows:

- The *domain* of the CoP, which describes the fundamental purpose, topic or activity around which the group convenes. The domain provides the group with an identity,

sets the problem space, distinguishes members from non-members, and can serve as a gatekeeper for membership if there is a minimum level of domain expertise required for membership.

- The *community* of the CoP which is the measure of whether significant social connectedness occurs in the group and the nature of that connectedness; it indicates mutual engagement around the issues and questions as prompted by the domain.
- The *practice* of the CoP describes both interactions within the group and the creation of artifacts that are a result of the group's shared inquiry and knowledge building.

The use of these three dimensions allows one to examine the nature of a community of practice by determining membership, connectedness and activity, as these impact the people within it. These dimensions also can be used to measure changes in a CoP due to maturity and longevity. Thus, this framework was chosen due to the high level of relevance it offers to the central focus for this study on communities of practice, and for the usefulness of its dimensions in ascertaining the nature of a given CoP.

A secondary theoretical framework is that of social capital, as defined by Nahapiet & Ghoshal (1998) and adapted by Lesser & Storck (2001) to describe the evolution of group connectedness in general as opposed to that found within a CoP. It has three dimensions:

- The *structural* dimension, likened to the connections people make when just beginning to connect in a CoP.
- The *relational* dimension, which occurs when deeper connections are forged between members of the community.

- The *cognitive* dimension, which refers to the creation of a common context or that which Lesser & Storck refer to as “shared language”. This final dimension signifies that the group has congealed to the point where they are connected enough to have a shared vocabulary.

While this framework is secondary, it is useful when attempting to describe the stages and measures through which members connect within CoPs.

Additional frameworks and models may be useful when examining communities of practice; for example, affinity network theory, James Gee’s conceptually similar “affinity spaces”, or even social network analysis all provide justifiable frameworks for this work. For this study, however, the seminal work of Lave and Wenger will provide the primary theoretical framework.

Organization of Approach

Web-based survey methodology has been employed to carry out this study. According to Tuckman (1999), survey methodology “allows investigators to measure what someone knows...and thinks. Even when an alternative is available, simply asking subjects to respond may be (and often is) the most efficient one.” (p. 237) This study seeks to learn how members of CoPs perceive moderator actions and characteristics, therefore the intention is indeed to measure what the members know and/or think. Another strength of survey methodology is that, with careful planning and attentive instrument construction, the collected information can be systematically and efficiently converted into data to which statistical analysis can then be applied. Additionally, since the members of CoPs that operate at least in part online are well acclimated to web technology and routinely use such tools to connect with the community, the risk of coverage error usually presented by the

use of a web-based survey is diminished. Lastly, as stated by Dillman, et. al (2009), “the remarkable power of the sample survey is its ability to estimate closely the distribution of a characteristic in a population by obtaining information from relatively few elements of that population.” (p. 54) A carefully constructed sample frame drawn using random sampling, combined with strict methodology to reduce error and bias and precision in terms of data analysis, have been utilized to increase the precision of the measurements and the validity of the findings.

Definition of Terms

Communities of Practice (CoPs): “a group of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an on-going basis.” (Wenger, McDermott & Snyder, 2002). This term originated before the advent of social networking technologies and until the late 2000’s, commonly indicated a group that met face-to-face. As the use of connected technologies continues to permeate social relationships, and more and more CoPs take advantage of the online environment, the term CoP does not necessarily indicate geographic status any longer. As this study will look exclusively at technology-mediated communities, the definition will include any community of practice, regardless of modality.

Moderator/Facilitator: For the purposes of this study, these terms will be used interchangeably to designate the person formally or informally charged with managing the day-to-day activities and members of a community of practice or a designated sub-group within a community of practice that occurs at least in part online. Also referred to as coordinator in some CoPs.

Member: For the purposes of this study, the term member will encompass all users of a CoP that are not part of the leadership or administrative team. Users who start new threads on the discussion board or frequently respond to questions, for example, would be considered members if they do not have the responsibility or clearance to move threads, delete messages, organize the board, etc. Members are contributors but not responsible for the maintenance, organization or promotion of the CoP or other members.

Sponsor: A representative of the organization or institution in which the CoP is located or that supports the CoP. This person, or the leader for a group that represents the sponsoring organization, along with the moderator(s) of the CoP are commonly referred to as the “leadership team”.

Moderator Action/Activity: Something a moderator does, or has done, for a particular purpose. Examples: guiding discussions to maintain quality, creating connections between group members.

Moderator Characteristic: A trait, attribute or quality belonging to a moderator. Examples: innovative, welcoming.

Organization of this Dissertation

Chapter 1 provides an overview of the problem, the study, the theoretical framework and general terms. Chapter 2 presents a literature review that highlights existing research into success factors for CoPs clustered into four categories (inquiry, mutual engagement, community sustainability and architecture) and the role of moderator or facilitator in each of these areas. Chapter 3 provides information about the study’s methodology, Chapter 4 presents the results and findings from the study, and Chapter 5 outlines implications and areas for further study.

Chapter 2: Literature Review

Participation in a community of practice (CoP) characteristically involved the physical proximity of its members; for some groups, this limitation hampered the use of the CoP framework as a means for collaboratively growing knowledge and improving professional practice. However, as web-based environments matured and stabilized, the availability of viable virtual gathering spaces and opportunities for professionals to connect and share knowledge beyond their local community or institution grew, and the interest in online or mixed mode (partially online and partially face-to-face) communities of practice increased. Given this expanded interest, the number of studies being conducted - as well as the range of disciplines investigating how these communities function and the value they may contribute to members and sponsors alike (Iriberry & Gondy, 2009) - has also grown.

As a subset of this literature, research studies on the use of communities of practice for education professionals has focused primarily on connecting educators (Baek & Schwen, 2006; Hanewald & Gesthuizen, 2009; Riverin & Stacey, 2008), supporting pre-service and 1st year teachers (Barab, MaKinster, & Scheckler, 2003; Gareis & Nussbaum-Beach, 2008; Goos & Bennison, 2007), determining key factors for CoP success and barriers to their use for educators (Cousin & Deepwell, 2005; Gannon-Leary & Fontainha, 2007; Hew & Hara, 2007; Hodgkinson-Williams, Slay, & Siebörger, 2008), and determining educator attitudes towards web-based professional development of any kind (Kao & Tsai, 2009). To date only a few studies have focused explicitly on the use of the educator communities of practice in higher education; the one article looking specifically at both higher education and communities of practice arose from South Africa and was concerned with assisting teachers who were charged with launching the use of technology in below-

poverty-level grade schools with no prior technology experience (Hodgkinson-Williams et al., 2008). Research studies specifically investigating the CoP moderator's role were also few in number; most of the literature folded the moderator's role and responsibilities into other factors identified as necessary for CoP success or noted this role only in passing. This study seeks to extend the existing literature by examining the challenges and factors for success in association with the role of the moderator and, in specific, the perceived value of CoP moderators to the CoP members themselves.

This literature search and review was conducted through the use of keyword searches of professional peer-reviewed journals and books from the academic press as found within databases including ERIC, Academic Search Complete, WorldCat and Google Scholar. Initial keywords included variations on "community of practice", "online community of practice", "CoP", "learning network", "knowledge sharing", and "learning community" which were combined with variations on "education", "educator", "college", "higher education", "teacher", "success factors", "best practices" and "success strategies". Keywords such as "moderator", "facilitator", "coordinator" and similar variations were used along with the initial terms to uncover research on the moderator role in particular. Journal article abstracts were reviewed and promising studies were either downloaded directly or requested from the library as an electronic scan; the bibliographies and resources of appropriate studies were mined for additional literature on these topics. Books and chapters were retrieved in person with references to relevant literature pursued. In addition, the work of the U.S. Department of Education in the area of online CoPs was reviewed and large, professional, commercially-funded educator communities such as Connected Educators and Powerful Learning Practices were visited in an effort to

uncover additional qualified studies. Approximately 112 studies were selected and reviewed with roughly two-thirds pertaining to the education sector. Of those 112 studies, 59 rose to the top as most relevant in regards to communities of practice, educators and the role of the moderator. Most of the selected studies detailed the use of online communities of practice as a means for connecting geographically separated professionals and the various success factors that support this work; the topics the communities were attempting to collaborate around varied, and activities within the CoPs ranged from sharing troubleshooting stories to answering procedural questions to contributing and providing resources for the group.

This review is by no means exhaustive and the fact that only a handful of studies were found that specifically looked at the role of the moderator is a concern. However, the final selection of literature did allow for a fairly broad look across this emergent discipline. It is hoped that more literature will be published as this area develops.

This chapter will next present an introduction to the theoretical origins and elements of the community of practice framework, then highlight existing and emerging research into success factors for CoPs, clustered by the author into four overarching categories (inquiry, mutual engagement, community sustainability and architecture). Finally, the role of the CoP moderator is examined in relation to these success factors. The chapter concludes with a summary and the rationale for the study as conducted.

Communities of Practice

Foundations

While the focus of this paper is not necessarily on the underlying theory or history of the community of practice model, there are several concepts central to any discussion on

CoPs that are necessary to understand before moving on. Jean Lave and Etienne Wenger are credited with creating the term “community of practice” (CoP) during their study of apprenticeships as a social learning environment. In the decades since, the description of a CoP rarely includes a reference to apprenticeships; more commonly they are described as “groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an on-going basis.” (Wenger, McDermott & Snyder, 2002) Even so, it is important to recognize how the theoretical roots of the community of practice model remain significant and influential in the application of this model to this day.

One of these fundamentals is the relationship of this model to the apprenticeship environment from whence it arose. Wenger (2006) explains that:

the term community of practice was coined to refer to the community that acts as a living curriculum for the apprentice. Once the concept was articulated, we started to see these communities everywhere, even when no formal apprenticeship system existed. And of course, learning in a community of practice is not limited to novices. The practice of a community is dynamic and involves learning on the part of everyone. (personal web site, theory section, para. 4)

This is reinforced by a number of studies that have analyzed the learning relationship between expert and novice in subsequent communities; one good example is the research of Gunawardena, Layne & Frechette (2012) who found that “a range of ability in a CoP creates an opportunity for apprenticeship learning. Mentors provide learning support to more novice community members by helping them perform tasks, acclimate to a groups social dynamics and interact effectively with members of the community” (Gunawardena et

al., p. 372). This research and that of others demonstrates how the apprenticeship model continues to function within the contemporary CoP model.

Another important theoretical foundation of Lave and Wenger's community of practice (CoP) model is that it is rooted in social learning theory; learning in such a community is fundamentally social, a "situated" activity rather than an isolated individuated process. This aspect of the CoP model can be traced back to earlier social learning theorists such as Bruner (1966) who proposed that learning involves both acquiring knowledge about a topic or discipline and also understanding how this knowledge fits into the greater structure of the discipline's practice and culture. Current social learning theorists also support this view: "In contrast to viewing learning as knowledge transmission from an instructor to a learner, the concept of CoP theorizes the meaning and process of learning as part of social activity" (Zhao & Kemp, 2012, p. 236). Social learning theory thus provides a foundation upon which the CoP model rests.

Core Elements of the CoP Model

A cornerstone of the community of practice model are the three identifying dimensions that define a CoP: *domain*, *community* and *practice*. The *domain* of a CoP is the area of interest or expertise that is held in common by community members and is the first step in categorizing a CoP; the domain differentiates the CoP from outsiders and defines the central focus of the group. The *community* of a CoP is not merely social but involves the act of learning; within a CoP, members "engage in joint activities and discussions, help each other, and share information. They build relationships that enable them to learn from each other." (Wenger, 2006). This differentiates the community of a CoP from a group formed around job titles or position or one that is simply social. Lastly, the *practice* of a CoP

involves a sustained community interaction that builds a “shared repertoire of resources: experiences, stories, tools, ways of addressing recurring problems—in short a shared practice” (Wenger, 2006). Zhao & Kemp (2012) summarize this well: “Members in the *domain* are inclined to commit to the *community* and have a shared competence that distinguishes them from others external to the community. The *community* supports member interaction and facilitates learning from each other. The *practice* means that members have a shared practice within the CoP” (p. 236). It is through the examination of these three characteristics – domain, community and practice – that one can establish whether or not a group can be considered a true community of practice.

Origins of Online CoPs

Some of the earliest and most direct adoption of the CoP framework have been as a knowledge management tool by the business sector. With the rise of the knowledge economy and the knowledge worker, it became increasingly necessary for organizations to manage and retain their collective knowledge in order to be competitive and innovative. Examples of this include communities of practice. Moving into the new millennium, it became common to read in the organizational industry literature statements such as “those organizations that methodically, passionately, and proactively find out and transfer what they know, and use it to increase efficiency, sharpen product-development edge and get closer to their customers will not only survive but excel” (Lee & Kim, 2005, p. 1).

As businesses looked to ways to manage and retain their organizational knowledge, one strategy they increasingly turned to was the community of practice model. CoPs were “brought to the fore with the dissemination of the knowledge management paradigm due to the nature of knowledge...knowledge lives in the human act of knowing, knowledge is

tacit as well as explicit, knowledge is social as well as individual and knowledge is dynamic” (Lee & Young, 2005, p. 6). Additionally, CoPs were seen as a means to “overcome the inherent problems of a slow-moving traditional hierarchy in a fast-moving virtual economy...and to share knowledge outside the traditional structural boundaries” (Lesser & Storck, 2001, p. 832). A good examples of this type of implementation of the CoP model are the communities of practice formed by Hewlett-Packard in the late 1990’s to connect product delivery consultants across North America; once these employees were connected, they found they had “they had many problems in common and that they could learn a great deal from one another” (Wenger & Snyder, 2000); the group went on to standardize processes and establish pricing consistency nationwide as a result of the work done collaboratively within their CoP. Other examples of global corporations that were early adopters of the CoP model as a means for knowledge management included American Management Systems (AMS), Shell Oil and World Bank (Wenger & Snyder, 2000). The domain for these business-sector CoPs is usually dictated by job title or function, the community function often stimulated by tasks assigned to the groups and the practice a result of accomplishing these tasks. This was a variation of the original community of practice model, in which most actions were organized by members rather than organized by management, but they remained true to the basic tenets of the CoP model nonetheless.

It is not surprising, given the parallel growth in internet-based tools for connectivity during this same period of time, that technology was brought to bear on this effort. By the early 2000’s, CoPs anchored in organizations were “increasingly interested in exploiting the capabilities of information and communication technologies” (Dube, Bouhis & Jacob, 2006, p. 69). While these CoPs did not necessarily shift wholesale to an entirely online

environment, more and more began to take advantage of the affordances of the emerging and expanding technologies to maintain connections, foster community and share expertise, news and inquiries. This was especially true for businesses and corporations with a global workforce; these organizations quickly moved into the virtual space to do this work. Wenger notes that “virtual CoPs (VcoPs) were widely used as a knowledge management tool in a number of multinational corporations where they are the norm rather than the exception” (Wenger, McDermott & Snyder, 2002, p. 306); ten years later, Annabi, McGann, Pels, Arnold & Rivinus (2012) reports that this trend has only strengthened: “Communities of Practice (CoP) are increasing becoming a powerful Knowledge Management (KM) mechanism for geographically distributed organizations [which] face KM challenges arising from the difficulty organizations have in disparate sources of knowledge necessary for adapting and innovating for any particular organizational goal, protecting against knowledge loss from turnover, and creating an environment to develop shared understanding by sharing knowledge” (p. 3869). Tools such as discussion boards, wikis, blogs, microblogs, virtual object repositories, webinars, virtual meeting space – in short, “web 2.0” or “social media” tools – have helped to create environments in which these online CoPs meet, share, discuss and engage.

While the means by which these online communities connect and practice can differ from that of a physically situated community of practice, there are similarities that remain despite this change of modality including the core elements as established by Wenger (2006). Gunawardena et al. (2009) observes that, in virtual spaces, “technologies present a forum for discussion and interactions and provide common ground where members share their ideas, knowledge and stories...tools such as wikis and blogs can help build the

community through dialog and conversation among participants who share the same interests. The *practice* is the specific knowledge the community develops, shares and maintains” (p. 10). Annabi et al. (2012) found the same in a study of the use of social media tools in the corporate setting, stating that “the most innate location to maximize the benefits of social media is within existing CoP. CoP inherently emphasize strong relationships and require social interactions. In taking advantage of the highly social nature of CoP, social media tools offer immediate improvement to CoP” (p. 3869)

Communities of Practice in Education

While the reasons behind the emergence or formation of a community of practice of educators are as numerous as the communities themselves, there are several common scenarios; the use of web-based technology to support these endeavors parallels that found in the business sector. The most prevalent rationale for creating such an exchange is the improvement of teaching; Grossman, Wineburg & Woolworth (2001) note that the “improvement of professional practice is the most common rationale for the formation of teacher community” (p. 951). This argument is fairly straightforward: sharing questions, solutions and practices in a peer environment provides educators with exposure to new ways of thinking and doing things. The need for this is accelerated by data from the National Commission on Teaching and America’s Future (2010) that shows teachers spend “an average of 93% of their workday working in isolation from their colleagues” and “rarely have the opportunity to share their practice, reflect on what works or doesn’t work with colleagues and other knowledgeable experts” (p. 4). Notably, much of the current research and data concerning CoPs in the education sector concentrates on their use in the

support and coaching of pre-service and new teachers which also can be said to share this domain of pedagogical improvement.

Another impetus for the emergence of an educator community of practice is the desire by teachers for first-hand experience, as learners themselves, of how collaborative learning occurs in a connected learning environment. Indeed, as Grossman, Wineburg & Woolworth point out, “we cannot expect teachers to create a vigorous community of learners among students if they have no parallel community to nourish themselves” (2001, p. 993). While this may be similar to the previous originating factor, the domain of a community formed for this purpose has a more narrow focus; instead of the broad intent of pedagogical improvement the group concentrates on the experience, processes and practices of online collaborative learning and how it works.

The third originating purpose that regularly surfaces for the creation of teacher CoPs is to support educators as they work to stay current in their area of discipline and how to teach it; the domain for these groups could be thus be described as “pedagogical content knowledge” (Shulman, 1987). This is clearly necessary to ensure the quality of instruction, especially in fields marked by rapid change in technologies and practices, and can also provide opportunities for participation in one’s area of scholarship, behavior that is often tied to advancement or required for recertification. We are also reminded from the business sector that “as accounts of social networks and occupational communities indicate, (participants) are likely to have more in common with their peers in other organizations than with many of the other employees in their own” (Brown & Duguid, 2001, p. 201). Placed into the arena of academia, discipline-specific learning communities, while potentially external to the instructor’s institution, may be beneficial to educators in

growing and maintaining their currency by connecting them with other educators who are teaching similar topics.

Factors for Successful Communities of Practice

When entering a discussion about the factors necessary for creating and maintaining a successful CoP, it would seem necessary to first determine what defines success. However, given that no two communities are identical and that the nature of a CoP is one of continuous evolution and change, a measure of success that may serve well at a certain stage of development may not apply at another or may not apply to another group at all. This has led most researchers in this area to declare, as have Ibibberri & Leroy, that “there is no widespread consensus on a definition of CoP success” (2009, p. 11:10). Indeed, Preece (2001), who conducted a comprehensive review of success metrics for communities of practice, found measures that ranged from the volume of postings (measuring interactivity) to ratings schemes (measuring quality of contribution) to user satisfaction surveys (measuring member support and site design) and ultimately concluded that “no two communities are the same...therefore, it is essential to recognize the uniqueness of each community when identifying determinants of success and devising measures.” (p. 354). This is made all the more evident as one reviews the literature; while there is very little pointing towards a global measure of CoP success, there are many studies that seek to identify success factors or isolate elements that lead to the use and vitality of a CoP.

During the course of reviewing the community of practice research literature, groupings of CoP success factors became evident to this researcher. Reflective of the literature and subsequently useful for organizing moderator activities and characteristics, four categories emerged that accommodated the most frequently cited success factors. The

first three categories borrow heavily from Wenger's community of practice theoretical framework and its fundamental structural elements of domain, community and practice as described earlier in this paper; the fourth addresses the technological aspects required for operating as an online community. These categories include the cultivation and maintenance of 1) a culture of inquiry that fosters and supports critical dialogue, 2) a culture of mutual engagement in which members trust and share knowledge freely, 3) a culture of sustainability that supports community persistence and organization, and 4) an architecture for participation that supports accessibility for community connections and access to shared resources. As elaborated upon in subsequent sections of this paper, these categories are effective for organizing CoP success factors, yet it should be noted that one of the most frequently and emphatically cited elements for success – that of a skilled moderator or facilitator - defies such categorization as it appears in all.

Summative Category 1: Cultivating a Culture of Inquiry

Cultivating and maintaining a culture of inquiry differentiates a vibrant CoP from an online repository or simple question and answer forum; without a culture that spurs members to persevere in their shared exploration of ideas and innovations and to pursue deeper, critical thinking around problems in their field of interest, the group is unlikely to embody the elements necessary to be considered a CoP. This can be seen as a reflection of Wenger's model which describes the need for a community to "explore both the existing body of knowledge and the latest advances in the field" (Wenger, 2002 p.38) while focusing on a distinct area of interest. The factors described below – CoP purpose, critical dialogue and membership diversification – are drawn from the literature as elements that support the cultivation of such a culture of inquiry; challenges and strategies for implementation

are also briefly discussed.

Setting a purpose. The most noted and most prominently ranked CoP success factor across the literature is that of a clearly delineated purpose for the group around which the community comes together and interacts (Cousin & Deepwell, 2005; Gray, 2005; Hew & Hara, 2006; Wubbels, 2007; Preece, 2004) . This is established either internally by the members or externally by the organization within which the community exists and designates the “shared area of interest to which members are committed and in which they have a shared competence that distinguishes them from other people” (U.S. Dept. of Educ. Office of Educational Technology, 2011). Preece (2004) describes this as a “clear, short statement of purpose and a well-chosen name, prominently displayed on the community’s home page and repeated on other applications, signals the community’s intentions and can contribute positively towards success” (p. 300).

Without such a purpose, a group cannot aspire to be a community of practice but is instead simply a social network or circle of friends; it is in the setting of the purpose for the CoP that the group is readied for inquiry within the problem space, that the foundation for inquiry is established, and by which focus is obtained. It also establishes the place in the world for the community and its work, and the value to be had for its achievements (McLure, Wasko & Faraj, 2000; Wenger, McDermott, & Snyder, 2002). The necessity of this factor maps directly onto the “domain” element found in Wenger’s CoP framework and as such is vital to the establishment of a true community of practice. It is also the means by which members – those who have developed the required baseline competency in the domain area or otherwise met membership criteria – can be determined and against which their expertise will be measured.

Of course, within any CoP in any domain or area of expertise, particular issues and current topics will “arise, be solved, dissipate or otherwise be dismissed with new issues or topics taking their place” (Johnson, 2001); this is a natural function of growth and change and even desirable as the very act of raising and dismissing issues and topics can be an indicator of an active membership and an impetus to the community to revisit what it is about. Indeed, in discussing the domain, Wenger points out is “not a fixed set of problems (but) evolves along with the world and the community” (Wenger, 2002, p. 31).

And so arises the primary challenge with setting a group’s purpose or domain: that of balancing between being too general and too specific. As noted above, the purpose should be defined in a manner that will provide a deep sense of identity for the CoP yet should permit and support fluctuations in the topics and questions addressed by the community. The purpose for the CoP must be broad enough to encompass these shifts yet not so broad as to lack the ability to inspire the passion and interest of its members with an overly dilute focus. And it must to contain “complex and long-standing issues that require sustained learning” (Wenger, p. 32) but not be so narrow as to repress the evolution of the very questions it raises. The literature suggests scant few strategies to ensure this balance, and those suggestions almost entirely depend upon the developmental stage of the CoP. In the beginning, finding a “shared sense of purpose” (Gannon-Leary & Fontainha, 2007) that raises interest and passion in the membership – and potential membership - is deemed critical and is much commented upon. Less is offered in terms of reasserting or resetting the domain, although Wenger does indicate that refining the relationship to other domains and maintaining the relevance of the domain may be necessary to rejuvenate and revitalize a long-standing CoP (2002, p. 97). But whether perfect or not, and whether set by the

members themselves or by the organization sponsoring the community, it is clear that by establishing a CoP's purpose, the foundation for a culture of inquiry is also set.

Critical discourse. As noted in the introduction to this section, a truly functioning CoP is more than a social group that entertains questions and answers or a web site that features a repository of materials (Baek & Schwen, 2006; Barab, MaKinster, & Scheckler, 2003; Goos & Bennison, 2007; Wenger, 1998). Yet while we have seen that establishing the purpose or domain of a CoP is best accomplished in the very beginning of the CoPs lifecycle, critical discourse within a community takes time. For example, Barab, et al. (2003), note that even after several years of online activity in a particular CoP, "there has been very little critical dialogue...most of the discussion posts are either complementary or are simply people stating their ideas and opinions. It is very seldom that a member challenges the opinions of another person, or gives critical feedback" (p. 251). The majority of researchers account for this non-discourse as a function of socio-cultural barriers that must be removed or passed by prior to true critical dialogue appearing within the community; some of these are barriers experienced by individual members such as a lack of familiarity with the community or trust in the online environment, elements we will review in later segments of this paper. But this gap in discourse also may be attributed to the maturation level of the community itself.

Wenger (2002) posits that there are five stages of growth experienced by a CoP: potential, coalescing, maturing, stewardship and transformation (p. 68-69). In the early stages of growth, relationships and group norms have not yet been firmly established; core members are still being recruited, the online space is being initiated, moderators are emerging or being sought. In essence, the social scaffolding for supporting risk taking and

honest discourse is not yet in place. During these stages of growth, the members are unlikely to enter into a critical discourse given the unfamiliarity of the environment and populace. Once a CoP has entered the maturation phase of growth, however, the literature focuses on removing barriers faced by individuals rather than the community as a whole and reiterates the theme that, overall, time is what is needed to allow members to garner trust, become aware of group norms and venture into the arena of critical discourse at which point “a person’s intentions to learn are engaged and the meaning of learning is configured through the process of becoming a full participant in a socio-cultural practice” (Attwell & Elferink, 2007). Strategies to increase critical discourse, then, rely primarily on removing barriers for such participation by individual members. We will turn to this shortly.

Membership diversification. Portrayed as a duality or tension inherent in the building of any community, the degree to which a community is homogeneous or diverse in relation to its member expertise, experience or interest focus directly impacts its ability to foster a culture of inquiry for “as the level of diversity within a community increases, so does the opportunity for collective and individual development” (Barab, et. al., 2003). And while coherence – in terms of activity, environment and artifact – is more easily accomplished in a group that closely aligns with itself, it is through the support of multiple and diverse views that critical dialogue is fostered (Barab et. al., 2003). While Wenger (2002) concedes that “it is often easier to start a community among people with similar backgrounds” (p. 25), a diverse membership brings fresh perspectives and can assist with displacing stagnation and codification in terms of ideas and approaches to problem-solving. In attempting to cultivate a diverse membership in a educator CoP – in terms of

experience, expertise, years of association, discipline area or socio-cultural background – the literature suggests it is important that the community attends to these differences; for example, when attempting to diversify membership in terms of levels of participation, Zhao & Bishop (2011) found that setting norms that all were required to adhere to were not the answer, instead suggesting that the key was “distinguishing between peripheral and core participants and addressing their needs differently. Successful CoPs fulfill the needs of both groups while facilitating the transition from peripheral to central participation” (p. 725).

Summary – cultivating a culture of inquiry. This segment has examined three factors essential to the cultivation of the culture of inquiry that supports a successful community of practice and reflects structural elements of the CoP framework established by Wenger, most notably that of “domain”. Determining a well-defined purpose for the CoP during its early stages of growth, facilitating critical discourse through the removal of barriers for such participation by individual members, and encouraging and recruiting a diverse membership so as to increase the opportunity for fresh ideas, innovations and viewpoints to emerge all are part in creating a culture of inquiry in a CoP. We will now turn our attention to the next category of factors, that of cultivating a culture of mutual engagement.

Summative Category 2: Cultivating a Culture of Mutual Engagement

As we’ve seen, communities of practice are intentional social groups that build, share and create knowledge around a specified interest or passion while also “building relationships, and in the process, developing a sense of belonging and mutual commitment” (Wenger, 2002, p. 34). This is in close alignment with the community element in Wenger’s

CoP framework and because “knowledge sharing activities cannot be successful without the active participation of online members” (Chiu, Hsu, & Wang, 2006), it is deemed critical that a culture of mutual engagement is cultivated through which meaningful and frequent member participation is encouraged, supported and sustained (Brown & Duguid, 2001; Farooq, Schank, Harris, Fusco, & Schlager, 2007; Gannon-Leary & Fontainha, 2007; Goos & Bennison, 2007; Wenger, McDermott, & Snyder, 2002; Wenger & Lave, 1991).

Three success factors are examined in this section as contributing to the cultivation of mutual engagement – growing membership, knowledge sharing, and trust. These factors are commented on heavily in the literature; for example, Bourhis & Dube (2010) identify the “two most important success factors for a community of practice to be knowledge sharing and trust” (p.177). These three elements distinctly influence one another; they are further influenced by the stage of maturation of a particular CoP (Barab et al., 2003; Iriberri & Leroy, 2009; Etienne Wenger et al., 2002). This section will look at each individually not only as they pertain to the community element of the CoP model but also through the lens of an adapted social capital model.

Interested in gaining a better understanding of the socially connected professional environment, Nahapiet & Ghoshal (1998) applied the principles of social capital as a model which they described as having three primary dimensions: the ability of members to connect with each other (structural dimension), the deepening of these connections into relationships (relational dimension) and the development of a shared context or language (in the broadest sense of the word) between members to the business world (p. 258-260). The use of this model has been carried forward into the analysis of communities of practice (Chang & Chuang, 2011; Lesser & Storck, 2001; Wasko & Faraj, 2005; Chiu et al., 2006) and

provides a helpful backdrop against which we will examine several key factors featured in the literature as critical in efforts to cultivate a culture of mutual engagement.

Growing a membership. The lists of motivating factors for joining a professional community of practice are fairly stable and standardized across the literature, differing only in focus and breadth. Lesser & Storck (2001) state that “communities help members locate individuals with expertise, discover others with similar experiences, locate tools and artifacts that have been previously developed and identify outside influences that can help spark new ideas” (p. 840) Gray (2004) indicates similar motivators and adds that community membership adds “a means of social and professional connection to colleagues, and a mechanism to reduce the isolation that was inherent in the job function and geographical location” (p. 23). Jarrahi & Sawyer (2012), in their study of the uses of social media for knowledge networking, identify five “knowledge practices” that drive individuals to CoPs: expertise locating, expert locating, reaching out, socializing, and horizon broadening (p. 12-13). In an exhaustive review of the literature, Iriberry & Leroy (2009) listed information exchange, social support, social interaction, time and location flexibility and permanency as the benefits of online CoPs for individuals (p. 11:8).

These four examples illustrate what research has confirmed: most people join CoPs in order to connect, learn, share and expand their professional network. While this represents the reasons for becoming and staying a member, it represents only the structural dimension of the social capital framework, in that these describe only why members are connecting rather than describing the deepening of their connections to that of relationships.

Strategies for building membership as delineated by the stage of maturation of a

CoP are summarized well by Wenger (2002); in the early stages of CoP growth, finding existing networks or individuals who are already aligned with the purpose of the CoP, building a case for membership, spreading the word, hosting events and other typical membership-building activities common to most membership-based groups (p. 71-75). The issue of membership diversity as discussed earlier would also be well suited to shaping recruitment efforts at this point in time. On-going responsibilities for growing and sustaining membership involves the integration of new members, trust building, the recognition of contributions and member satisfaction management (Wenger, 2002; Ibiberrri & Leroy, 2009).

Knowledge sharing. As noted previously, an active and engaged membership is critical to the success of a CoP and while joining a CoP is the first step to connecting members, it is through the process of building relationships and moving towards full participation that the relational dimension of social capital is actualized. And while much of the research done in the business context concerns the influence of the organizational culture, management support and other factors that we will not consider here, individual motivations for knowledge sharing across contexts have been well documented. One of the most common personal motivator towards knowledge sharing appeared to be the desire to build one's professional reputation or status as an expert, both for personal advancement and for status in the community itself (Ardichvili, 2008; Ardichvili, Page, & Wentling, 2003; Cheung, Lee, & Lee, 2013; Kao & Tsai, 2009). Lesser and Storck (2001) describe similar findings, concluding that "communities of practice helped individuals build reputations both as subject matter experts and as individuals that were willing to help others. This reputation development was cited as an important benefit from participating in community

activities” (p. 838).

Somewhat conversely, researchers also found that for some community members, the motivation to support the community as a whole outpaced the desire for self-advancement (Chiu et al., 2006; McLure Wasko & Faraj, 2000; Wasko & Faraj, 2005). Another reason cited for on-going activity was the “friendly bonding and banter” that was experienced as a member of the community (Gareis & Nussbaum-Beach, 2008; Riverin & Stacey, 2008).

Barriers to on-going participation are also fairly well documented. Studies cite a lack of available time (Alexander Ardichvili et al., 2003; Baek & Schwen, 2006; Hew & Hara, 2006; Johnson, 2001; Riverin & Stacey, 2008), a lack of social connectedness with the community (Gannon-Leary & Fontainha, 2007; Goos & Bennison, 2007; Riverin & Stacey, 2008) and the fear of providing inadequate or inaccurate information or knowledge (Gray, 2005; Hew & Hara, 2006; Hsu, Chang, & Yen, 2011). Interestingly, there appeared to some disagreement when it came to the question of whether anonymity is a positive or negative influence on knowledge sharing; for example, Ardichvili et. al. (2003) found that members were more likely to share if asked by people they knew (p. 72) yet the option to remain anonymous took away the fear of being berated if a response was deemed insufficient as found by Gray (2005). Also interesting was the finding about reciprocity, which was identified as a catalyst for knowledge sharing in face-to-face communities of practice (Wenger, Etienne, 1998), but did not persist as a motivator or barrier for participation in the online environment (Chiu et al., 2006; Wasko & Faraj, 2005). The researchers postulated that this might be due to the “generalized reciprocity” that occurs in the online environment in which there is less expectation that reciprocity would be as direct in face-

to-face encounters and wide acceptance that a response is likely to come from a third party (Wasko & Faraj, 2005, p. 51).

Suggested strategies for overcoming the more common barriers to participation were offered throughout the literature with the exception of the hurdle posed by a lack of time; although this appeared frequently and across a number of studies as noted above, this was generally left on the table as a situational or personal issue. One researcher did suggest, however, that this barrier be reframed as a task prioritization issue and addressed through better management support and encouragement concerning CoP involvement (Hew & Hara, 2006). There was no follow up as to whether this was attempted.

The reluctance to participate based on a lack of social connectivity with the community, as well as the fear that one might contribute ill-formed or incorrect information, were both tied to neophyte status in almost all the studies reviewed. As many of the strategies for offsetting the sense of disconnectedness experienced by newcomers to the CoP are strategies for building trust, they will be addressed in the next segment.

Trust. There is much in the literature that describes trust as a fundamental requirement for creating a culture of mutual engagement in a CoP (Abd-Elaziz et al., 2012; A. Ardichvili, 2008; Dzunic, Zeljiko, Stoimenov, Leonid, & Dzunic, Marija, 2011; Hsu et al., 2011; J. Preece, 2004; Wasko & Faraj, 2005). This is reiterated even by the U.S. Department of Education, in its 2011 report on online communities of practice in education, with the statement that “a sense of trust is paramount in online communities. People need to feel comfortable admitting what they don’t know, asking of help, sharing their thoughts, exposing their practice as a work in progress and taking risks—often in full view of a large group (U.S. Dept. of Education, p. 15). And while a lack of trust is often a part of being new

to a community, as was noted above, it can also be a result of being unfamiliar with online environments (Gannon-Leary & Fontainha, 2007) or technologies (Attwell & Elferink, 2007) or reflect a lack of trust in the CoP's sponsoring institution or organization (Ardichvili et al., 2003).

One commonly suggested strategy for building trust is the creation of shared guidelines by which the members abide; Ardichvili (2003) describes these as “a set of clearly communicated norms and standards for sharing knowledge, which would reduce the anxiety associated with the uncertainty about what constitutes acceptable postings, etc” (p. 74). Using a similar argument, Preece (2004) points out that it is important to “identify and establish acceptable, stable norms, because without them empathy and trust are threatened” (p. 299).

Another strategy is to scaffold the online environment with in-person meetings or social events, particularly for newcomers; Young & Tseng (2008) aptly describe the difficulties of building trust online, where, they say “the sense of social distance and the lack of social cues make it hard for people to identify with each other and to assess mutual ability, integrity, and benevolence” (p. 60). To overcome these difficulties, and as a means to building rapport and bridging said distances, it is suggested that face-to-face meetings of the CoP are scheduled either initially, as a reoccurring event or in coordination with other professional meetings or conferences (Attwell & Elferink, 2007; Goos & Bennison, 2007; Johnson, 2001; Riverin & Stacey, 2008). Bourhis & Dube (2010) state that “live interactions seem to be used to create temporal rhythm which helps keep the virtual community alive” (p.186) and Babinski et al. (2001) add that such meetings allow for “opportunities for members to get to know one another and develop a sense of trust and

belongingness” (p. 167). The suggestion to stage face-to-face meetings for online communities of practice is repeated throughout the literature.

Bourhis & Dube (2010) also point out that a culture of mutual engagement can be supported by “devoting time to understanding the members’ needs in order to make sure that the community keeps in line with them” is necessary (p. 177). This includes attending to any difficulties faced by member with the technology or online environment.

While these are but three rather global strategies for building trust in CoPs, there are others - dependent on the growth stage, the membership constituency, the practice and purpose of the CoP – that exist in the literature. Once a CoP has been analyzed and its particular attributes and characteristics established, it is suggested that community stewards avail themselves of the breadth of this research.

Summary – cultivating a culture of mutual engagement. This segment has examined three factors essential to the cultivation of a culture of mutual engagement within a CoP: growing a membership, knowledge sharing, and trust. These factors, which mirror the structural element of “community” in Wenger’s CoP framework, also support the development of social capital by fostering member connections (structural dimension) and the deepening of those connections into relationships (relational dimension). In the next segment, we will look at cultivating a culture of sustainability, which embodies both the final dimension of social capital development – that of shared context or language – and the third structural element of Wenger’s framework, that of practice.

Summative Category 3: Cultivating a Culture of Sustainability

A culture of sustainability, as described here, is not an effort towards extending the lifespan of a CoP or repurposing its work. Instead the factors within this category focus on

the notion that “the sustainability of an online community, particularly an online community of practice, depends largely on whether members are willing to initially and continually share” (Cheung, et. al. 20013). We will break that down into two factors for success: leadership/governance for sustainability and content management.

A culture of sustainability also describes the support necessary for the development of the third dimension of social capital, that of a common context or language, and also for actualizing Wenger’s concept of practice.

In the case of Wenger, his description of practice - the third structural element of his CoP framework - is broad. It “establishes a baseline of common knowledge that can be assumed on the part of each full member”, thus setting the boundaries for central membership. It also “explores both the existing body of knowledge and the latest advances in the field”, “embodies the history of the community and the knowledge it has developed”, and “provides resources that enable members to handle new situations and create new knowledge”. And it also “denotes a set of socially defined ways of doing things in a specific domain” (Wenger, 2002, p. 38). It is the output of the community, the social mores of the community, the exploration of ideas by the community and “an ongoing interplay of codification and interactions, of the explicit and the tacit” (p. 39). In other words, it is the activities and outcomes of a community of practice at work.

However, to be successful, these endeavors need to be sustained and so in this section, we will explore the challenges and strategies for leadership, and for content management, that appear in the literature as key factors in the successful cultivation of a culture of sustainability.

Leadership. Communities of practice, like any group enterprise, require oversight

and leadership to flourish (Bourhis, Dubé, & Jacob, 2005; J. S. Brown & Duguid, 1991; Dubé, Bourhis, & Jacob, 2006; Farooq et al., 2007; Wenger et al., 2002; Wenger, White, & Smith, 2009) with the literature suggesting leadership practices based on the CoP's stage of growth. Wenger (2002) describes five stages of community development: potential, coalescing, maturing, stewardship and transformation; each of these stages shift the duties of leadership progressively away from building towards maintenance, categorizing content and refining activities and member connections (p. 68). Iriberry & Leroy (2009) also propose five distinct stages of development - inception, creation, growth, maturity, death - although the model cycles iteratively through the first four stages until it enters the final stage (p. 11:18) and Johnson (2001) outlines three additional models, all of which follow a similar time-based progression (p. 51) from pre- to post-existence. Suggested management and leadership activities mimic those found within Wenger's model; in the early stages, the emphasis is on coalescing the membership, establishing norms, confirming the purpose of the group and building connections. Later stages focus on monitoring for decreased activity and strategies for reversing such trends, redefining the scope of the group, cycling leadership duties, cataloging content and materials generated by the CoP and expanding from bounding social capital, or the development of social capital within the group, to the development of bridging social capital which extends connections to other groups (Iriberry & Leroy, 2009).

The question of optimal leadership is also investigated in the literature and, in cases where there is a sponsoring institution or organization, the style and hierarchical organization of the sponsor does influence the effective management and ultimately the success of the CoP (Wenger, 2009). For communities that do not have an influential

organization overseeing them, the literature is clear that the most effective leadership will most likely come from the community itself (Barab et al., 2003; Dubé et al., 2006; Iriberry & Leroy, 2009). In fact, Farooq et al. (2007) makes this quite clear after a review of the variables, in stating: “leadership by community members, who are intrinsically motivated to give back to the community, entails better long-term sustainable consequences than designing contrived and possibly constraining leadership roles” (p. 422). Even member-based leaders, however, are cautioned that the “line between controlling and monitoring the community may sometimes be thin (but) VCoPs should be monitored in order to encourage quality interactions and to help build legitimacy” (Bourhis and Dube, 2010, p. 179). This suggests that leadership use a light hand in overseeing the actions of the community of practice.

Another suggested best practice for the leadership is to ensure that there are pathways for members to progress from novice to participant and also to leadership. Zhao & Bishop (2011) make the claim that “the evolution of a CoP requires distinguishing between peripheral and core participants and addressing their needs differently. Successful CoPs fulfill the needs of both groups while facilitating the transition from peripheral to central participation” (p. 731). This is echoed by Lesser & Storck (2001), who acknowledge both the necessity of attending to existing members and to cultivating the potential found in peripheral members by observing: “the nature of participation must be engaging although there is clearly room for what is called legitimate peripheral participation. Indeed, peripheral members bringing new ideas can catalyze innovation” (p. 832). And the U.S. Department of Education, in its report on the use of online communities in education (2011), makes a parallel statement concerning the various types of users that

need to be served within a single community: “It is important for communities to understand the needs of their readers, not just their most active users—even as they make every effort to encourage deeper forms of participation, roles and responsibilities to which educators can aspire” (p. 23). Balancing the need of a mixed membership surely is one of the critical tasks faced by the leadership of a CoP.

While there are undoubtedly many factors at play when considering best practices for leading the shifting, multifaceted entity that is a community of practice, there is one last success element that bears mentioning in this brief overview: that of funding. The knowledge management literature coming out of the business sector usually overlooks this as most corporate-based CoPs functions as part of the organization. However, the literature of non-corporate CoPs does not list this as frequently as one might expect. Indeed, Bourhis & Dubé (2010) claim that “providing financial resources seems to be particularly vital” and go on to explain how such funding can be used to “sustain their virtual existence and face-to-face meetings for members to develop relationships that lead to fruitful virtual interactions” (p. 187). Resource allocation or development is certainly something a leadership team should consider if seeking to sustain a healthy CoP.

Managing content. In the course of pursuing its practice, a community generates content; Wenger (2002) confirms this with his observation that “successful practice development depends on a balance between joint activities in which members explore ideas together, and the production of ‘things’, like documents and tools” (p. 39). However, Wenger’s comment references a face-to-face community; in an online community, even the act of exploring ideas creates artifacts and trails of documents. Wenger addresses this later in a note about distributed communities, stating “this info can easily become a junkyard of

disorganized insights, particularly if they are organized according to only one taxonomy...organizing the repository appropriately is a crucial objective” (p. 102).

While this is certainly true, and a matter to be taken up with a good site designer, the same sentiment resonates in the statement by Farzan et al. (2009) that “the sustainability of online communities depends on two main factors: the creation of quality content and the continuing interaction of users around this content” (p. 31). An online CoP, “based upon user-produced content” (Atwell, 2007, p. 11) becomes the embodiment of the community’s work but even if it is well organized, how is one to know what is important to view? Which resources are not to miss? While ranking schemes such as those on online shopping sites are mentioned in passing in the literature, Farzan, DiMicco, & Brownholtz (2009) deployed a system that rotated the duties of curating and promoting resources throughout the membership. In addition to bringing into circulation resources that may have not been viewed by the membership, this activity also “encouraged a social dialogue between users who would not otherwise communicate” (Farzan, DiMicco, et al., 2009, p. 39). This type of mutually beneficial member activities is a wonderful illustration of how a community can foster a culture of sustainability.

Summary – cultivating a culture of sustainability. In this segment, we have looked at just two factors that can lead to a culture of sustainability for a community of practice: governance and leadership for sustainability and managing the content created by the community. Both of these factors can be leveraged as support for the community’s practice and its development of cognitive social capital. Next, we turn our attention to the crafting of an environment in which the work of an online community can not only take place but thrive.

Summative Category 4: Cultivating an Architecture for Participation

This fourth category of considerations for community of practice success is unique to the technology-mediated community of practice as they concern the online environment. In using the term “architecture for participation” we are calling for something that is more than the sum of its parts. Not only does it entail functional design – and organize “the repository appropriately” as Wenger admonished (2002, p. 102) - but it should also include proper supports so as to eliminate as much as possible the barriers that technology might present for any given member or for the whole. We will thus divide this construct into two factors, 1) design and 2) technology support, and look briefly at what the literature recommends in order for these elements to support a successful community of practice.

Design considerations. The first consideration when looking at design in the context of an online CoP is to acknowledge, as has Barab et al. (2003), that “the technology determines the epistemology. By this we mean that the programming that creates the designed technological interface is composed of decisions that incorporate certain ideologies. At the least, they limit some types of exchange and encourage others” (p. 249). This simple statement does indeed sum up the reality when working with any kind of technology in the pursuit of learning; there are limits to what can be done given the boundaries imposed by a chosen technology. It also illustrates the primary tension when it comes to designing an environment for a CoP: how does one simultaneously support the self-design inherent in the CoP model, by which a community shapes its own experience, yet also pre-create a fixed set of constructs in which this work is to happen?

The literature has suggestions in how to resolve this duality. Atwell suggests that “a

virtual community - or any traditional organization - is the designed community, where as the community of practice is what *emerges* from the designed community. The best one can do is set up a design (e.g. a virtual community) and hope the emerging community of practice can achieve its goals of learning and growth within and around it” (p. 9). Barab et al. (2003) is a little more optimistic and offers the practice of “minimalist design”: “the idea is to create a tentative platform and then facilitate the community in growing and evolving its own space, a process that involves walking the tightrope between designing the community and allowing it to emerge from the needs and agendas of its members” (p. 242). This method of minimalist design requires “co-evolutionary” design (rather than participatory) as it must continue to be shaped through collaborative work between the design team and the community itself as time progresses. Farooq et al. (2007) supports this as a solution by finding that “design interventions that enhance end user participation and interaction with the designers of the community infrastructure can lead to sustainability” (p. 400). What remains to be seen is if this time and resource intensive method is sustainable over the lifespan of a community or if the maintenance of the environment can slowly be shifted to the CoP itself.

Beyond this balance of external and internal environmental design, any given community would need to undergo a thorough analysis in order to determine the exact set of tools and functions that would best support their efforts. Lesser & Storck (2001) recommend that the online community at least leverage “the information technology to make it easier for individuals to locate and contact fellow community members (and to identify experts...who could be valuable in addressing questions posed by community members” (p. 834). This would provide a means for facilitating and deepening member

connections and also support the community dimension in Wenger's CoP model and the relational dimension of the social capital framework, thus building the overall community. This is a good example of a feature to be found in the design of an architecture for participation.

Scaffolding technology. In terms of supporting a successful community, the various combinations of possible technologies are seemingly endless and again, the needs and characteristics of a given community should drive all technological choices. However, there is one area that is repeatedly mentioned in the literature and so must be included here and that is the importance of support and scaffolding for the use of whichever technologies a community chooses to use. Guldberg & Mackness (2009) indicate "research highlights the importance of assessing the technical expertise of participants, particularly when a number of different technological tools are used" (p. 536); almost all the studies reviewed urged a plan of action to support members as they gain the technological skills necessary for practical use of the online environment. Johnson (2001) adds to this that "these skills include not only operation of the technology but skills in asynchronous and synchronous discussion as well as online collaboration" (p. 53). Even as technology becomes more and more ubiquitous, it is still worthwhile to provide these supports and seek this input to avoid isolating members due to technological issues.

Summary – cultivating an architecture for participation. It is important that the use of technology not overshadow the call to action that constitutes the creation of an online community of practice. Choosing a site design that is shaped by and reactive to the needs of the community, and taking the time to plan intentional supports and scaffolding for the use of whatever technologies the CoP chooses to use to support its work are two

ways that a community can cultivate an architecture for participation.

Summary of Success Factor Categories

The analysis of the most frequently cited CoP success factors in the community of practice research literature produced four categories of success factors. These four categories involve the cultivation and maintenance of 1) a culture of inquiry that fosters and supports critical dialogue, 2) a culture of mutual engagement in which members trust and share knowledge freely, 3) a culture of sustainability that supports community persistence and organization, and 4) an architecture for participation that supports accessibility to both the community and shared resources. While these categories are effective for organizing and analyzing CoP success factors, one of the most frequently and emphatically cited elements for success – that of a skilled moderator or facilitator - defied such categorization as the literature indicate it as relevant to all. Given that the literature points to the presence of a moderator as key to success in all these areas, the next section focuses on this overarching success factor and establishes the basis for this study.

The Role of Moderator

The stewardship provided by a capable moderator shows up high on almost every list of success factors for online communities of practice. According to the literature, the work of the moderator is that of “an unsung hero” (Wenger, 2009); Atwell (2007) praises Magda Balica’s depiction of the CoP moderator as “a shepherd, a keeper of the purpose, a guardian of the community, a timekeeper, a co-explorer of meaning, a co-explorer of contexts, a mover of inquiry, a host at a banquet” as an accurate representation of the many services provided to the community by a good moderator (p. 13).

Wenger (2002) makes this a little more concrete; he states that the job of the

moderator is “to foster horizontal relationships, not to create a hierarchical channel of information through which members must navigate. Coordinators connect people; they do not convey information. They broker relationships, not knowledge” (p. 128). Indeed, given that the membership of an online CoP can be put off by issues with technology or by not feeling connected to the group, someone has to be there to assist. Guldberg makes this point even more directly, noting that “when learners fail to understand culture, norms and learning tensions, do not have the necessary technical skills and thus experience negative emotion, they are unable to establish effective connections and may find themselves in isolation from the community (p. 536). The literature suggests that these are the gaps into which the moderator steps so, in order to better understand this role, we will look at examples of how the moderator supports the work in the summative categories established previously.

Moderator Role: Cultivating a Culture of Inquiry

Cultivating a culture of inquiry includes crafting a strong and inclusive purpose for the group, encouraging critical discourse and developing a diverse membership in terms of experience levels, expertise and areas of focus or interest.

One of the more difficult elements in this category for the moderator to achieve is that of fostering critical discourse; Gray (2005) describes as helping “the community evolve from a forum for sharing information to a community of practice where knowledge is constructed through shared learning” (p. 27). McDermott (2001) reflects that the moderator’s “primary role is linking people, not giving answers” and “building a community that trust each other enough to ask for help and share half-baked ideas” (p. 12). In truth, communities frequently struggle to get beyond polite and innocuous banter, and it

is easy to understand how an effective moderator might be necessary to prod the membership beyond this comfortable dialogue and into critical discussions. Wenger, who has adopted “social artist” as a descriptive term for a group’s moderator, points out that “social artists help us experience ourselves as learning citizens. They know how to bring out our passions. They make us care to the point of engaging our whole person in a social learning space” (2009, p. 10) and in this way, moderators can open up dialogue where it might not exist.

Barab et al. (2003) indicates that critical discourse can also suffer when core or senior members of the community are too tightly aligned with one another and alienated from newcomers; he reports that a good moderator can mix things up in order to reverse trends that may result in “new members having fewer opportunities for negotiation because the identity of the community appears already established” (p. 248). Fontaine (2001) describes a similar moderator activity and states “they encourage and energize participation by interacting with the community, by endorsing ideas, and by directing knowledge to the appropriate experts.” (p. 129). It is this mixing up of the old and new, the unknown and the known that seems critical to inspire true critical discourse.

Moderator Role: Cultivating a Culture of Mutual Engagement

Cultivating a culture of mutual engagement involves growing a membership, fostering knowledge sharing in general and building trust. Naturally, moderators often play a critical part in growing and sustaining the membership of a CoP. They work with management or the group itself to solicit new members, they welcome newcomers, they “energize the community and serve as chief motivator” (Fontaine, 2001) and they “keep people informed of what each other is doing and create opportunities for people to get

together to share ideas” (McDermott, 2001). As if this were not sufficient, Fontaine (2001) echoes what is noted in much of the group leadership literature (Gairín-Sallán, Rodríguez-Gómez, & Armengol-Asparó, 2010; Garavan, Carbery, & Murphy, 2007; Tarmizi & de Vreede, 2005; Tarmizi, 2007) when he goes on to say that “facilitators are responsible for brokering, networking, and connecting community members” but must also “provide closure when necessary and give constructive feedback “(p. 129). As noted, the tasks associated with managing the membership are broad and require a great amount of time and energy on behalf of the moderator.

The moderator also must lead the community in generating trust, often by modeling behaviors and norms for participation within the community. Babinski et al. (2001), in describing how a particular community desired problem solving would occur in its forums, noted that the moderator would “model this process or make it more explicit by discussing it within the context of a ‘real’ discussion online” (p. 168). McDermott (2001) tells of even manipulating the social order directly, describing times when the moderator “orchestrated community in the beginning so that a senior, well-respected community member asks for help” (p. 11), allowing the community itself to demonstrate norms and trust. These are but two examples from the literature describing strategies for encouraging mutual engagement for those who may be on the periphery of the community.

Moderator Role: Cultivating a Culture of Sustainability

Cultivating a culture of sustainability for a community of practice involves developing the group’s sense of continuity in a number of ways; we focus here on growing resources and leadership, two keys to sustaining a CoP. Wenger (2002) notes that “communities often begin with a spike of interest and energy...however, after the first

event, the reality of the community work—networking, sharing ideas, maintain the web site, typically sets in and people’s energy for the community can fall off sharply” (p. 84). Stuckey & Smith (2005) whose scholarship is centered on strategies for this particular life phase of a CoP, refer this to the period after the “first blush” is gone (p. 4) but refer to all stages of a community’s development in saying that “sustaining a community of practice involves deliberately responding to change in a community’s life together as well”. They go on to tell the story of the moderator who held “a 10-year birthday bash for the community...where community members in general can celebrate and reflect on their time together, reconnects the community, sustains it, and moves it forward” (p. 4). Creating an environment that honors the on-going changes that inevitably are faced by an evolving community is another challenge faced by a group’s moderator.

Of course, sustainability also means that a community must find the necessary resources to continue to exist. Stuckey & Smith (2005) refer to this in stating that the ability of the moderator (and the sponsor, if there is one) to draw “appropriate nourishment (i.e. new topics or new blood and probably new money) from the environment is a key consideration” (p.6).

Moderator Role: Cultivating an Architecture for Participation

The prevalence and usefulness of connective technology in supporting a geographically dispersed CoP has been stated and realized; it is further suggested by the literature that choosing a site design shaped by, and reactive to, the needs of the online CoP is important for fostering participation. McDermott (2001), for example, points out that any technological design “should reflect the natural way community members think about their field of topic...the key to making information easy to find is to organize it according to a

scheme that tells a story about the discipline in the language of the discipline” (p. 11).

Determining the nature of the online environment may be outside the scope of the moderator’s duties but it is worth noting that in cases where they are involved, attention should be paid to this factor for success.

Given an online community’s reliance on technology, “adequate scaffolding in the form of both technical support and usage of the technology for communication and collaboration is necessary” (Johnson, 2001, p. 56). This then is another aspect of cultivating an architecture for success and one which often does fall within the range of support offered by the moderator, especially for smaller communities. Indeed, Bourhis et al. (2010) found that “the leader plays a critical role in enabling members to participate by giving them individual help and removing obstacles to their input” (p. 186) so while such support is clearly an advantage in supporting the overall success of the community, it is the moderator is often cast in the role of technological “first responder”.

Conclusions

Summary of Factors

We have looked at a number of elements identified by the literature as critical for growing and sustaining an online community of practice. Cultivating a culture of inquiry includes crafting a strong and inclusive purpose for the group, encouraging critical discourse and maintaining a membership that is diverse in terms of expertise, experience and focus of interest; these elements map onto Wenger’s dimension of “domain” and the social capital structural dimension or connectivity. Cultivating a culture of mutual engagement involves growing a membership, fostering knowledge sharing and building trust; these activities are tied to Wenger’s community dimension and the social capital

dimensions identified as structural and relational but which again reference connectivity. In cultivating a culture of sustainability, a CoP requires leadership from within and a vital growing body of resources and artifacts to share; this is Wenger's practice dimension and the social capital cognitive or shared language dimension. And finally, in the case of technology mediated communities of practice, creating and sustaining an architecture that fosters member participation through participatory and co-evolutionary design and scaffolding for technology use aids in ensuring that members do not experience barriers due to the online nature of the community. And in all these areas, we have seen how a designated moderator can fill in gaps, assist, support and otherwise gently drive the community making that role a critical need indeed. Table 2.1 summarizes the findings of this literature review and the four success factor summative categories.

The role of the Moderator and the need for further study

As mentioned previously, this is not an exhaustive literature review and it is entirely possible that some valuable studies were missed. However, as Bourhis et. al (2010) report: "Among the communities in our sample, those whose success exceeded initial expectations had very involved leaders who possessed the ability to build political alliances, to foster trust, and to find innovative ways to encourage participation. These people ended up in this important position because a member of the organization's management team or the sponsor had decided that they had the right set of abilities and should be selected...However, to help organizations choose the best person, more research needs to be done to investigate the profile of successful leaders" (p. 33). With this thought in mind, we turn now to Chapter 3, Methodology.

Table 2.1

Summary of literature review findings and summative success factor categories

	Factors	Cultivation	Moderator Role
Culture of Inquiry <i>Related to domain (Wenger) & structural (social capital) dimensions</i>	Purpose	Crafting a strong and inclusive purpose for group, encouraging critical discourse, embracing and encouraging diverse levels of expertise, experience and interests in membership.	Facilitates development and evolution of CoP purpose; fosters critical discourse by moderating quality and focus of discussions; creates connections between dissimilar members; demonstrates a passion for learning; is socially and politically adept.
	Critical Discourse		
	Diversification		
	Factors	Cultivation	Moderator Role
Culture of Mutual Engagement <i>related to community (Wenger) & structural, relational (social capital) dimensions</i>	Membership	Growing and cultivating a membership, fostering knowledge sharing, building trust	Solicits and welcomes members; models and builds trust; provides guidance for resolving issues; creates and promotes opportunities for info and knowledge sharing across the group.
	Knowledge Sharing		
	Trust		
	Factors	Cultivation	Moderator Role
Culture of Sustainability <i>related to practice (Wenger) & cognitive (social capital) dimensions</i>	Leadership	Developing leadership from within, cultivating a body of knowledge artifacts to share	Sustains community momentum; stimulates member activity and interest; locates and procures resources; fosters and develops emergent leaders; manages change; provides innovative solutions.
	Managing Content		
	Factors	Cultivation	Moderator Role
Architecture for Participation	Design	Participatory and co-evolutionary design; scaffolding for technology use	Supports member use of technology; solicits member input; leads and models technology use.
	Technology		

CHAPTER 3: METHODOLOGY

This study seeks to better understand the value placed by CoP members of practice on moderator actions and characteristics that have surfaced in the emerging literature as supportive of communities of practice, specifically those CoP that support the professional development of educators. The following research questions will frame the study:

1. What value do members of educator online communities of practice place on particular moderator actions?
2. What value do members of educator online communities of practice place on particular moderator characteristics?
3. Do member demographics – age, gender, years of CoP membership, technology experience - influence the value ranking of moderator actions and characteristics, and if so, how?
4. Are there moderator actions or characteristics that are not prevalent in the literature but valued by members?

Research Design

Approach

A survey methodology was employed for this research. Given the research questions, which seek to learn about the value perceptions of members in regards to moderator actions and characteristics, survey methodology was determined to be the most expedient and direct method to reach the research goals after consulting the literature. For example, according to Tuckman (1999), survey methodology “allows investigators to measure what someone knows...and thinks. Even when an alternative is available, simply asking subjects to respond may be (and often is) the most efficient one.” (p. 237). Another

strength of survey methodology is that, with careful planning and attentive instrument construction, the collected information can be systematically and efficiently converted into data to which statistical analysis can then be applied. Additionally, since the members of online CoPs are well acclimated to web technology and routinely use such tools to connect with the community, the risk of coverage error due to subject unfamiliarity with web technology is diminished. Lastly, as stated by Dillman, et. al (2009), “the remarkable power of the sample survey is its ability to estimate closely the distribution of a characteristic in a population by obtaining information from relatively few elements of that population.” (p. 54) A carefully constructed sample frame combined with random sampling, strict methodology to reduce error and bias, and precision in terms of data analysis will add rigor and, taken together, will increase the precision of the measurements and the validity of the findings.

Population, Sample & Sampling Procedures

The target population for this research is United States-based technical workforce educators who are members of CoPs whose domain is that of educator professional development and the development of pedagogical content knowledge. It was an arduous task to find a set of communities whose organization permitted the release of contact information of its members; several months and almost twenty groups were approached prior to securing three CoPs that met the above criteria while also providing variation in the number of members, the geographical distribution of their members, and a mix of members in terms of age, gender, and length of association with the CoP. The first of the three CoPs is a community of educators focused on the adoption and adaption of information technology-related curricular materials, approaches and pedagogy; the

members are geographically dispersed across the United States with the coordinating office located in Texas. The second is an outgrowth of work done by a national center for biotechnology education headquartered in San Francisco. The CoP members in this case were educators distributed nationally who are involved with a “bridge to college” program which provides models, curriculum and support for institutions interested in creating and promoting student pathways to careers in biotech, especially amongst underrepresented populations. The last of the three CoPs is a CoP of renewable energy and energy efficiency educators, distributed nationally, that are working collaboratively to broaden the available curriculum in this area and also to incorporate international practices in this increasingly global sector; this CoP is coordinated by a regional engineering and renewable energy/energy efficiency education center located in California.

The sampling frame, or list from which the sample was drawn, was created by combining the list of CoP participants identified by the coordinators of the CoPs as having the role of member, participant, user, or a similar title; the combined list consisted of 108 unique email addresses. Permission and access to these members and their email addresses was provided by the sponsoring organization who reviewed their lists for currency and completion prior to providing them to the researcher. To reinforce the appropriateness of the subjects for this particular study, initial survey items request that respondents confirm that they are educators and also request confirmation of CoP role to ensure respondents who self-identify in a role other than member – moderator, facilitator, sponsor, administrator, etc. – are screened out as this study seeks to measure the perception of the membership rather than that of the leadership.

A priori power analysis was used to estimate a sufficient sample size to achieve adequate power; based on calculations assuming a 50% response rate, a desired 95% confidence limit and a desired 5% margin of error a sample size of 84 was calculated given the population of 108 CoP members. In preparation for drawing the sample, the three lists – representing 108 unique elements - were combined into a single list using an Excel spreadsheet and then randomized by assigning each element a random, non-sequential identifying number, and sorting numerically. The identifiers were then removed, new non-sequential random numbers were assigned to each element, and the element list was again sorted numerically. This process was repeated a total of three times. At the conclusion of this process, the email addresses were scrambled to the point that there was no longer an identifiable order to the sequence in which they were listed. A systemic random sample was then drawn using a fixed sampling interval of 3 until a sample size of 84 was achieved. The email addresses of the 84 elements selected for the study were entered into the surveying software which was then used to track submissions and eliminate repeat submissions. The concern that one or more of the CoPs may be over- or under-represented is not considered critical due to the nature of the information sought: the respondents are reporting only the value they attach to a particular moderator action or characteristic, and were not asked to evaluate their particular moderator or CoP. If they did not witness or experience a particular action or characteristic, “did not observe” was available as a response.

Other considerations taken into account when determining sample size and sampling procedure centered on concerns about response rate which in turn influences the potential for coverage error. Research on what might be expected in terms of a web-based

survey response rate ranged from cautiously positive to quite negative however the primary barrier reported by these researchers appeared to be tied to respondent unfamiliarity with web-based technologies. For example, in one oft-quoted meta-analysis paper, Manfreda et al. (2008) noted that the “increased burden when responding through non-traditional methods” by those with “limited web literacy and low-frequency use of the Internet” (p. 81) created a measurable barrier to participation and completion. Conversely yet in agreement with this finding, a review of web survey response rate literature by Schonlau et al. (2002) found that web-based surveys administered to subjects with some technological experience had relatively strong response rates that ranged from 19% to 39% (p.84). Given the online nature of the CoPs that make up this study’s target population, and the frequency of web-based activity on the part of their members, a lack of web literacy was not seen as a significant barrier for this particular population. Indeed, the final response rate for this survey was a robust 54.7% so while the cautions are worth mentioning, it would seem that this study confirms that a familiarity with web-based technology minimizes at least one perceived issue with web-based survey response rates and potentially may reduce coverage error.

A low response rate is also sometimes perceived as increasing the risk of non-response error; this was also considered when determining sampling procedures. However, Manfreda et al. (2008) points out that “non-response does not necessarily lead to non-response error, which is a function of the percentage of the sample not responding to the survey and the differences in the statistics between respondents and non-respondent” (p. 99). In response, the sampling procedure utilized was designed to create as representative a sample as possible in an effort to combat both sample error and also non-

response error. A remaining concern was that of measurement error, which is represented in the survey methodology literature as being influenced by survey design and implementation methodology; these are fully addressed in the next segment.

Process

As noted previously, this study was conducted as a web-based survey. The use of a web survey is particularly well suited to this population given their connection to a web-based community; this ensures some familiarity with web-based technology and reduces the risk for coverage error which is normally associated with technology-mediated surveys. This rationale is supported by the literature as noted above and also by Aoki & Elasmir (2000), who state that “though there are still limitations to be overcome if the Web is used for general population survey, the Web will present advantages over traditional modes of data collection if it is used for specific populations that are known to be Internet savvy” (p.3).

The survey was hosted online and administered through the use of SurveyMonkey, an online web-survey service. SurveyMonkey was primarily chosen for the ease it brings to the respondent: it allows for fast and familiar access via URL and is platform and browser agnostic which minimizes the potential for technological interruptions. Additionally, it supports sophisticated and intelligent survey design, is extremely robust in terms of data management, and allows for reminders to non-responders to be sent based on survey data. In addition, SurveyMonkey is currently a common choice for educational and social science research and has also been used extensively in a variety of capacities by the author for seven years.

Instrument Design

The survey instrument contained 25 items; the first segment secured consent, the next set of items screened for participant appropriateness for this particular study (educator, CoP member, active in a CoP) after which seven items presented moderator actions and seven items presented moderator characteristics as drawn from the literature. The survey concluded with five demographic items and an option to be kept informed of the study results. The following short discussion will describe the process by which the moderator actions and characteristic survey items were selected, after which a detailed description of the survey instrument will commence. The full instrument is available as Appendix A.

The items that related to moderator characteristics and actions were selected to represent the four summative categories of success factors: culture of inquiry, culture of mutual engagement, culture of sustainability and architecture of participation. The moderator actions drawn from the literature around “cultivating a culture of inquiry” focused on those activities that guide the quality and focus of the discussion and that create connections between dissimilar members in the group; the related survey items read: “The moderator actively guides the quality and focus of discussions” and “The moderator creates connections between knowledge seekers and experts”. The two moderator characteristics drawn from this category focused on the moderator’s passion for learning and skillful navigation of group politics; the resulting survey items read: “The moderator demonstrates a passion for learning” and “The moderator demonstrates social acumen, understanding and awareness”. Future research may mine this category of success factors more thoroughly for attributes and actions but for this initial study, these statements were used

to reflect that which the literature suggested in terms of a moderator's role in cultivating a culture of inquiry.

Within the category of cultivating a culture of mutual engagement, the predominant focus in the literature suggests that the effective moderator guides the community when issues arise, and fosters trust within the group by modeling trustworthy behavior; the related survey items read: "The moderator guides the community through disruptions or conflicts" and "The moderator works at keeping members involved in the community." The two moderator characteristics from this category reflected that the effective moderator should be a person that engenders trust themselves and works at welcoming and keeping members involved in community. The related survey items read: "The moderator demonstrates that s/he is trustworthy" and "The moderator is welcoming". Again, these elements were assigned as indicators of moderator attributes and actions that the literature suggested for this category of success factors; further research is suggested to fully investigate the various moderator actions and characteristics that support the cultivation of a culture of mutual engagement.

In the summative category that focuses on cultivating a culture of sustainability, the two actions selected to reflect actions taken by the moderator focus on the moderator's role in keeping the community energized and being active in finding resources to support the work of the community; the related survey items read: "The moderator keeps the community energized and active" and "The moderator draws in resources to support the work of the community". The two moderator characteristics drawn from the literature that reflected factors of success in this category read: "The moderator is innovative in responding to change" and "The moderator fosters leadership within the community." As

with the previous categories, these are but a few of the possible moderator actions and characteristics whose perceived value by members that may be investigated in further studies.

Lastly, instrument items were selected to reflect the literature findings in the area of creating and maintaining an architecture that supports participation. In this category, given that some moderators play a limited role – or no role at all -- in shaping how technology is used and designed for the community, only one moderator activity and one characteristic were used as instrument items. The survey item for moderator actions in this area reads: “The moderator supports member use of technology”; the item regarding the moderator characteristic for this category reads: “The moderator is skilled at using technology”.

The survey began with a brief statement describing the study and an outline of any potential risks to respondents, followed by an informed consent checkbox. Participants were unable to advance without first providing consent.

Once consent was secured, three pre-questions screened for validity of the respondent’s status (educator, member/participant of educator CoP, currency of membership); these were the only survey items that required a response. If a respondent was not an educator, or did not self-identify primarily as CoP member - rather than an administrator or moderator - they were redirected to an exit from the survey. This measure intended to ensure that the survey collected data only from the targeted population, that of CoP members.

The next page of the survey did not contain any survey items but instead provided a quick introduction to the following pages and defined key terms. The instructions read:

The next two pages will present seven actions and then seven characteristics that research has identified as relevant when analyzing the work of online community of practice (CoP) moderators. 'Moderator' refers to the person who acts as the primary facilitator for the group. Alternate titles include coordinator, facilitator and/or organizer; 'Actions' are observable activities performed by the moderator in their role as online facilitator; 'Characteristics' are traits or behaviors demonstrated by the moderator in their interactions with the group. (see Appendix A for the full survey instrument)

After reviewing this information, subjects clicked "next" to proceed to a page entitled "Moderator Actions"; this page contained seven items that employed Likert-like response items measuring the value subjects place on seven moderator actions as drawn from categorization of the CoP success factor literature. The seven items were: "The moderator actively guides the quality and focus of discussions", "The moderator creates connections between knowledge seekers and experts in the group", "The moderator guides the community through disruptions or conflicts", "The moderator works at keeping members involved in community", "The moderator keeps the community energized and active", "The moderator draws in resources to support the work of the community", and "The moderator supports the members' use of the technology." Likert-like response items are appropriate for this effort as they can "deal with attitudes of more than one dimension, and tend to have high reliabilities" (Vogt, 2005). Response options were "Very Important to me", "Somewhat Important to me", "Somewhat unimportant to me", "Not important to me", "Did Not Observe" and "Prefer Not to Answer" (see Fig. 3.1).

MODERATOR ACTIONS

Research indicates that the following ACTIONS
 are commonly employed by moderators/coordinators to manage communities of practice.
**Please indicate how important each moderator action
 is (or was) to you as a member/participant.**

Action 1: The moderator actively guides the quality and focus of discussions.

<input type="radio"/> Very Important to me	<input type="radio"/> Not Important to me
<input type="radio"/> Somewhat Important to me	<input type="radio"/> Did Not Observe
<input type="radio"/> Somewhat Unimportant to me	<input type="radio"/> Prefer Not to Answer

Figure 3.1: Example of Moderator Actions survey item

The final item on the Moderator Action page was an open-ended text response item which permitted respondents to contribute additional moderator actions they have found to be important to them; this open item provided data for future consideration and also reduced cognitive dissonance moving forward should the subject feel an important action had not been included in the survey.

The next page in the survey is the Moderator Characteristics page which contained seven items that collected respondents' perceived value of seven moderator characteristics drawn from the summative categories of CoP success factor literature as detailed previously. This page looked and functioned identically to the Moderator Actions page and used the same Likert-like responses. The seven items on this page are: "The moderator demonstrates a passion for learning", "The moderator demonstrates social acumen, understanding and awareness", "The moderator demonstrates that s/he is trustworthy", "The moderator is welcoming", "The moderator is innovative in response to change", "The moderator fosters leadership from within", and "The moderator is skilled at using technology." The final question on this page was another open-ended text response item which permitted respondents to contribute additional moderator characteristics they found to be important.

Following the moderator action and characteristics pages was a page with five demographic items that requested information about the respondent's CoP membership duration, their comfort with technology, their age (in ranges), and their gender. The respondents also indicated one of five discipline areas; this information was not used and deleted from the results. Upon completion, respondents were given the opportunity to indicate their interest in being contacted with study results and updates, or to indicate willingness to participate in follow-up interviews should that step be taken in the future by the researcher. If a subject expressed interest in either or both, they could write in their name and email address.

Perceived fear of disclosure or security risk on the part of respondents was mitigated by providing assurances of confidentiality of responses in invitations to participate and on the informed consent page of the survey itself. The survey collected no descriptive data about the CoPs or moderators nor was any identifying data requested of the respondent. Completing the survey via email attachment was not an option to further protect the confidentiality of the respondents.

Instrument Testing & Revision

In order to diminish the risk of measurement error (inaccurate or incomplete responses) and to "identify wording, question order, visual design and navigation problems" (Dillman, Smyth, & Christian, 2008), the survey instrument was refined through pre-testing and cognitive interviews with seven educators similar to the study subjects as well as two educational researchers. Initial testing was performed by four educators and the two researchers; this group was sent a web link to the survey which allowed them to access the pilot version of the study. Once revisions were made based on their feedback, a

second group of three educators were sent a draft of the actual invite that the survey population would receive which included a link to the survey in the body of the email. This second group was asked for feedback on the invitation text and process as well as the survey.

In both cases, the survey settings allowed reviewers to revisit the survey multiple times and change their answers in order to test all aspects of the survey. For both phases of testing, reviewers were also provided with a Word document which solicited their written feedback on accessing the survey, the intro/consent process, the screening questions, the survey items that related to moderator actions and characteristics, the demographic questions and the overall experience (see Appendix B for instrument reviewer instructions).

Feedback from the initial group of reviewers was mostly positive; they found the language, directions, process and overall experience to be “clear, directed and unambiguous” and “easily understood and followed”. Suggested changes resulted in a revision of the Likert-like scale on the Moderator Actions and Moderator Characteristics pages from seven choices to four, the inclusion of two additional responses for gender (“prefer not to answer” and “identify as neither or other”), the addition of the instruction and definitions page that appears just before the ratings pages, and simplifying the consent page text.

In addition to the written feedback, the three educators in the second test group were asked to “think aloud” and record their thoughts from the time they opened the invitation until they completed their exploration of the survey instrument itself. The feedback collected from the second group resulted in only one design revision to the survey

itself: the questions for the Moderator Actions and Moderator Characteristics pages were broken into separate questions to reduce a slight amount of visual overload reported by two of the reviewers when the question appeared as a single block. Otherwise, the second group also found that the instructions were clear, that they understood the questions and intent, and also reported that the email invite was concise yet provided enough information to be compelling. Once the changes were incorporated based on the feedback of the second group, the survey instrument was finalized with the only additional change occurring during the review by the Human Subjects office who requested the addition of a “prefer not to answer” response to all questions on the survey outside of those used for screening or for indicating consent. No monetary compensation was offered for completion. Instead, a combination of language on initial invitation and on subsequent reminders emphasized the value and potential benefits of participation for both the individual and the collective in an effort to encourage participation.

Process and Procedures

The survey launched on May 3, 2016 and was available to respondents through May 20, 2016, a total of 18 days. Practices for increasing return rates, as suggested by the literature and detailed below, were employed to encourage participation and completion and to minimize coverage error.

Initial contact with sample group members occurred via an email message from their CoP moderator or administrator. This initial message introduced the study, endorsed the researcher, and encouraged participation (see Appendix C for a sample initial email). While this made practical sense in that it explained to the sample group how they had come to be part of the study and also prepared the subjects for the formal invitation to

participate, survey methodology literature also indicates that “creating multiple contact opportunities with selected participants “ (Perkins, 2011) and using multiple means to connect with potential respondents (Cook et al., 2000) also increases response rates, so asking the CoPs themselves to introduce the study was also seen as a means to increase participation.

The notice from the CoP moderator or administrator was followed by the researcher’s initial request for participation later the same day. As with all correspondence regarding the survey, the message included a concise description of the purpose and dates of the survey along with appreciation extended for the participant’s assistance; the tone and the length were carefully tailored and included an indication of the amount of time necessary to complete the survey as advised by the literature (Clarkberg & Einarson, 2008). The survey launched in parallel to the invitation as there appears to be contradictory data in terms of the effectiveness of a pre-notice email (Cook, Heath, & Thompson, 2000; Dillman et al., 2008; Fan & Yan, 2010). In addition, the introductory message from the CoP moderator or administrator introducing the study was referenced in, and pasted below, the researcher’s invite text. Twenty-four responses were received between May 3 and May 9.

A reminder email was sent on May 10, seven days after the initial launch to those who had not yet responded. This message was constructed to be slightly more concise than the initial invitation but again included and referenced the original message from the CoP moderator or administrator. Twelve additional responses were recorded between May 10 and May 15 bringing the total response count to thirty-six.

In reviewing the response data on May 15, it appeared that a portion of the recipients were not opening the email invitation; one potential rationale for this was that the invite was sent from an unfamiliar email address (that of the researcher). To counter this possibility, on May 18 the CoP moderator or administrator sent a brief reminder to their membership, highlighting the researcher's email address and encouraging participation. This was followed by a "last chance" message from the researcher on May 19, the day before the survey was to close. And additional ten responses were recorded prior to the close of the survey, bringing the initial total response count to forty-six which represented 54.7% of the sample population.

The procedure for this plan reflects the findings of Archer (2007) whose research on web-based response rate variables reports that "increasing the total days a questionnaire is left open, with two reminders, may significantly increase response rates. It may be wise to launch in one week, remind in the next week, and then send the final reminder in the third week" (p. 8). Clearly this worked well with the study population as the resulting response rate eliminate some risk of coverage or sampling error.

Data Analysis

This study is framed by four research questions:

1. What value do members of educator online communities of practice place on particular moderator actions?
2. What value do members of educator online communities of practice place on particular moderator characteristics?

3. Do member demographics – age, gender, years of CoP membership, technology experience - influence the value ranking of moderator actions and characteristics, and if so, how?
4. Are there moderator actions or characteristics that are not prevalent in the literature but valued by members?

The data analysis for research questions 1 and 2 focused on Likert response items as related to moderator actions and characteristics. In determining the best approach for the analysis of these responses however, it became clear that a long-standing controversy exists amongst statisticians concerning the proper way to treat such data. This polarizing discord, arising primarily from disagreement as to the type of data generated by such items, calls for some comments on assumptions and decisions made when describing the results of a study that includes such items.

On one side of this debate, the argument is made for treating the data as continuous and interval-level; these statisticians recommend assigning numeric coding to the responses, generating descriptive statistics such as the mean and standard deviation, and then utilizing parametric inferential statistic methods such as t-tests, analysis of variance, and correlation analysis (Carifio & Perla, 2008; Norman, 2010; Sullivan & Artino, 2013). Other statisticians argue that the data generated from a Likert-like items should be considered ordinal or even nominal (Clegg, 1998; Jamieson, 2004; Shadish, et. al., 2002); one argument for this is that an interval scale assumes that responses are equidistant from each other which is difficult to establish with most Likert-like response scales (Allen & Seaman, 2007). But perhaps the most practical argument for the latter position, and the one most relevant to this study, is that using the mean as a measure of central tendency has

little to no practical meaning; as Jamieson (2004) notes “the average of fair and good is not ‘fair and a half’; this is true even when one assigns integers to ‘fair’ and ‘good’.” (p. 1217).

While both sides of this debate offer balanced and, at times, passionate arguments in support of their position, one thing they do agree on – as do most statistic texts and tutorials – is that the primary consideration when choosing analysis methods is to take into account the research questions being asked and the statistical analysis that will best answer those questions.

Given that the first two research questions can be responded to appropriately using the measure of frequency of response, analysis will follow the recommendation to treat this data as ordinal rather than interval, and will employ “distribution free methods such as tabulations and frequencies” along with graphic aids such as bar graphs to examine and describe results. However, to provide a second layer of analysis, the frequency distributions will also be converted to numerical data so that means and medians of the frequencies and Chi-square test can be used to compare results across response selections. Given the determination of a sufficient sample size, and with good survey design and administration, external validity may permit these results to be generalized with an acceptable degree of confidence to represent the survey population.

In approaching Research Question 3, it is clear that frequency tables will not suffice in determining if a relationship exists between respondent demographics and value perception statements. In revisiting the Likert-style item analysis debate in order to ensure that the chosen method for group analysis is most likely to produce “true” results, one again finds statisticians who insist that parametric analysis is appropriate here; in fact, Carifio & Perla (2007, 2008) make a strong case for the robustness of item level F-tests as a

priori testing of Likert response formatted items. As frequently, if not more so, recommendations call for employing nonparametric procedures as with all other ordinal data when performing group analysis; Kruskal-Wallis and Mann-Whitney U tests are often mentioned in this literature. One suggestion made by Allen & Seaman (2007) that appears to bridge this divide was of particular interest; they make the suggestion that “given that these scales are representative of an underlying continuous measure, one recommendation is to analyze them as interval data as a pilot prior to gathering the continuous measure.” It is this final suggestion that was followed in analyzing the data in response to Research Question 3; one-way ANOVAs (F-tests) were run on each demographic/value perception pairing, followed by a Kruskal-Wallis test. All 56 pairs were evaluated using this two-step procedure.

In response to Research Question 4, text responses to the two open-ended survey items (*“Are there other moderator actions that have been important to you as a community member?”* and *“Are there other moderator characteristics that have been important to you as a community member?”*) were analyzed for patterns both manually and through the use of SurveyMonkey’s text analysis tool which displays the most important distinguishing words and phrases across responses; simple frequency of use is not considered to be of primary relevance so common phrases or words (such as “I like” or “and”) are not highlighted by this tool. This text analysis tool also allows for display of an ordinal list with the most frequent important words listed at the top. Finally, to complete the analysis, the text analysis tool was used to create categories that corresponded to existing value perception items. Actions or characteristics suggested by respondents were then analyzed to determine if they fit within existing survey items or within the summative success factor

categories developed earlier; if so, comments were tagged and sorted into the appropriate category. The results of this analysis will be discussed in Chapter 5.

Validity & Reliability

Internal validity refers to whether or not the study measures what it intends to measure. The use of thorough pre-testing and especially of cognitive interviewing – which involved strategies such as “think aloud” – was beneficial in obtaining feedback from educators much like the study’s sample group and assisted with ensuring that the instrument and survey-taking process was constructed in such a way as to accurately capture the thoughts of the respondents. External validity is a measure of how well the findings can be extrapolated out from the sample to the target population. While generalizing to a population from a sample is never a given, the care taken to create and execute a well-designed sampling procedure was intended to increase the external validity as much as possible, as was the addition of initial screening questions at the start of the survey instrument. As for reliability, a measure of whether or not the instrument would produce similar results if re-administered, this is difficult to determine especially given that the analysis of relationships between CoP member demographics and the value placed on moderator actions and characteristics had not been previously examined in a quantifiable manner however the use of Likert-like scales introduces some measure of reliability

Limitations

The major limitation of this study is the relatively small sample size. Three educator CoPs were selected for this study and those CoPs were focused on technical workforce education. This makes it difficult to generalize the findings to other educator CoPs or to CoPs found in other sectors. Lastly, the limitations of this study are that of any survey – did

the sample truly represent the population? And did the non-responders vary from the responders in a significant way, one unperceived by the researchers? These are methodological limitations that are impossible to erase.

CHAPTER 4: RESULTS

Data analysis in this chapter will begin with a discussion of respondent demographics using descriptive statistics. Following this, each of the study's research questions will be presented with an accompanying discussion of the statistical analysis of the related survey items and the results for each. The chapter concludes with a summary of the results.

Respondent Descriptive Statistics

Of the 84 subjects contacted, 46 (54.8%) responded and participated in the study. Twenty of the 46 respondents were screened out by initial survey items designed to ensure that data collection was limited to the target population of educator CoP members who are currently active in a CoP or have been within the past five years. Of the remaining 26 respondents, 23 fully completed the survey and one respondent completed all but the demographic survey items. See Table 4.1 for a depiction of participation results.

Table 4.1
Summary of participation

Total surveys sent	84
Responses received	46
Screening Questions	
Q2 Not an educator	- 6
Q4 Not active in a CoP in 5 years	- 9
Q5 Role other than member	- 5

Total advanced after screening questions	26
Respondents that did not proceed to Q6	2
Respondents completing items Q1-Q20	24
Respondents who completed the survey and demographic section	23

Demographics

Four demographic items were employed to obtain the data required for analyzing Research Question 3: “Do member demographics – age, gender, years of CoP membership, technology experience - influence the value ranking of moderator actions and characteristics, and if so, how?” The following discussion presents the descriptive statistics for each of the four demographic survey items.

Gender

Of the 23 respondents who completed the demographic portion of the survey, sixteen identified as male (69.6%), five identified as female (21.7%) and two subjects declined to answer. This distribution was skewed which increased the preference for nonparametric analysis when approaching Research Question 3 given the non-normal distribution. Figure 4.1 represents the respondent distribution by gender.

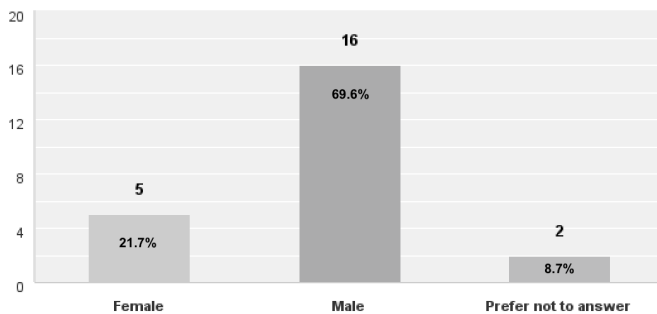


Figure 4.1: Distribution of Respondents by Gender

Age Group

Five responses were provided for respondents to indicate their age group: under 18, 18-30, 31-50, 51-70, and 71+. Eleven of the respondents (47.8%) reported to be between 31 and 50 years of age, nine (39.1%) were between 51 and 70 years of age, and one respondent (4.3%) reported an age of 71+. Two respondents declined to give their age group and no responses indicated an age less than 30. Figure 4.2 depicts the distribution of respondents by age.

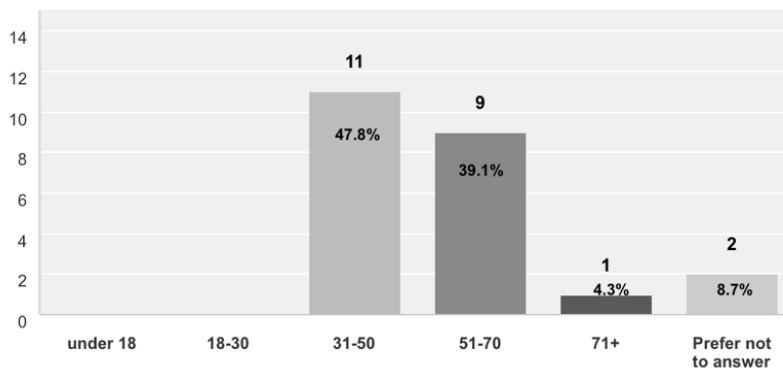


Figure 4.2: Distribution of Respondents by Age Group

Length of Membership

Respondents were also asked to identify the length of time they have been members of a CoP and provided with the following options for response: less than 6 months, 6 months–1 year, 1-2 years or 2-3 years and more than 3 years. Fourteen respondents (60.9%) reported that they have been members of a CoP for more than 3 years, four (17.4%) reported that they have been members for 2-3 years, and five (21.7%) reported that they have been members for 1-2 years. No respondents indicated that they have been a member of a CoP for less than a year. Figure 4.3 illustrates the distribution of participants

by length of CoP membership. Again we see a skewed distribution that, when responding to Research Question 3, favors nonparametric analysis.

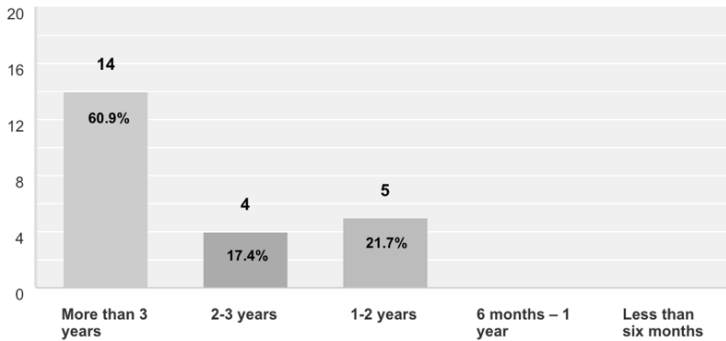


Figure 4.3: Distribution of Respondents by Length of CoP Membership

Technology Comfort Level

Technology comfort level was reported using one of five responses. Nine respondents (39.1%) indicated that “I seek out new technologies to learn”, thirteen respondents (56.5%) reported “I feel comfortable learning new technologies”, and one (4.3%) indicated that they felt “neither uncomfortable nor comfortable with new technologies”. No respondents chose the response “I don’t particularly like learning new technologies...” or “I prefer not to learn new technologies”. Figure 4.4 represents the distribution of respondents in terms of technology comfort level.

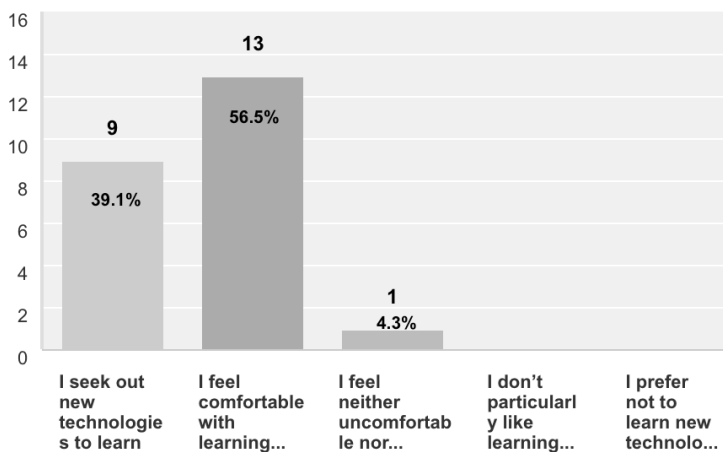


Figure 4.4: Distribution of Respondents by Technology Comfort Level

Research Question Results

The survey instrument featured seven items regarding respondents' perceived value of moderator actions followed by seven items regarding respondents' perceived value of moderator characteristics; both sets of questions utilized Likert-like scales to obtain this data. The available responses were identical for all fourteen items, listed as: Very Important to me, Somewhat Important to me, Somewhat Unimportant to me, Not Important to me, and Did Not Observe. Additionally, a choice of "Prefer Not to Respond" was included as required by the sponsoring institution's Human Subjects Board office. However, as no respondents chose this response for any item, the "prefer not to respond" response is not included in the analysis going forward.

Research Question 1: What value do members of educator communities of practice place on particular moderator actions?

To determine the value members place on moderator actions, seven statements were drawn from the CoP success factor literature; these were then used to create seven survey items. As noted above, these items used a Likert-like scale to determine perception of value of each of the seven moderator actions and offered six possible responses: Very Important to me, Somewhat Important to me, Somewhat Unimportant to me, Not Important to me, Did Not Observe and Prefer Not to Answer.

Research Question 1 Data Summary. The frequency of responses across the seven moderator action survey items are presented in Table 4.2, along with the percentage of total responses in each response column and the percentage of very and somewhat important responses versus the percentage of somewhat unimportant and not important

responses. The results for each moderator action survey item are described in the following section. A discussion of the results will occur in the next chapter.

Table 4.2
Frequency of response for items related to Moderator Actions 1 - 7

	Very Important	Somewhat Important	Somewhat Unimportant	Not Important	Did Not Observe
Action 1: Moderator actively guides the quality and focus of discussions	12	12	0	0	0
Action 2: Moderator creates connections between knowledge seekers and experts	13	10	0	0	1
Action 3: Moderator guides the community through disruptions or conflicts	10	7	2	2	3
Action 4: Moderator works at keeping members involved in the community	9	11	4	0	0
Action 5: Moderator keeps community energized	14	9	1	0	0
Action 6: Moderator draws in resources to support the work of the community	12	10	2	0	0
Action 7: Moderator supports the members' use of technology	4	16	2	2	0
Total Responses	74	75	11	4	4
% Total Responses	44.0%	44.6%	6.6%	2.4%	2.4%
% Important/Unimportant	88.6%		9.0%		

Moderator action 1. Responses to this first value perception item referring to moderator actions, “*The moderator actively guides the quality and focus of discussions*”, indicated that twelve respondents (50.0%) felt this to be very important and twelve (50.0%) valued this as somewhat important. No respondents reported that this moderator action was either moderately unimportant or not important. The median for this distribution was 3.5, the mean was also 3.5. Figure 4.5 presents the distribution for this survey item as well as descriptive statistics provided for further analysis of this distribution.

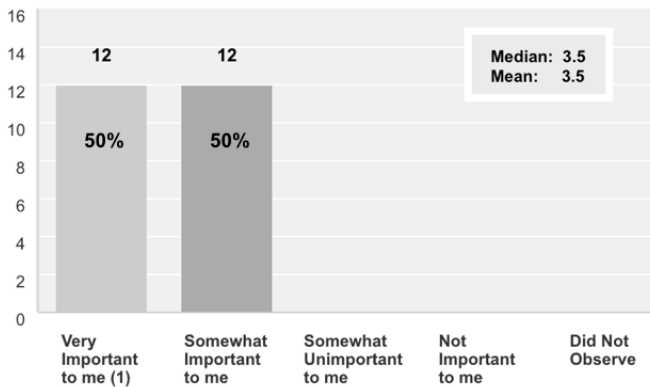


Figure 4.5: Distribution of responses to Moderator Action 1: “The moderator actively guides the quality and focus of the discussion.”

Moderator action 2. Responses to the next item, “*The moderator creates connections between knowledge seekers and experts*”, indicated that thirteen respondents (54.2%) felt this to be very important, ten (41.7%) reported it as somewhat important, and one (4.2%) did not observe this moderator action. No respondents reported that this moderator action was either moderately unimportant or not important. The median for this distribution was 4, the mean was 3.56. Figure 4.6 presents the distribution for this survey item.

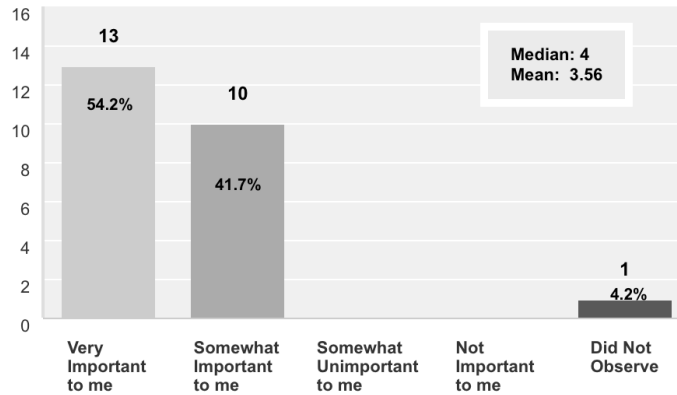


Figure 4.6: Distribution of responses to Moderator Action 2: “The moderator creates connections between knowledge seekers and experts.”

Moderator action 3. The third survey item related to moderator actions, “*The moderator guides the community through disruptions or conflicts*”, indicated that ten respondents (41.7%) felt this moderator action to be very important, seven (29.2%) found it to be somewhat important, two (8.3%) found it to be somewhat unimportant, two (8.3%) found it to be not important and three (12.5%) did not observe this action on behalf of the moderator. The median for this distribution was 3, the mean was 3.19. Figure 4.7 presents the distribution for this survey item.

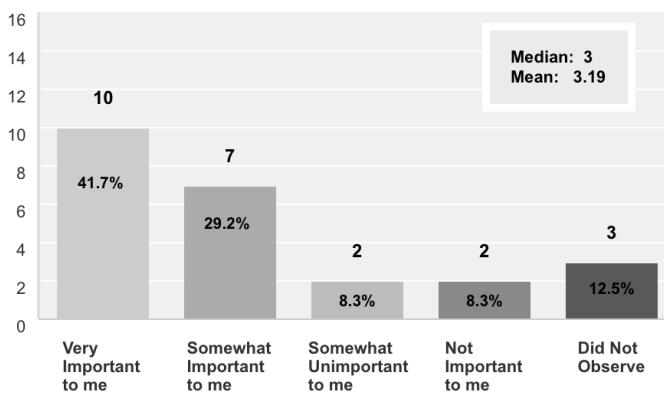


Figure 4.7: Distribution of responses to Moderator Action 3: “The moderator guides the community through disruptions or conflicts.”

Moderator action 4. The fourth survey item, “*The moderator works at keeping members involved in the community*”, indicated that nine respondents (37.5%) felt this moderator action to be very important, eleven (45.8%) found it to be somewhat important, and four (16.7%) found it to be somewhat unimportant. No respondents found this moderator action to be not important and no respondents reported that they did not observe this moderator action. The median for this distribution was 3, the mean was 3.2.

Figure 4.8 presents the distribution for this survey item.

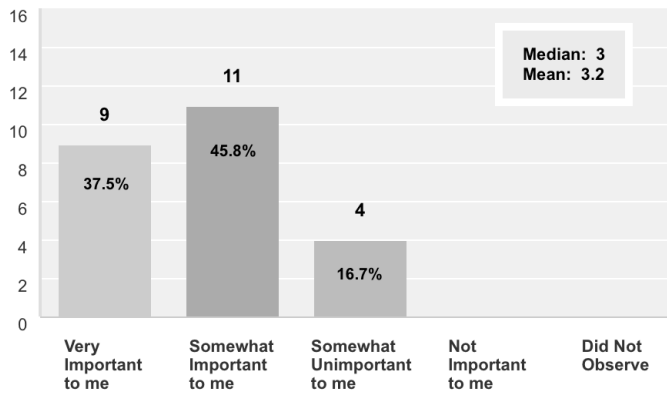


Figure 4.8: Distribution of responses to Moderator Action 4: “The moderator works at keeping members involved in the community.”

Moderator action 5. Responses to the next moderator action item, “*The moderator keeps the community energized*”, indicated that fourteen respondents (58.3%) felt this to be very important, nine (37.5%) reported it as somewhat important, and one (4.2%) found this moderator action to be somewhat unimportant. No respondents reported that this moderator action was not important and none reported that they did not observe this action. The median for this distribution was 4, the mean was 3.54. Figure 4.9 presents the distribution for this survey item.

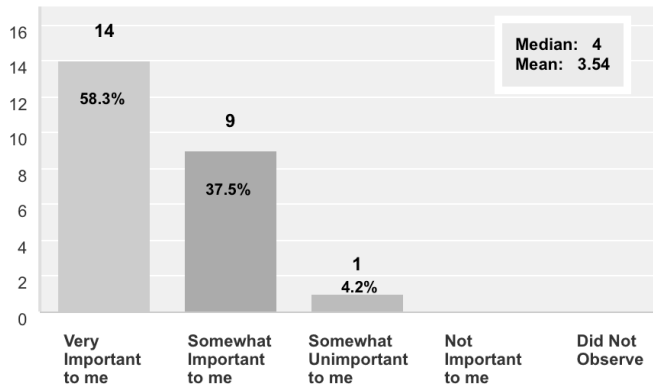


Figure 4.9: Distribution of responses to Moderator Action 5: “The moderator keeps the community energized.”

Moderator action 6. The sixth survey item related to moderator actions, “*The moderator draws in resources to support the work of the community*”, indicated that twelve respondents (50.0%) felt this moderator action to be very important, ten (41.7%) found it to be somewhat important, and two (8.3%) found it to be somewhat unimportant. No respondents indicated that this action was not important and no respondents reported that they did not observe this moderator action. The median for this distribution was 3.5, the mean was 3.42. Figure 4.10 presents the distribution for this survey item.

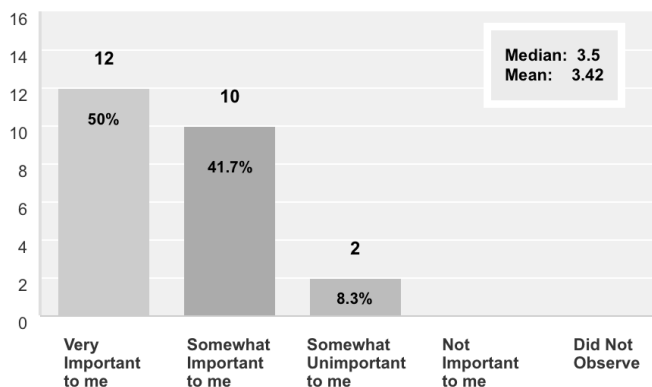


Figure 4.10: Distribution of responses to Moderator Action 6: “The moderator draws in resources to support the work of the community.”

Moderator action 7. The final survey item related to moderator actions, “*The moderator supports the members’ use of technology*”, indicated that four respondents (16.7%) felt this moderator action to be very important, sixteen (66.7%) found it to be somewhat important, two (8.3%) found it to be somewhat unimportant, and two (8.3%) found it to be not important. No respondents reported that they did not observe this moderator action. The median for this distribution was 3, the mean was 2.92. Figure 4.11 presents the distribution for this survey item.

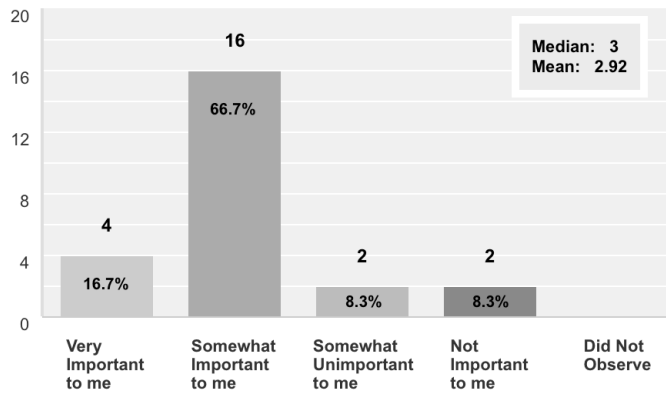


Figure 4.11: Distribution of responses to Moderator Action 7: “The moderator supports members’ use of technology.”

Research Question 2: What value do members of educator communities of practice place on particular moderator characteristics?

Using the same process described in the previous section to determine the value members place on moderator actions, seven statements were drawn from the CoP success factor literature and used to construct survey items tied to moderator characteristics or traits. These items used the same Likert-like scale that was employed for the moderator action survey items in order to determine perception of value of each of the seven

moderator characteristics with response options of: Very Important to me, Somewhat Important to me, Somewhat Unimportant to me, Not Important to me and Did Not Observe.

Research Question 2 Data Summary. The frequency of responses across the seven moderator characteristic survey items are presented in Table 4.3, along with the percentage of total responses in each response column and the percentage of very and somewhat important responses versus the percentage of somewhat unimportant and not important responses. The results for each moderator action survey item are described below. A discussion of the results will occur in the next chapter.

Table 4.3
Frequency of response for items related to Moderator Characteristics 1 - 7

	Very Important	Somewhat Important	Somewhat Unimportant	Not Important	Did Not Observe
Characteristic 1: Moderator demonstrates a passion for learning	13	10	0	1	0
Characteristic 2: Moderator demonstrates social acumen, understanding & awareness	14	8	1	0	1
Characteristic 3: Moderator demonstrates that s/he is trustworthy	16	6	1	1	0
Characteristic 4: Moderator is welcoming	14	9	0	1	0
Characteristic 5: Moderator is innovative in responding to change	10	12	1	1	0
Characteristic 6: Moderator fosters leadership from within	8	12	2	2	0

Characteristic 7: Moderator is skilled at using technology	7	13	2	2	0
Total Responses	82	70	7	8	1
% Total Responses	48.8%	41.7%	4.2%	4.8%	0.5%
% Important/Unimportant	90.5%		9.0%		

Moderator characteristic 1. Responses to the first value perception item referring to moderator characteristics, *“The moderator demonstrates a passion for learning”*, indicated that thirteen respondents (54.2%) felt this to be very important and ten (41.7%) valued this as somewhat important. No respondents reported that this moderator characteristic was moderately unimportant, and one (4.2%) found it to be not important. No respondents reported it as unobserved. The median for this distribution was 4, the mean was 3.46. Figure 4.12 presents the distribution for this survey item.

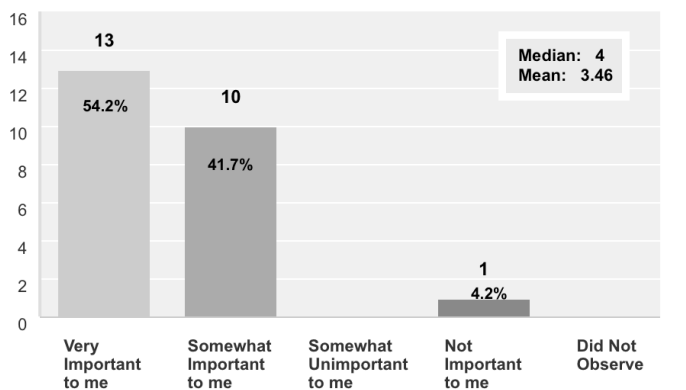


Figure 4.12: Distribution of responses to Moderator Characteristic 1: *“The moderator demonstrates a passion for learning.”*

Moderator characteristic 2. The second survey item related to moderator characteristics, *“The moderator demonstrates social acumen, understanding and awareness”*,

indicated that fourteen respondents (58.3%) felt this moderator characteristic to be very important, eight (33.3%) found it to be somewhat important, one (4.2%) found it to be somewhat unimportant, none found it to be not important and one (4.2%) did not observe this moderator characteristic at all. The median for this distribution was 4, the mean was 3.42. Figure 4.13 presents the distribution for this survey item.

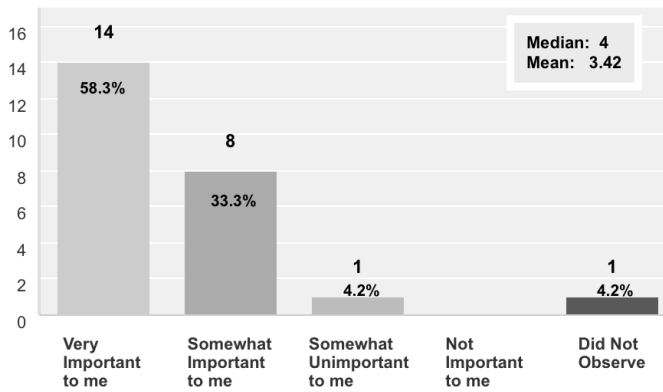


Figure 4.13: Distribution of responses to Moderator Characteristic 2: “The moderator demonstrates social acumen, understanding and awareness.”

Moderator characteristic 3. The third survey item related to moderator characteristics, “*The moderator demonstrates that s/he is trustworthy*”, indicated that sixteen respondents (66.7%) felt this moderator characteristic to be very important, six (25.0%) found it to be somewhat important, one (4.2%) found it to be somewhat unimportant, and one (4.2%) found it to be not important. No respondents indicated that they did not observe this moderator characteristic. The median for this distribution was 4, the mean was 3.54. Figure 4.14 presents the distribution for this survey item.

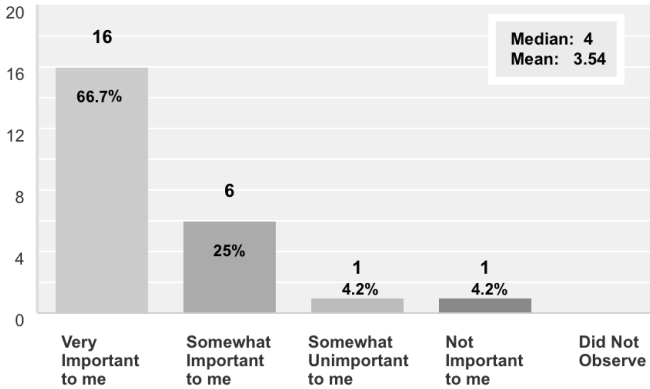


Figure 4.14: Distribution of responses to Moderator Characteristic 3: “The moderator demonstrates that s/he is trustworthy.”

Moderator characteristic 4. Responses to the next value perception item referring to moderator characteristics, “*The moderator is welcoming*”, indicated that fourteen respondents (58.3%) felt this to be very important and nine (37.5%) valued this as somewhat important. No respondents reported that this moderator characteristic was moderately unimportant, and one (4.2%) found it to be not important. No respondents reported it as unobserved. The median for this distribution was 4, the mean was 3.5.

Figure 4.15 presents the distribution for this survey item.

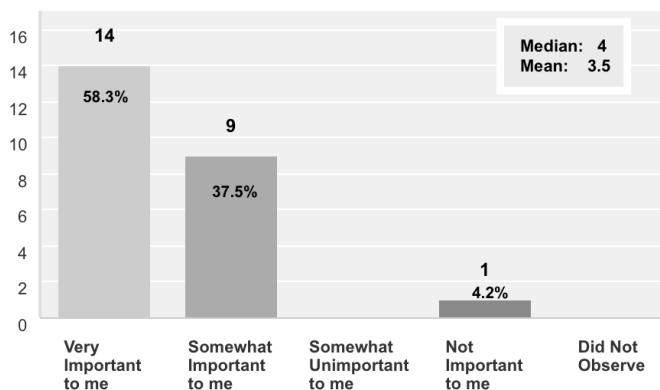


Figure 4.15: Distribution of responses to Moderator Characteristic 4: “The moderator is welcoming.”

Moderator characteristic 5. The fifth survey item related to moderator characteristics, “*The moderator is innovative in responding to change*”, indicated that ten respondents (41.7%) felt this moderator characteristic to be very important, twelve (50.0%) found it to be somewhat important, one (4.2%) found it to be somewhat unimportant, and one (4.2%) found it to be not important. No respondents reported that this characteristic was unobserved. The median for this distribution was 3, the mean was 3.29. Figure 4.16 presents the distribution for this survey item.

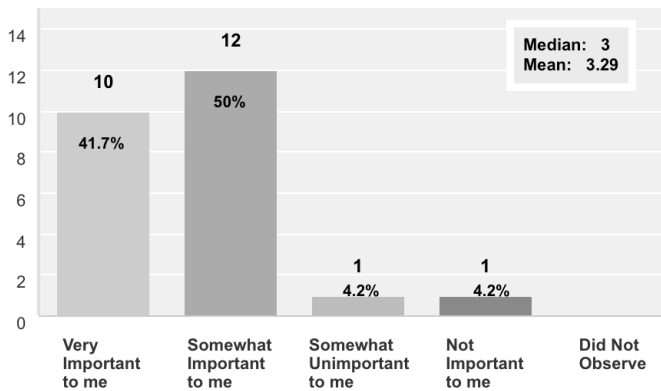


Figure 4.16: Distribution of responses to Moderator Characteristic 5: “The moderator is innovative in responding to change.”

Moderator characteristic 6. The sixth survey item related to moderator characteristics, “*The moderator fosters leadership from within*”, indicated that eight respondents (33.3%) felt this moderator characteristic to be very important, twelve (50.0%) found it to be somewhat important, two (8.3%) found it to be somewhat unimportant, and two (8.3%) found it to be not important. No respondents reported that they did not observe this moderator characteristic. The median for this distribution was 3, the mean was 3.08. Figure 4.17 presents the distribution for this survey item.

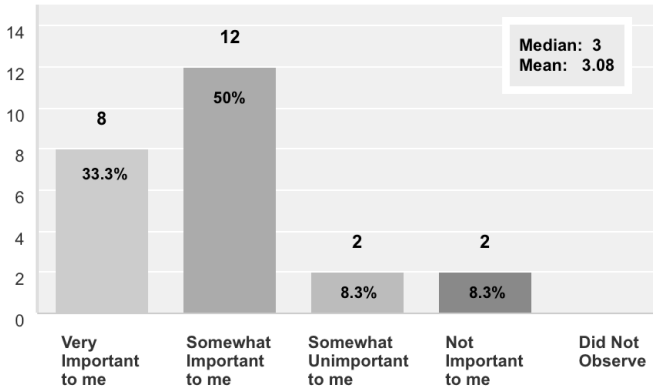


Figure 4.17: Distribution of responses to Moderator Characteristic 6: “The moderator fosters leadership from within.”

Moderator characteristic 7. The final survey item related to moderator characteristics, “*The moderator is skilled at using technology*”, indicated that seven respondents (29.2%) felt this moderator action to be very important, thirteen (54.2%) found it to be somewhat important, two (8.3%) found it to be somewhat unimportant, and two (8.3%) found it to be not important. No respondents reported that they did not observe this moderator characteristic. The median for this distribution was 3, the mean was 3.04. Figure 4.18 presents the distribution for this survey item.

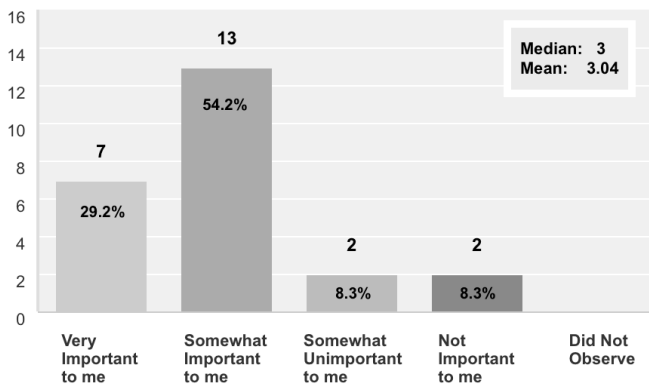


Figure 4.18: Distribution of responses to Moderator Characteristic 7: “The moderator is skilled at using technology.”

Research Question 3: Do member demographics – age, gender, years of CoP membership, technology experience - influence the value ranking of moderator actions and characteristics, and if so, how?

To analyze whether or not demographics influenced CoP members' perceived value of moderator actions or characteristics, statistical tests were run comparing the medians and means of responses to a moderator action or characteristic with responses to a demographic item. As noted earlier, after consulting the literature and reviewing the research questions, the researcher was inclined to analyze the data generated by the Likert-like scales as ordinal rather than treat the data as interval/continuous. However, as recommended by Allen & Seaman (2007) and Carifio & Perla (2007, 2008), one-way ANOVA tests based on calculated means were initially run for each paired set (the responses to a demographic item and one action or characteristic) to explore whether or not differences would appear in the parametric analysis. The next level of analysis was performed using Kruskal-Wallis Tests, characterized as "nonparametric, one-way ANOVA for rank-ordered data that are based on medians rather than means" (Vogt, 2005) and suggested by the statistical analysis literature as appropriate for analyzing ordinal data in three or more groups. The null hypothesis for each test held that there was no statistically significant difference between the responses to the items being tested with a significance level set at 0.05. Rejection of the null hypothesis therefore would indicate a significant difference between the paired items in terms of mean or median.

After analyzing the 56 paired items (four demographic items by 14 perceived value items) using the one-way ANOVA test with a significance level of 0.05, only one item pairing was found to reject the null hypothesis, that comparing the means of survey item

Moderator Characteristic 6 “*The moderator fosters leadership from within*” and dependent variable technology comfort level ($F=4.81$, $df=2$, $p=.0198$).

The comparison of the medians of the 56 paired items using Kruskal-Wallis also failed to reject the null hypotheses for all but three pairs (see Table 4.6); one of these three was the same pairing that rejected the null hypothesis when tested using the one-way ANOVA and which paired “*the moderator fosters leadership from within*” with technology comfort level. The response frequency distribution for this pairing is presented in Table 4.7 to illustrate the detailed response frequencies in this group; this illustration will be useful when discussing these results in the next chapter.

The other two pairings that showed statistical significance in the difference between medians using Kruskal-Wallace testing was “*The moderator keeps the community energized*” and the demographic item of gender, and “*The moderator demonstrates social acumen, understanding and awareness*” and the responses to the demographic item measuring member’s length of membership. Both of these results will be discussed in the discussion chapter that follows. Please note that chi-squared goodness-of-fit was not applied to these tables due to the number of cells with expected frequencies of less than one. Please also see Appendix D for full tables of group ANOVA and Kruskal-Wallace analysis results.

Table 4.4
Summary of Kruskal-Wallace Test pairings that rejected the null hypothesis

Independent variable	Dependent Variable	H	df	p
Gender	<i>A5: The moderator keeps the community energized</i>	6.04	2	0.0489
Length of Membership	<i>C2: The moderator demonstrates social acumen, understanding and awareness</i>	6.70	2	0.0352
Technology Comfort level	<i>C6: The moderator fosters leadership from within</i>	6.66	2	0.0357

Notes: .05 significance level, adjusted for ties (higher accuracy)

Table 4.5
Frequency of response by technology comfort level group to item "The moderator fosters leadership from within"

Technology Comfort Level	Very Important	Somewhat Important	Somewhat Unimportant	Not Important	Did Not Observe
Seeks out new technologies	1	4	2	2	0
Comfortable learning new technologies	6	7	0	0	0
Neither comfortable nor uncomfortable with new technologies	0	1	0	0	0
Do not like learning new technology	0	0	0	0	0
Prefer not to learn new technologies	0	0	0	0	0

Research Question 4: Are there moderator actions or characteristics not noted in the literature that are valued by members?

Two open-ended questions on the survey were used to capture any moderator actions or characteristics that may have been of value to the CoP members. At the end of the moderator actions section of the survey, the respondents were asked "Are there other moderator/coordinator actions that have been important to you as a community member? If so, please note them below." The same language was used at the end of the characteristics section to solicit any additional characteristics that respondents may wish

to have noted. This section will present a brief analysis of these two open-ended survey items.

Moderator actions. The open-ended item concerning moderator actions captured seven responses in total. Of those, three comments were found to be closely related to Moderator Action 4: “The moderator works at keeping members involved in community” (see Table 4.8). This group of comments included one that noted the importance of keeping the members aware of the CoP activities (“*schedule reminders are extremely important*”), one that spoke to keeping members engaged (“*a good moderator has smooth people skills, and is able to connect with the various participants to encourage them and help keep them engaged*” and one that spoke to both points (“*it is important to schedule, send reminders, and foster persistent participation*”).

Table 4.6
Moderator Action 4-related open-ended responses

Action 4	Related Comments
	<i>schedule reminders are extremely important</i>
The moderator works at keeping members involved in community	<i>a good moderator has smooth people skills, and is able to connect with the various participants to encourage them and help keep them engaged</i>
	<i>it is important to schedule, send reminders, and foster persistent participation</i>

One response related to survey item 6; the comment stated “*moderator keeps things flowing and goal oriented*” which was found to be in alignment with Action 2: “The moderator actively guides the quality and focus of the discussions.”

Three remaining responses were not categorized; one commented that the moderator may need to “leverage the CoP so that the upper admin is aware of what goes on

to improve student learning”, another spoke to the need for the moderator to be a subject matter expert on implementing and managing a specific educational program, and one noted that the moderator might suggest “next steps.” Figure 4.19 presents the full set of responses annotated to illustrate relationships to existing survey items.

Responses
Leveraging the CoP so that the upper admin is aware of what goes on for improve student learning.
Moderator demonstrates Subject Matter Expertise on Biosciences Bridge (or content area) program development, curriculum development, program sustainability issues, program outreach/recruitment issues, and outcome measurements to evaluate program success.
Making suggestions for "next steps" might be another action.
Q6: guides/focuses Moderator is focused on keeping the meeting flowing and goal oriented. Sidebars and deviations from the subject at hand are discouraged
Q9: keeps membrs involved Schedule reminders and coordination are extremely important
Q9: keeps membrs involved The moderator/coordinator needs to be very well organized - because often time the participants are not! This is especially true if we are talking about an online CoP. It is very easy to let online comittments slide, or for participation to slacken when other things intrude on our time and vie for priority. A good moderator has smooth people skills, and is able to connect with the various participants to encourage them and help keep them engaged.
Q9: keeps membrs involved It is important to schedule, send reminders, and foster persistent participation.

Figure 4.19: Comments in response to open-ended survey item soliciting moderator actions not yet mentioned with annotation.

Moderator characteristics. The open-ended item capturing potentially missing moderator characteristics recorded four comments from respondents (see Figure 4.20). Two of the responses were determined to be close in intent to items on the survey. The first of these comments noted a desirable moderator characteristic might be an “encouraging, positive mentality”; this is seen as an extension of Moderator Characteristic 4, “the moderator is welcoming” which is derived from the CoP literature. The second comment, “the moderator must become familiar with the members’ interests and

application of the community”, might also fit under Characteristic 4 but for the purpose of this analysis is considered an extension of Moderator Characteristic 2, “the moderator demonstrates social acumen, understanding and awareness”. The other two comments, “The moderator...presents evidence based research in the best practices of CoP”, and “the moderator has the stature/reputation to attract knowledgeable enthusiastic people as member of the community” will be discussed in Chapter 5.

Responses
The moderator is aware of and presents evidence based research in the best practices of CoP.
Encouraging, positive mentality
The moderator has the stature/reputation to attract knowledgeable enthusiastic people as members of the community
The moderator must become familiar with the members' interests and application of the community.

Figure 4.20: Comments in response to open-ended survey item soliciting moderator characteristics not yet mentioned.

Summary

This chapter has presented the results of the statistical analysis of the data collected in response to the survey instrument. Chapter 5 will discuss these findings, present recommendations and conclusions, and provide an overall summary of the study.

CHAPTER 5: DISCUSSION

The community of practice (CoP) social/collaborative learning model has been widely adopted since its introduction by Jean Lave and Etienne Wenger in 1991, with growth spurred on as practitioner groups increasingly leverage technology to overcome geographically dispersed memberships. This study has sought to contribute to the body of literature concerned with the support and management of communities of practice in the

education sector in particular by examining the role of the moderator from the perspective of the membership in such groups.

This final chapter presents a summary of the study along with conclusions drawn from the data analysis detailed in the previous chapter. Summary statements for each research question are then followed by a discussion of implications for action and recommendations for future study. A formal conclusion brings the chapter, and paper, to a close.

Study Summary

Educator communities of practice have become popular as arenas for educator professional development and as venues for developing distributed expertise, collaborative knowledge building and professional social networking. The online environment in particular is charged with providing peer connectivity regardless of proximity yet the literature indicates that there is still much to be learned about launching, growing, sustaining and evolving communities of practice that occur at least in part online.

In reviewing the literature on CoP success factors, the researcher found the factors to be well described using four summative categories that also fit within the study's theoretical framework as defined by the Community of Practice Structural Framework and the social capital framework adapted by Lesser and Storck (2001); these categories group together factors that 1) foster and support critical inquiry, 2) cultivate and encourage mutual engagement, 3) develop and support community sustainability and 4) present an architecture that supports member participation.

The literature also persistently indicated the role of moderator or facilitator in communities of practice as a crucial element for CoP success; this factor fit within and

across all four summative categories. However, distinct actions and characteristics of the CoP moderator have only recently begun to be defined and very little is suggested concerning the impact of these actions and characteristics on the CoP, especially from the perspective of members. As a result, this study sought to determine the value CoP members place on various moderator actions and characteristics, drawn from the literature and representing the four categories of success factors, and how member demographics may influence these value perceptions.

The following research questions have framed this study:

1. What value do members of educator communities of practice place on particular moderator actions?
2. What value do members of educator communities of practice place on particular moderator characteristics?
3. Do member demographics – age, gender, years of CoP membership, technology experience - influence the value ranking of moderator actions and characteristics, and if so, how?
4. Are there moderator actions or characteristics not noted in the literature that are valued by members?

Survey methodology was determined to be the most expedient and direct method to reach the research goals after consulting the literature; web-based survey methodology in particular was selected given the online nature of these communities. The target population was defined as United States-based technical workforce educators who are members of CoPs whose domain is that of educator professional development and the development of pedagogical content knowledge. The survey population was drawn from a

set of three educator CoPs that met the above criteria in addition to providing variation in the number of members, geographical distribution of members, and diversity in terms of age, gender, and length of association with the community of practice.

The survey instrument consisted of an introductory section through which informed consent was secured, followed by screening questions that ensured that respondents fit the criteria for the study (educator, member/participant of educator CoP, currency of membership). “Moderator action” and “moderator characteristic” pages followed the introductory section, each presenting a series of seven items concerning moderator actions or characteristics, respectively, as drawn from CoP success factor literature. Response options for all value perception items were Likert-formatted responses of “Very important to me”, “Somewhat important to me”, “Somewhat unimportant to me”, “Not important to me”, “Did Not Observe” and “Prefer Not to Answer.” The final item on each page provided an open-ended text response area to allow respondents to note additional moderator actions or characteristics they found important and to reduce cognitive dissonance due to missing options. Following the moderator action and characteristics pages, demographic items collected information necessary for analyzing the influence these variables may have had on the subjects’ perceived value responses.

Discussion of Results

Of the eighty-four subjects initially invited to participate in this study, forty-six responded. After twenty respondents were screened out as non-educators or as performing a role within the CoP other than that of member, twenty-three participants completed the survey in full with one additional respondent completing all but the demographic items

The response rate of 54.8% and completion rate of 50% met the criteria initially set when establishing the sample size; the response rate in particular was considered generous given that web-based surveys traditionally experience much lower response and completion rates. However, at N=24, this was a small study with some challenges in terms of generalizing results but the data collected does appear to support initial findings. The next segment will examine results as they pertain to each of the four research questions.

Research Question 1

The first research question asks: What value do members of educator communities of practice place on particular moderator actions? Likert response formatted items collected this information on seven moderator actions; results were examined using frequency of response as the primary measure. The data clearly indicated that respondents self-reported all seven of the moderator actions as important; overall, 88.6% of the responses recorded in the “very important” and “somewhat important” categories and only 8.9% recorded in the “somewhat unimportant” or “not important” categories.

Descriptive statistics (median, mean) were also calculated based on these response frequencies. Table 5.1 presents the seven items related to moderator actions in descending rank order of response median and mean. Given that none of the medians are below a 3, and only one mean dips below that mark, the data indicates that all of the actions are of importance to respondents.

Table 5.1

Moderator Actions 1 – 7 response items in order of response median and mean

		Median	Mean
Action 2	Moderator creates connections between knowledge seekers and experts	4	3.56
Action 5	Moderator keeps community energized	4	3.54
Action 1	Moderator actively guides the quality and focus of discussions	3.5	3.5
Action 6	Moderator draws in resources to support the work of the community	3.5	3.42
Action 4	Moderator works at keeping members involved in the community	3	3.2
Action 3	Moderator guides the community through disruptions or conflicts	3	3.19
Action 7	Moderator supports the members' use of technology	3	2.92

The response item with the lowest mean is Action 7 which asks about the importance of technology support offered by the moderator to members. The slightly reduced importance rating of this item may be related to the relative ease with adopting and using technology that is self-reported by this particular sample group. The response frequencies to the demographic item “how comfortable are you with learning new technologies?” indicated that 95.6% of the respondents felt at ease with technology and in particular learning to use new technologies; 56.5% reported “I am comfortable learning new technologies” and 39.1% reported “I seek out new technologies to learn.” While there may be other factors at play, it would make sense that a respondent who is comfortable with technology and perhaps even pursues new technologies would rate technology support as a little less important than other moderator actions. It would be interesting to see if the response frequencies for this particular moderator action would change if the

members instead reported that they find technology challenging or something with which they prefer not to engage.

The results of this small study indicate no statistical difference between the items and thus suggest that members find all provided moderator actions across the categories as informed by the literature to be important and of value. Future studies in this area may seek to identify actions that are not viewed as favorably as these, or might pursue the relationship between these moderator actions and the overall success and effectiveness of the CoP.

Research Question 2

The second research question is similar to the first but asks: What value do members of educator communities of practice place on particular moderator characteristics? Likert response formatted items were again employed to collect subjects' responses regarding seven moderator characteristics; as with the moderator actions, results were examined using frequency of response as the primary measure. The data again clearly indicated that all seven of the moderator characteristics were important to the respondents with 90.5% of the responses recorded in the "very important" and "somewhat important" categories and only 9.0% recorded in the "somewhat unimportant" or "not important" categories.

Descriptive statistics (median, mean) were also calculated based on these response frequencies. Table 5.2 presents the seven items related to moderator characteristics again in descending rank order of response median and mean. As with the moderator actions, we see that none of the medians are below a 3 yet, in this case, none of the means drop below 3 either, which indicates that all of the characteristics are of importance to respondents.

Table 5.2

Moderator Characteristics 1 – 7 response items in order of response median and mean

		Median	Mean
Characteristic 3	Moderator demonstrates that s/he is trustworthy.	4	3.54
Characteristic 4	Moderator is welcoming.	4	3.50
Characteristic 1	Moderator demonstrates a passion for learning.	4	3.46
Characteristic 2	Moderator demonstrates social acumen, understanding and awareness.	4	3.42
Characteristic 5	Moderator is innovative in responding to change.	3	3.29
Characteristic 6	Moderator fosters leadership from within.	3	3.08
Characteristic 7	Moderator skilled at using technology	3	3.04

The top four response items relate to the structural and relational dimensions of social capital in that they concern characteristics that bring members together and deepen their connections; the bottom three characteristics appear to be more closely related to the administration of the CoP. These two groups, characteristics 1-4 and 5-7, were analyzed to determine if a statistically significant difference might exist between these two however, the comparison of the pooled means and standard deviations did not reject the null hypothesis that no difference existed. Characteristic 7, much like Action 7, concerns the moderator's skill with technology however in this case the question is concerned with whether having a technologically adept moderator is of importance rather than whether or not they are able to support members with technology. Again, it may be that the survey population's relatively high levels of self-reported technology aptitude have resulted in less

emphasis being placed on moderator technological acumen. Interestingly, the importance rating for the action of the moderator providing technological support received slightly less importance than having a moderator who is generally skilled at technology; further studies would be necessary to tease out why this is so.

As with the question about moderator actions, the results of this portion of the survey indicate no statistical significance between the items and that members find all the listed moderator characteristics, which represent the summative categories of success factors for CoPs, to be important and of value.

Research Question 3

The third research question asks: Do member demographics – age, gender, years of CoP membership, technology experience - influence the value ranking of moderator actions and characteristics, and if so, how? Frequency tables will not suffice in determining if a relationship exists between respondent demographics and value perception statements so after consulting the literature, one-way ANOVAs (F-tests) were run on each demographic - value perception item pairings, followed by a Kruskal-Wallis test. All 56 pairs were evaluated using this two-step procedure; a significance level of 0.05 was assumed and the null hypothesis for each test held that there was no statistically significant difference in the means (ANOVA) or medians (Kruskal-Wallis) between the groups being tested.

Only one group rejected the null hypothesis under both parametric and nonparametric testing: this was the group pairing the value perception item for characteristic C6, “The moderator fosters leadership from within,” with self-reported technology comfort level. It is unclear to the researcher why this group would show significance as the amount of self-reported ease with technology seems unrelated to a

measure related to the moderator’s involvement with group’s evolution of governance. Further study, including interviews of subjects, would likely be required to determine if this was a false positive and if not, to better understand this statistically significant difference between means and medians.

Two other groups rejected the null hypothesis when analyzed using the Kruskal-Wallace test. The first group paired moderator action A5 “The moderator keeps the community energized”, with the gender demographic; the frequency distribution of responses is illustrated in Table 5.3. It is clear from the table that five of the female-identified responders ranked this action as “very important” while slightly less than half the male respondents reported this to be “very important.” It would be tempting to conclude that it is more important to female CoP members than male CoP members that the moderator energize the group but with such a small group size, such a conclusion would be difficult to defend.

Table 5.3
Frequency of response by gender group to item “The moderator keeps the community energized”

Gender	Very Important	Somewhat Important	Somewhat Unimportant	Not Important	Did Not Observe
Female	5	0	2	0	
Male	7	8	2	0	
Prefer not to answer	2	0	2	0	

An additional point of interest with this particular group is the amount of influence the two respondents who declined to indicate their gender - and who both ranked this moderator action as “somewhat unimportant” - would have had on findings of significance

should their gender be known. Assigning a female gender to the two gender-undeclared respondents and re-running the Kruskal-Wallis test lowers the p-value and sustains the rejection of the null hypothesis; no difference in the outcome. However, assigning a male gender to the gender-undeclared respondents results in the rejection of the null hypothesis and a finding that there is no significant difference between the medians of the two groups in relationship to A5. While this is of course an academic exercise and no suggestion is being made that data be replaced or manipulated in such a way, it does illustrate how the small size of the sample and the even smaller numbers in sub-sets of the sample can be greatly influenced by very small changes. This is a concern throughout the study.

The last group that rejected the null after the Kruskal-Wallis testing is the group that paired moderator characteristic C2, “The moderator demonstrates social acumen, understanding and awareness”, with the length of CoP membership demographic. In this case, 11 out of 14 responses (78.6%) of “very important” were received from respondents who had 3+ years of membership in their CoPs and who represented 11 out of the 23 (47.8%) responses received overall (see Table 5.4). For this sample, it is clear that those respondents with longer terms of involvement with CoPs felt that social acumen in a moderator was quite important and valuable.

Table 5.4
Frequency of response by length of CoP membership group to item “The moderator demonstrates social acumen, understanding and awareness”

Length of Cop Membership	Very Important	Somewhat Important	Somewhat Unimportant	Not Important	Did Not Observe
3+ years	11	1	1	0	1
2-3 years	3	1	0	0	0
1-2 years	0	5	0	0	0
6 months – 1 year	0	0	0	0	0

0 – 6 months	0	0	0	0	0
Did not observe	0	0	0	0	0

In summary, statistically significant differences were found between the means and medians of one group, and the medians of two others, however given the small N for each test, the results would need to be repeated with larger groups prior to concluding that these effects were reportable or that demographics influenced the value placed by members on moderator actions and characteristics. The only possible exception to this would be the group that paired moderator social acumen and length of CoP membership but again, and unfortunately, the small sample size limits the generalizability of this result.

Research Question 4

The fourth research question asks: Are there moderator actions or characteristics not noted in the literature that are valued by members? Given that the survey’s value perception items were derived from the literature, this question was investigated by adding open-ended text questions to capture any moderator actions or characteristics that may have been of value to the CoP members. Because these were open text items, text analysis procedures were used to analyze, categorize and summarize the comments.

Suggested moderator actions. Seven comments were received regarding moderator actions by the open-ended survey item. Upon analysis, as detailed in Chapter 4, three were found to be close enough in intent to fit within Moderator Action 4: “The moderator works at keeping members involved in community” and one was determined to be related to survey item 6: “The moderator actively guides the quality and focus of the

discussions”. This left three responses that were not categorized into existing items on the survey which we will now examine to see if they may point to new directions or fit into the summative categories of success factors discussed earlier.

The first comment was that the moderator may need to “leverage the CoP so that the upper admin is aware of what goes on to improve student learning”. The task of CoP advocacy concerning gains in student achievement does not appear in the literature as a usual duty for a CoP moderator. While this may be true for a moderator serving multiple roles, for example acting also as CoP institutional sponsor and/or administrator, this responsibility would not necessarily fit globally under the moderator duties. It could also be argued that the instructional staff themselves may have access to more examples, in addition to an educator CoP, of what “goes on to improve student learning” that might be shared with their upper administration and perhaps this is what is meant by “leverage”, however this is unclear. On the other hand, within the category of cultivating a culture of sustainability, a moderator may well need to advocate on behalf of the CoP to secure resources, for example, or to recruit members, but this is seen as quite different from taking on the job of communicating the efforts being made to improve learning. While clearly valuable to this respondent, this action is not necessarily a good fit for the moderator role.

The second comment spoke to the need for the moderator to be a subject matter expert on implementing and managing a specific educational program. This might be expanded to say that it is beneficial if the moderator is a subject matter expert in the domain of the CoP, a statement to which a number of CoP researchers would agree, including the author of this study. There has been little research into this claim, however,

and studies examining the impact of domain expertise on moderator effectiveness would help determine if this indeed would be a moderator strength. While this moderator characteristic (for it is more a characteristic than an action) is noted in some of the literature, this is indeed good feedback from the member perspective on something they value.

Lastly, one respondent noted that the moderator might “suggestions for next steps.” As this is a rather vague suggestion, it was difficult to tell whether or not this action might fit under one of the survey items; conceivably it might be included in “the moderator actively guides the quality and focus of discussions”, or “the moderator guides the community through disruptions or conflicts” or even “the moderator draws in resources to support the work of the community.” Suggesting next steps might also be part of fostering mutual engagement, critical inquiry or community sustainability. As stated however, the comment was not made clear enough to be considered as a stand-alone moderator action.

Suggested moderator characteristics. Four comments were recorded by the open-ended item that sought to capture moderator characteristics that respondents felt were important to them and not represented on the survey. Two of the responses were determined to be close enough in intent to items on the survey that they fit within two of the existing moderator characteristics. A discussion of the remaining two comments will now commence.

The first comment, “the moderator is aware of and presents evidence based research in the best practices of CoP” is interesting in that it evokes a meta role for the moderator as CoP expert in addition to other duties and tasks. While the literature appears to assume that the moderator would indeed be knowledgeable about CoP best practices,

this characteristic is very rarely presented as an attribute of a moderator; this comment therefore presents something new in its approach. There is also a moderator action embedded in the respondent's comment ("presents...research") that fits less easily into a category and may not be a good candidate for an overarching moderator action.

Presenting research on CoP practices may well encourage members to better support the CoP and even adopt leadership roles; this would fit well within the summative success factor category of supporting and developing community sustainability. However, CoP members may prefer to focus on the domain-based interactions and resource sharing that brought them to the CoP in the first place and take umbrage at time and energy being spent by the CoP moderator on presenting the "best practices of CoP". Therefore, the usefulness of the action aspect of this comment would likely depend on the CoP and its members.

The second comment relates to community building and as such fits well within the category of cultivating a culture of mutual engagement, which has as a component "building a membership". The comment reads "the moderator has the stature/reputation to attract knowledgeable enthusiastic people as members of the community". While the survey items did not reflect this critical moderator task due to space limitations and concerns for respondent overload, the literature and summative success factor categories certainly do.

In summary, of the eleven comments contributed by respondents, six were considered to be related closely to survey items and, by extension, already present. Five remained; one was deemed to be outside the role of moderator and more in keeping with the role of CoP administrator or even the instructional staff themselves. One was too vague to be analyzed, and one fit cleanly into a summative category and success factor heading (culture of mutual engagement/building a membership) but was not on the survey due to

limitations and concerns for survey fatigue. The remaining two comments illuminated moderator considerations missing in the literature, the summative categories, and the survey items: the first by suggesting that the moderator should be a domain-related subject matter expert and the other by recommending that the moderator explicitly play the role of CoP expert. These two comments provide direction for further study in addition to new perspective as to what is important to members.

Summary of Results

The study results appear to indicate that, in terms of the moderator actions and characteristics that were presented to the survey respondents, all were important to the survey participants. In addition, there may be a relationship between longevity of CoP membership and perceived value of social acumen on the part of the moderator, and between gender and the moderator's efforts to keep the community energized. However, as these results were based on a small sample population, further research would be needed before these results could be generalized. Lastly, at least one respondent noted that it was important that the moderator have content-specific expertise and another commented that the moderator should embrace the role of CoP expert for the group. These two characteristics were not included in the success factors or summative categories of success factors so present an opportunity for further research.

Conclusions

Study Limitations

Clearly the greatest limitation for this study was the small number of completions; the response rate was strong but the lack of pre-screening by the list providers clearly did

not eliminate those invitees who did not fit the study target population hence a rather large number of potential respondents were screened out within the first several items of the survey. While the final response frequencies did indicate preferences and trends, the low numbers compromised the calculations required for analysis. Additionally, the responses for Research Question 4 (Are there moderator actions or characteristics not noted in the literature that are valued by members?) were especially limited and may be better investigated using a mixed methods approach that could incorporate focus groups and/or follow-up interviews to tease out greater variety and depth in responses.

Another limitation was the use of Likert-type response items which resulted in data that was essentially ordinal rather than continuous, which in turn limited the type of data analysis that could be performed. Future survey design should incorporate true Likert scales, which require the integration of multiple like items that, upon analysis, are combined into composite items; these composites can then be treated as interval data and analyzed as such.

Lastly, the study presented a very limited set of moderator characteristics and actions; in addition, most of these were framed in a positive manner. It may have been useful to incorporate a greater number of actions and characteristics and to reverse some of the survey items to avoid a response bias of reporting only positive responses.

Implications and Recommendations for Future Research

The results of this study are, first and foremost, useful to community of practice practitioners. Administrators and moderators can review the moderator actions and characteristics that the study has presented, be assured that they were found to be

important and valuable by the study respondents, and develop plans to implement, incorporate, or modify their own list of actions and characteristics that can better the work they are doing with their communities. Members of CoPs can also use the results to open a dialogue amongst themselves and with their moderator(s); what on the actions or characteristics lists might be useful to them as members and how might they be implemented?

In terms of future research, this study will hopefully spur on continued investigation into the arena of community of practice moderation. The open-ended items which allowed CoP members to comment on actions and characteristics that they found to be important and valuable turned up vital questions about the moderator's role as CoP expert and whether or not it was necessary for the moderator to be a domain-subject expert. More research is needed on these topics as well as deeper research into the actual work that moderators do, and the impact this work has on CoP effectiveness and outcomes.

In addition, this study suggests a number of related research questions whose investigation may be beneficial to the field, for example: Is there a distinction between member perception of value to the community and realized value to the community? Are there moderator activities that are predictive of community success that community members do not value? Are there moderator activities that are highly valued by the community but that are also predictive of community failure? These are but a few of the avenues opened for future research as a result of this initial study.

Final Remarks

This study has attempted to identify the perceived value CoP members assign to specific moderator actions and characteristics identified as corresponding to CoP success,

and to examine the influence member demographics may have on the member value perceptions. The results, which indicate that members appear to value all presented moderator actions and characteristics, will be applied to my own work in supporting groups that seek to establish a community of practice and will also inform the construction of a concise “job aid” for moderators with whom I work. Future investigations into the role of the moderator as CoP expert and subject/content matter expert will also shape the implementation of supports going forward. And while the small completion numbers in this study hampered the analysis of the data somewhat, enough consistency was observed to inform this practice and future studies.

It will also be interesting to see how the evolution and adoption of synchronous web-based connective platforms and software may impact the work of a community of practice that does some or most of its work online and, subsequently, impact the role of the moderator. Might the actions and characteristics gleaned from the CoP success factor literature be eclipsed by new or different moderator actions or characteristics needed for synchronously connecting members across distances? This may also prove to be a rich area for future research.

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APPENDIX A: FULL SURVEY INSTRUMENT

Survey Introduction & Participant Consent

Thank you for your willingness to participate in this effort to increase our collective understanding of the coordinator/moderator role in support of educator communities of practice.

- The survey should take approximately **10 minutes** to complete.
- Participation in this study is **completely voluntary**. You may withdraw at any time.
- Once past the preliminary screening questions, you are **free to skip any question** that you choose.
- Your responses will be kept **completely confidential**; no identifying data about you, your group or your moderator will be requested. Reporting will be done in the aggregate. Your email address will be used only to track completions.
- The survey will present seven actions then seven characteristics of a moderator/coordinator and ask that you report how valuable each is/was to you. The last set of four questions are simple demographics.
- **Once you complete the survey, you will not be contacted again.** However, if you wish to be contacted with survey results or are interested in participating in follow-up interviews, please provide your name and preferred contact info when prompted at the end of the survey.

If you have any concerns, suggestions or questions, please contact lead researcher Mary Slowinski (University of Washington College of Education, mslow@uw.edu.) You may also contact UW Human Subjects Division (206 543-0098; hsdinfo@uw.edu) for any complaints or concerns regarding subject rights.

Your input is greatly appreciated and will be very useful in supporting educator communities of practice nationwide. Thank you for your time!

Response Required

By clicking "I agree" below, I indicate that I am at least 18 years old, I have read and understood this consent form, and I agree to participate in this research study.

- I Agree
- I Do Not Agree

Preliminary Screening Questions

Are you a full-time or part-time educator (instructor, faculty member, teacher, trainer, etc)?

- Full-time educator
- Part-time educator
- Not an educator

Preliminary Screening Questions

Are you currently a member of an online community of practice for educators or similar networked group?

- Yes
- No

Preliminary Screening Questions

Have you been a member of a community of practice for educators or similar networked group of educators in the past five years?

- Yes
- No

Preliminary Screening Questions

What has been your primary role in your community of practice?

- Member or participant
- Moderator or facilitator
- Administrator or organizational lead

Process and Definitions

The next two pages will present seven actions and then seven characteristics that research has identified as relevant when analyzing the work of online community of practice (CoP) moderators.

- "*Moderator*" refers to the person who acts as the primary facilitator for the group. Alternate titles include coordinator, facilitator and/or organizer.
- "*Actions*" are observable activities performed by the moderator in their role as online facilitator.
- "*Characteristics*" are traits or behaviors demonstrated by the moderator in their interactions with the group.

Please click NEXT to proceed.

MODERATOR ACTIONS

Research indicates that the following ACTIONS are commonly employed by moderators/coordinators to manage communities of practice. Please indicate how important each moderator action is (or was) to you as a member/participant.

Action 1: The moderator actively guides the quality and focus of discussions.

- | | |
|--|--|
| <input type="radio"/> Very Important to me | <input type="radio"/> Not Important to me |
| <input type="radio"/> Somewhat Important to me | <input type="radio"/> Did Not Observe |
| <input type="radio"/> Somewhat Unimportant to me | <input type="radio"/> Prefer Not to Answer |

Action 2: The moderator creates connections between knowledge seekers and experts

- | | |
|--|--|
| <input type="radio"/> Very Important to me | <input type="radio"/> Not Important to me |
| <input type="radio"/> Somewhat Important to me | <input type="radio"/> Did Not Observe |
| <input type="radio"/> Somewhat Unimportant to me | <input type="radio"/> Prefer Not to Answer |

Action 3: The moderator guides the community through disruptions or conflicts.

- | | |
|--|--|
| <input type="radio"/> Very Important to me | <input type="radio"/> Not Important to me |
| <input type="radio"/> Somewhat Important to me | <input type="radio"/> Did Not Observe |
| <input type="radio"/> Somewhat Unimportant to me | <input type="radio"/> Prefer Not to Answer |

Action 4: The moderator works at keeping members involved in community.

- | | |
|--|--|
| <input type="radio"/> Very Important to me | <input type="radio"/> Not Important to me |
| <input type="radio"/> Somewhat Important to me | <input type="radio"/> Did Not Observe |
| <input type="radio"/> Somewhat Unimportant to me | <input type="radio"/> Prefer Not to Answer |

Action 5: The moderator keeps the community energized and active.

- | | |
|--|--|
| <input type="radio"/> Very Important to me | <input type="radio"/> Not Important to me |
| <input type="radio"/> Somewhat Important to me | <input type="radio"/> Did Not Observe |
| <input type="radio"/> Somewhat Unimportant to me | <input type="radio"/> Prefer Not to Answer |

Action 6: The moderator draws in resources to support the work of the community.

- | | |
|--|--|
| <input type="radio"/> Very Important to me | <input type="radio"/> Not Important to me |
| <input type="radio"/> Somewhat Important to me | <input type="radio"/> Did Not Observe |
| <input type="radio"/> Somewhat Unimportant to me | <input type="radio"/> Prefer Not to Answer |

Action 7: The moderator supports the members' use of the technology.

- | | |
|--|--|
| <input type="radio"/> Very Important to me | <input type="radio"/> Not Important to me |
| <input type="radio"/> Somewhat Important to me | <input type="radio"/> Did Not Observe |
| <input type="radio"/> Somewhat Unimportant to me | <input type="radio"/> Prefer Not to Answer |

Are there other moderator/coordinator actions that have been important to you as a community member? If so, please note them here.

MODERATOR CHARACTERISTICS

Research indicates that the following CHARACTERISTICS are commonly employed by moderators/coordinators to manage communities of practice.

**Please indicate how important each moderator characteristic
is (or was) to you as a member/participant.**

Characteristic 1: The moderator demonstrates a passion for learning.

- | | |
|--|--|
| <input type="radio"/> Very Important to me | <input type="radio"/> Not Important to me |
| <input type="radio"/> Somewhat Important to me | <input type="radio"/> Did Not Observe |
| <input type="radio"/> Somewhat Unimportant to me | <input type="radio"/> Prefer Not to Answer |

Characteristic 2: The moderator demonstrates social acumen, understanding and awareness.

- | | |
|--|--|
| <input type="radio"/> Very Important to me | <input type="radio"/> Not Important to me |
| <input type="radio"/> Somewhat Important to me | <input type="radio"/> Did Not Observe |
| <input type="radio"/> Somewhat Unimportant to me | <input type="radio"/> Prefer Not to Answer |

Characteristic 3: The moderator demonstrates that s/he is trustworthy.

- | | |
|--|--|
| <input type="radio"/> Very Important to me | <input type="radio"/> Not Important to me |
| <input type="radio"/> Somewhat Important to me | <input type="radio"/> Did Not Observe |
| <input type="radio"/> Somewhat Unimportant to me | <input type="radio"/> Prefer Not to Answer |

Characteristic 4: The moderator is welcoming.

- | | |
|--|--|
| <input type="radio"/> Very Important to me | <input type="radio"/> Not Important to me |
| <input type="radio"/> Somewhat Important to me | <input type="radio"/> Did Not Observe |
| <input type="radio"/> Somewhat Unimportant to me | <input type="radio"/> Prefer Not to Answer |

Characteristic 5: The moderator is innovative in responding to change.

- | | |
|--|--|
| <input type="radio"/> Very Important to me | <input type="radio"/> Not Important to me |
| <input type="radio"/> Somewhat Important to me | <input type="radio"/> Did Not Observe |
| <input type="radio"/> Somewhat Unimportant to me | <input type="radio"/> Prefer Not to Answer |

Characteristic 6: The moderator fosters leadership from within.

- | | |
|--|--|
| <input type="radio"/> Very Important to me | <input type="radio"/> Not Important to me |
| <input type="radio"/> Somewhat Important to me | <input type="radio"/> Did Not Observe |
| <input type="radio"/> Somewhat Unimportant to me | <input type="radio"/> Prefer Not to Answer |

Characteristic 7: The moderator is skilled at using technology.

- | | |
|--|--|
| <input type="radio"/> Very Important to me | <input type="radio"/> Not Important to me |
| <input type="radio"/> Somewhat Important to me | <input type="radio"/> Did Not Observe |
| <input type="radio"/> Somewhat Unimportant to me | <input type="radio"/> Prefer Not to Answer |

Are there other moderator/coordinator characteristics that have been important to you as a community member? If so, please note them here.

DEMOGRAPHIC INFORMATION

This information will help us to better understand the impact of moderator actions and characteristics across demographic groups.

How long have you been a member of your current community or network of educators?

- More than 3 years
- 2-3 years
- 1-2 years
- 6 months – 1 year
- Less than six months

What is your primary discipline area?

- Information Technology
- Computer Science
- Engineering
- Renewable Energy and Efficiency
- BioTechnology
- Other (please specify)

How comfortable are you with learning new technologies?

- I seek out new technologies to learn
- I feel comfortable with learning new technologies
- I feel neither uncomfortable nor comfortable with new technologies
- I don't particularly like learning new technologies but will do so if necessary
- I prefer not to learn new technologies
- Prefer not to answer

To which age group do you belong?

- under 18
- 18-30
- 31-50
- 51-70
- 71+
- Prefer not to answer

What is your gender?

- Female
- Male
- Identify as neither or other
- Prefer not to answer

No Consent Received

Your response indicates that you are not able and/or willing to consent to the guidelines for this study.

Please click NEXT to exit the survey.

Non-Qualified Respondent

This survey is intended to measure the impact of moderator actions and qualities on educator/participants within educator communities of practice.

Your response(s) indicates that you are not in the group whose experiences we are attempting to measure; either you are not identifying yourself as an educator, you are performing a role other than participant in a Community of Practice (CoP), or you have not been active in a CoP within the past five years.

While your interest and time is appreciated, your responses are not eligible for this particular study.

Thank you again and goodbye.

CONCLUSION

Thank you again for your time and for providing your insights into the role of moderator in educator communities of practice. Your participation is valuable to the greater community as we strive to increase the effectiveness of our work together!

Please contact Mary Slowinski (mslow@uw.edu) if you have questions, concerns or suggestions about this survey or this research.

OPTIONAL:

If you would like to receive email updates on about this research project or are willing to participate in post-survey follow-up interviews, please provide your information below. We will not contact you again without your consent!

Follow-Up Participation Interest

- No, I am not interested in receiving follow-up information regarding this research
- Yes, please keep me informed of the status of this research.
- Yes, I would be willing to participate in follow-up interviews.

Contact Information (if yes)

Last name	<input type="text"/>
First name	<input type="text"/>
Email Address	<input type="text"/>
Phone	<input type="text"/>

APPENDIX B: SURVEY PILOT TEST FEEDBACK FORM

- 1) **Access:** How easy was it to access the survey? Did the URL make sense?

- 2) **Intro/consent:** Was the initial instruction/consent page easy to comprehend? Was it too long or too brief? Was there any information missing that should have been included, or too much information? Do you have any other input regarding the initial information/consent page?

- 3) **Screening questions:** Were the screening questions clear and easy to answer? If you were forwarded to an exit page, did you find the explanation satisfactory? Do you have any other comments regarding the screening questions?

- 4) **Moderator actions and characteristics:** Were the pages with the seven questions regarding moderator actions and characteristics clear and easy to advance through? Were any elements confusing? How might these pages be better constructed? Any other comments?

- 5) **Demographic info:** Did the demographic questions demonstrate sensitivity and clarity? Do you have any suggestions about these questions?

- 6) **Overall:** Was the experience smooth or were there issues? How long do you think this survey might take to complete? Do you have any suggestions or comments about the survey overall?

APPENDIX C: SAMPLE EMAIL INVITATION

Hello Fellow Educator --

In follow-up to an earlier email from **xx xxx**, Director of the **xx xxx**, I am writing to ask if you might take a few moments to complete a brief survey that will help increase understanding of the moderator or coordinator role in educator communities of practice.

Communities of practice (CoPs) are groups of individuals who connect around a shared topic of interest and who collaborate to grow knowledge and improve their practice.

You were selected to participate based on your involvement in the **xxx** community; your contact information was provided in the interest of improving the community experience for all.

The survey should take approximately 5-10 minutes to complete. Your responses will be kept completely confidential and your email address will be used only to track completions. Once the survey is completed, you will not be contacted again unless you indicate your interest in survey results or follow-up interviews.

Please click the "Begin Survey" button below to get started. The survey will remain open until Friday May 20th.

We hope you will share your experiences to better inform moderator best practices and, in turn, help support educator communities of practice.

Please don't hesitate to contact me with questions or concerns.

Mary Slowinski, University of Washington
mslow@uw.edu

Begin Survey

APPENDIX D: RESULTS OF ANALYSIS OF PAIRS

MODERATOR ACTIONS / GENDER

Null Hypotheses

H₀ A1 - H₀ A7: There is no statistically significant difference between rankings of Moderator Action 1-7 by gender-based groups

Kuskal-Wallis Test

	H ₀ A1	H ₀ A2	H ₀ A3	H ₀ A4	H ₀ A5	H ₀ A6	H ₀ A7
H-value	0.39	3.58	0.70	0.55	6.04	0.97	1.93
df	2	2	2	2	2	2	2
P-value	0.8230	0.1672	0.7040	0.7607	0.0489	0.6163	0.3816
Greater or less than .05 level of significance	Greater	Greater	Greater	Greater	Less	Greater	Greater
Null hypothesis	Accept	Accept	Accept	Accept	Reject	Accept	Accept
Finding	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference between medians IS statistically significant	Difference is not statistically significant	Difference is not statistically significant

Notes: .05 significance level, adjusted for ties (higher accuracy)

One-Way ANOVA

	H ₀ A1	H ₀ A2	H ₀ A3	H ₀ A4	H ₀ A5	H ₀ A6	H ₀ A7
F-value	0.18	1.17	0.16	0.32	3.31	0.21	1.78
df	2	2	2	2	2	2	2
P-value	0.8364	0.3301	0.8562	0.7273	0.0574	0.8092	0.1944
Greater or less than .05 level of significance?	Greater	Greater	Greater	Greater	Greater	Greater	Greater
Null hypothesis	Accept	Accept	Accept	Accept	Accept	Accept	Accept
Finding	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant

Note: 0.05 significance level

MODERATOR ACTIONS / AGE GROUP

Null Hypotheses

H₀ A1 - H₀ A7: There is no statistically significant difference between rankings of Moderator Action 1-7 by age group

Kuskal-Wallis Test

	H ₀ A1	H ₀ A2	H ₀ A3	H ₀ A4	H ₀ A5	H ₀ A6	H ₀ A7
H-value	2.66	2.81	3.28	1.47	3.07	3.23	4.90
df	3	3	3	3	3	3	3
P-value	0.4472	0.4217	0.3508	0.6886	0.3810	0.3574	0.1795
Greater or less than .05 level of significance?	Greater	Greater	Greater	Greater	Greater	Greater	Greater
Null hypothesis	Accept	Accept	Accept	Accept	Accept	Accept	Accept
Finding	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant

Notes: .05 significance level, adjusted for ties (higher accuracy)

One-Way ANOVA

	H ₀ A1	H ₀ A2	H ₀ A3	H ₀ A4	H ₀ A5	H ₀ A6	H ₀ A7
F-value	0.87	0.72	1.88	0.46	1.07	1.18	1.71
DF	3	3	3	3	3	3	3
P-value	0.4735	0.5544	0.1680	0.7163	0.3850	0.3433	0.1991
Greater or less than .05 level of significance?	Greater	Greater	Greater	Greater	Greater	Greater	Greater
Null hypothesis	Accept	Accept	Accept	Accept	Accept	Accept	Accept
Finding	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant

Note: 0.05 significance level

MODERATOR ACTIONS / LENGTH OF COP MEMBERSHIP

Null Hypotheses

H₀ A1 - H₀ A7: There is no statistically significant difference between rankings of Moderator Action 1-7 by groups based on length of CoP membership.

Kuskal-Wallis Test

	H ₀ A1	H ₀ A2	H ₀ A3	H ₀ A4	H ₀ A5	H ₀ A6	H ₀ A7
H-value	0.15	3.52	4.65	1.62	0.15	0.78	4.92
df	2	2	2	2	2	2	2
P-value	0.9277	0.1723	0.0977	0.4452	0.9296	0.6776	0.0853
Greater or less than .05 level of significance?	Greater	Greater	Greater	Greater	Greater	Greater	Greater
Null hypothesis	Accept	Accept	Accept	Accept	Accept	Accept	Accept
Finding	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant

Notes: .05 significance level, adjusted for ties (higher accuracy)

One-Way ANOVA

	H ₀ A1	H ₀ A2	A3	A4	A5	A6	A7
F-value	0.07	0.99	2.36	0.55	0.03	1.18	2.71
DF	2	2	2	2	2	2	2
P-value	0.9339	0.3879	0.1202	0.5850	0.3850	0.9696	0.0909
Greater or less than .05 level of significance?	Greater	Greater	Greater	Greater	Greater	Greater	Greater
Null hypothesis	Accept	Accept	Accept	Accept	Accept	Accept	Accept
Finding	Difference is not	Difference is not	Difference is not	Difference is not	Difference is not	Difference is not	Difference is not

	statistically significant	statistically significant	statistically significant	statistically significant	statistically significant	statistically significant	statistically significant
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Note: 0.05 significance level

MODERATOR ACTIONS / TECHNOLOGY COMFORT LEVEL

Null Hypotheses

H₀ A1 - H₀ A7: There is no statistically significant difference between rankings of Moderator Action 1-7 by groups based on technology comfort levels.

Kuskal-Wallis Test

	H ₀ A1	H ₀ A2	H ₀ A3	H ₀ A4	H ₀ A5	H ₀ A6	H ₀ A7
H-value	1.10	2.68	0.86	2.77	0.84	1.51	0.51
df	2	2	2	2	2	2	2
P-value	0.5779	0.2622	0.6516	0.2506	0.6575	0.4705	0.7733
Greater or less than .05 level of significance?	Greater	Greater	Greater	Greater	Greater	Greater	Greater
Null hypothesis	Accept	Accept	Accept	Accept	Accept	Accept	Accept
Finding	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant

Notes: .05 significance level, adjusted for ties (higher accuracy)

One-Way ANOVA

	H ₀ A1	H ₀ A2	H ₀ A3	H ₀ A4	H ₀ A5	A H ₀ A6	H ₀ A7
F-value	0.52	0.24	0.13	1.70	0.48	0.46	0.69
DF	2	2	2	2	2	2	2
P-value	0.5996	0.7854	0.8786	0.2072	0.6236	0.6399	0.5135
Greater or less than .05 level of significance?	Greater	Greater	Greater	Greater	Greater	Greater	Greater

Null hypothesis	Accept	Accept	Accept	Accept	Accept	Accept	Accept
Finding	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant

Note: 0.05 significance level

MODERATOR CHARACTERISTICS / GENDER

Null Hypotheses

H₀ C1 - H₀ C7: There is no statistically significant difference between rankings of Moderator Characteristics 1-7 by gender-based groups

Kuskal-Wallis Test

	H ₀ A1	H ₀ A2	A3	A4	A5	A6	A7
H-value	1.80	1.39	0.34	1.80	0.57	2.58	2.07
df	2	2	2	2	2	2	2
P-value	0.4063	0.4988	0.8430	0.4063	0.7534	0.2574	0.3552
Greater or less than .05 level of significance?	Greater	Greater	Greater	Greater	Greater	Greater	Greater
Null hypothesis	Accept	Accept	Accept	Accept	Accept	Accept	Accept
Finding	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant

Notes: .05 significance level, adjusted for ties (higher accuracy)

One-Way ANOVA

	H ₀ C1	H ₀ C2	H ₀ C3	H ₀ C4	H ₀ C5	H ₀ C6	H ₀ C7
F-value	0.54	0.54	0.03	0.54	0.11	1.99	0.44
DF	2	2	2	2	2	2	2
P-value	0.5909	0.5885	0.9719	0.590	0.8967	0.1623	0.6484

Greater or less than .05 level of significance?	Greater	Greater	Greater	Greater	Greater	Greater	Greater
Null hypothesis	Accept	Accept	Accept	Accept	Accept	Accept	Accept
Finding	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant

Note: 0.05 significance level

MODERATOR CHARACTERISTICS / AGE GROUPS

Null Hypotheses

H₀ C1 - H₀ C7: There is no statistically significant difference between rankings of Moderator Characteristics 1-7 by age-based groups

Kuskal-Wallis Test

	H ₀ C1	H ₀ C2	H ₀ C3	H ₀ C4	H ₀ C5	H ₀ C6	H ₀ C7
H-value	2.86	2.47	0.60	2.51	3.93	3.64	1.74
df	3	3	3	3	3	3	3
P-value	0.4142	0.4799	0.8975	0.4739	0.2687	0.3034	0.6273
Greater or less than .05 level of significance?	Greater	Greater	Greater	Greater	Greater	Greater	Greater
Null hypothesis	Accept	Accept	Accept	Accept	Accept	Accept	Accept
Finding	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant

Notes: .05 significance level, adjusted for ties (higher accuracy)

One-Way ANOVA

	H ₀ C1	H ₀ C2	H ₀ C3	H ₀ C4	H ₀ C5	H ₀ C6	H ₀ C7
F-value	0.90	0.43	0.14	0.60	1.10	1.66	0.432

DF	3	3	3	3	3	3	3
P-value	0.4609	0.7342	0.9371	0.6245	0.3752	0.2091	0.8094
Greater or less than .05 level of significance?	Greater	Greater	Greater	Greater	Greater	Greater	Greater
Null hypothesis	Accept	Accept	Accept	Accept	Accept	Accept	Accept
Finding	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant

Note: 0.05 significance level

MODERATOR CHARACTERISTICS / LENGTH OF CoP MEMBERSHIP

Null Hypotheses

H₀ C1 - H₀ C7: There is no statistically significant difference between rankings of Moderator Characteristics 1-7 based on length of CoP membership.

Kuskal-Wallis Test

	H ₀ C1	H ₀ C2	H ₀ C3	H ₀ C4	H ₀ C5	H ₀ C6	H ₀ C7
H-value	0.60	6.70	3.44	1.17	2.98	3.64	0.96
df	2	2	2	2	2	2	2
P-value	0.7414	0.0352	0.1795	0.5557	0.2254	0.8581	0.6194
Greater or less than .05 level of significance?	Greater	Less Than	Greater	Greater	Greater	Greater	Greater
Null hypothesis	Accept	Reject	Accept	Accept	Accept	Accept	Accept
Finding	Difference is not statistically significant	Difference between medians IS statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant

Notes: .05 significance level, adjusted for ties (higher accuracy)

One-Way ANOVA

	H ₀ C1	H ₀ C2	H ₀ C3	H ₀ C4	H ₀ C5	H ₀ C6	H ₀ C7
F-value	0.03	0.77	3.33	1.27	2.13	0.29	0.63
DF	2	2	2	2	2	2	2
P-value	0.9672	0.4770	0.0565	0.3020	0.1448	0.7513	0.5423
Greater or less than .05 level of significance?	Greater	Greater	Greater	Greater	Greater	Greater	Greater
Null hypothesis	Accept	Accept	Accept	Accept	Accept	Accept	Accept
Finding	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant

Note: 0.05 significance level

MODERATOR CHARACTERISTICS / TECHNOLOGY COMFORT LEVEL

Null Hypotheses

H₀ C1 - H₀ C7: There is no statistically significant difference between rankings of Moderator Characteristics 1-7 by technology comfort level groups.

Kruskal-Wallis Test

	H ₀ C1	H ₀ C2	H ₀ C3	H ₀ C4	H ₀ C5	H ₀ C6	H ₀ C7
H-value	1.65	1.03	2.36	2.91	1.44	6.66	1.68
df	2	2	2	2	2	2	2
P-value	0.4386	0.5988	0.3069	0.2339	0.4880	0.0357	0.4323
Greater or less than .05 level of significance?	Greater	Greater	Greater	Greater	Greater	Less Than	Greater
Null hypothesis	Accept	Accept	Accept	Accept	Accept	Reject	Accept
Finding	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference between medians IS statistically significant	Difference is not statistically significant

Notes: .05 significance level, adjusted for ties (higher accuracy)

One-Way ANOVA

	H ₀ C1	H ₀ C2	H ₀ C3	H ₀ C4	H ₀ C5	A H ₀ C6	H ₀ C7
F-value	1.04	0.94	0.76	0.39	0.64	4.81	0.69
DF	2	2	2	2	2	2	2
P-value	0.3714	0.4077	0.4809	0.6825	0.5403	0.0198	0.5135
Greater or less than .05 level of significance?	Greater	Greater	Greater	Greater	Greater	Greater	Greater
Null hypothesis	Accept	Accept	Accept	Accept	Accept	Reject	Accept
Finding	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference is not statistically significant	Difference between medians IS statistically significant	Difference is not statistically significant

Note: 0.05 significance level