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PRE-SERVICE TEACHER TRAINING EXPERIENCES VIEWED AS A CULTURAL ACTIVITY

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**PRE-SERVICE TEACHER TRAINING EXPERIENCES VIEWED
AS A CULTURAL ACTIVITY**

A Dissertation
Presented to
the Graduate School of
Clemson University

In Partial Fulfillment
of the Requirements for the
Doctor of Philosophy in
Curriculum and Instruction

by
Ronald Marlin Knorr
August 2010

Accepted by:
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ABSTRACT

What are the experiences of career-changing pre-service middle school teachers undergoing a group-based activity as part of their training? This series of studies explored two aspects of answering this question. In the first manuscript, a methodology of a novel virtual phenomenology interview technique attempts to determine the influence of a virtual world interviewer compared to a traditional face-to-face setting. While syntactical and other significant differences were found, there was no significant difference found comparing meaning units derived from both settings. In the second manuscript, these meaning units were analyzed to create an essence of the experience for the study's participants, using a modified version of Moustakas' (1994) phenomenology technique viewed through the lens of Cultural Historical Activity Theory (Engeström, 1987). The transcripts of participants were analyzed using this phenomenological technique yielded five meaning themes: Teamwork Function, Grade Orientation, Assignment Structure Conflict, Theory versus Practice Divergence, and Tool for Future Practice. Tensions within the elements of the activity system were identified from the interview transcripts and examined. These findings were used to create a composite textural description, a composite structural description, explained using a graphic depiction of knotworking (Engeström, 1999), and a narrative essence of the experience. A conclusion of both studies, noting a summary of the findings, implications for teacher education, limitations of the studies, and recommendations for future research is also presented.

DEDICATION

This work would not have been possible without the following people. With my deepest appreciation, this dissertation is dedicated to:

My Lord and Savior, Jesus Christ. I can do all things through Christ which strengtheneth me (Phil. 4:13). I've read it for years. Now, I believe it.

My beloved angel, my dear wife Pam. This work is as much her effort and sacrifice as mine. Her price is far above rubies (Prov. 31:10-30).

My cheerleader, Lienne. She believed in me, even when I didn't believe in myself.

The family of David Corey Hughes, who on the worst day of their lives made the decision that saved mine. Thank you isn't enough, but it's all I can do.

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CHAPTER ONE

Introduction to the Studies

The principal aim of this series of studies was to examine the perceptions of a specific group of career-changers as they underwent a specific experience as part of their training as pre-service teachers. This objective was carried out by generating two manuscripts to 1) explain the method used to record the participants' experiences for analysis, and 2) report the results of the participants' experiences in the group activity.

This dissertation adds to the literature in two areas of knowledge. The focus of the methodology manuscript (Chapter Three) examines the use of virtual worlds as a location for the collection of phenomenology interview data, compared to traditional face-to-face interviewing. The second manuscript (Chapter Four) uses the interview data from the methodology to focus on the perceptions of career-changing pre-service teachers as they work within a group activity, examined through the lens of Cultural Historical Activity Theory or CHAT (Engeström, 1987). In Chapter One, a rationale for both lines of enquiry is discussed. This discussion provides 1) an explanation of the activity system studied, 2) the significance of the research, 3) the research questions, 4) a theoretical framework and, 5) a discussion of terminology used in the studies.

Activity System Studied

This group activity of creating an integrated unit produced the foundation of the shared experience that the phenomenology interview questions were

designed to obtain. These interviews were directed toward gathering data to answer the research question as it involves the components of the second-generation CHAT model (Figure 2).

An additional purpose of these studies was to examine the experiences of career-changing pre-service middle school teachers in their training viewed as an activity through the lens of CHAT and analyzed using Engeström's (1987) activity triangle model. As part of this training, these pre-service teachers were required to participate in a group activity that created an integrated unit, a best teaching practice used in middle school settings. It is this activity and the pre-service teachers' lived experiences during it that forms the basis of this phenomenology report manuscript.

These pre-service teachers were students in the Master of Arts in Teaching (MAT) program at Clemson University (hereafter referred to as "Southland University" in the manuscripts). The MAT course of study is a 36-hour curriculum where its graduates are certified and highly qualified to teach within the middle grades (Grades 6-8) in one or more content areas, including English/Language Arts, Math, Science, or Social Studies applicable to middle grades. Most of these students are career-changers, where the student originally trained for and practiced a profession other than education for a significant period. Students typically complete the program in 12 to 18 months. The organizational form used in the MAT is the cohort model, where students take foundation courses in education and content area classes in their area of

certification in small groups prior to entering the classroom. After this academic training, the students progress to a practicum in a middle school setting during the fall semester, and conclude the program with a prescribed period of student teaching in a public middle school during the following spring semester, concluding in graduation and initial certification.

The Integrated Unit Activity

It was during one of these foundation courses, Middle School Curriculum, that the integrated unit was a required assignment. The purpose of the integrated unit is for the pre-service teacher to illustrate the techniques used to create a structured, well-organized strategy across multiple academic content areas to develop particular learning objectives, as defined by applicable content standards.

The integrated activity studied took place in the fall semester of 2009. Two sections of Middle School Curriculum were taught within the MAT during that semester, and participants for this study came from both sections. Two instructors taught the classes—one a tenured professor, the other a graduate student with considerable experience in middle grades education. The class syllabi for both sections were identical, as were the requirements of the integrated unit assignment.

Each class was divided into smaller groups, or teams. The instructor assigned individuals to each group in a desire to have all content areas represented in each group. As part of this class, the participants in this study

were allowed to use a topic of the group's selection. Each group produced an integrated unit on the group-selected theme. These integrated units were used, in part, to determine the student's grade in the course. This assignment represented 30% of the student's grade for the course. The MAT program retained these units, providing a required artifact for its continuing accreditation by the National Middle School Association.

In essence, each student was required to create a 5-day unit of lesson plans for his or her content area around the common group-selected theme. Each student's individual lesson plans were required to have supporting documentation, such as lesson plans prepared according to an instructor provided template, formal and informal assessments, and other instructional material used during the 5-day unit in the student's content area. At the end of the assignment, these individual units were bound together in a group notebook and turned in to the instructor.

Besides the lesson plans, each group notebook was required to contain a written introduction to the unit, which also included the rationale for the theme chosen by the group. Additionally, any cumulative unit plan activity, such as a field trip or team-wide game, was explained in the notebook. Finally, each group presented their work in a class presentation at the end of the semester, the due date for the assignment.

Significance

The importance of this series of studies lies in two areas. Regarding the methodology manuscript, the major significance is in the creation of a pilot study examining the results from the use of a virtual world interview environment compared to those results from a traditional face-to-face interview for a phenomenology study. Using similar studies of computer-mediated communications (CMC), the results of this novel interview mode examined both similarities and differences from previous findings seen in the literature.

From the phenomenology manuscript, the significance of this study is to place the group activity of these career-changers within the framework of CHAT in order to explain these experiences within the research literature reviewed, and to compare these experiences with similar studies. Additionally, these results create ideas for new avenues of research on this activity within the topic of pre-service teacher education and the further exploration of the findings within the elements of the CHAT theoretical base.

Research Questions

As part of this series of studies, two questions were asked. In the methodology manuscript, the question asked was “How might the use of a virtual world interviewer influence the answers received, as compared to an in-person interview?” This question was framed within the results of somewhat similar studies comparing communications between subjects in a computer-mediated communication environment to those in face-to-face settings. This question was

answered by analyzing the results of the phenomenology interviews, in which half the participants were interviewed in a virtual world setting while the other half were interviewed in a traditional face-to-face discussion. The results were evaluated using transcripts of the interviews for differences in syntactical elements, comparisons of inter-rater reliability, and content analysis to form a conclusion.

In the phenomenology manuscript, the focus of the study was on answering the question “How do career-changing pre-service middle school teachers perceive the effect of group-based training activities on their abilities as emerging teachers?” This question related to the socialization process of teacher education and its effect in defining the socio-cultural activity of producing an integrated unit lesson plan. Using Engeström’s activity triangle (Engeström, 1987) as a graphic representation to define the activity, the results of the phenomenology interviews were analyzed and the meaning of the experience, recorded as the perceptions of the participants, extracted. This modification of Moustakas’ (1994) method was used to extract the essence of these experiences, creating a narrative defining the experience.

Theoretical Framework

The cohort model provides several characteristics forming an underpinning for the phenomenology manuscript. The teacher socialization process occurring within this cohort context shapes the basis of this group activity under study. The process of creating the integrated unit activity was

examined within the framework of CHAT, an activity model used here to explain the social interactions occurring during the creation of that integrated unit.

The influence of socio-cultural processes on an activity of pre-service teachers, especially from a Vygotskian perspective, characterizes much of this study. This influence is seen in various models of learner interaction, such as communities of practice (Lave & Wenger, 1991) and other models illustrating similar concepts of teacher socialization. The theoretical framework of CHAT is to explain qualitative changes in human practices over time (Engeström, 1987). For this study, that practice is the creation of the integrated unit plan. Additional tools and models that are derivatives of CHAT, such as third-generation CHAT (Engeström, 2001) and knotworking (Engeström, Engeström, & Vähäaho, 1999), are used in the phenomenology manuscript for additional explanation of this activity.

Definition of Terms

Certain terms are used in connection with this series of studies. These terms are defined in the following paragraphs from the related CHAT literature, with an additional description of their use in illustrating the theory concepts by examples from the creation of the integrated lesson plan, the activity studied. The definitions are adopted from Engeström and Miettinen (1999) and are explained below.

In Engeström's (1987) CHAT model, the *activity triangle* (Figure 2) represents the overall *activity system* containing the elements of *subject*, *tools* (or

artifacts), *rules*, *community*, *division of labor*, *object*, and *outcome*. The *activity* is directed by the *subject*, mediated by *tools*, to produce an *object* that has a decided *outcome*. This process is referred to as *artifact-mediated action* (Figure 1). In addition, the *activity* is also mediated by socio-cultural elements. These elements include the *community* of persons affecting the activity system, *rules* imposed on the elements of the activity system in carrying out the *activity*, and *division of labor* among the members of the *community* to accomplish the tasks within the *activity*. The product of this *activity system* is the *object*, which has an *outcome* (or meaning) for the *subject*. A generic activity system is illustrated by Figure 2.

In this study, the *activity system* researched is the production of the integrated unit, the *object* of the activity system. The *subjects* are the pre-service teachers, and the *tools* are the instruments, such as texts, technology, and communication methods, used by the pre-service teachers to create the integrated unit. The *community* for this activity system includes project teammates, the MAT cohort, and others such as persons in the subjects' practicum schools and the subjects' families. *Rules* followed included explicit codes, such as the class syllabus and state content standards, and implicit expectations of behavior. The *division of labor* among the subjects was done by partitioning the work by subjects' interests, content experience, or skills.

The ultimate *object* of this activity system was the production of the integrated unit. That object had an *outcome* for the subjects; in this case, their

perceived *meaning* as that meaning influenced the effect of group-based training activities on their perceptions of their abilities as emerging teachers. This meaning is key to answering the research question in Chapter Four. In addition to Engeström's (1987) activity triangle, tensions in the operation of the activity system were recorded and analyzed. Tensions are contradictions and conflicts that shape the functioning of the activity system (Cole & Engeström, 1997; Engeström, 1993; Engeström, 1987; Yamagata-Lynch, 2007). In this activity system, the tensions occurred within the various elements of the activity system itself. The detail of the integrated unit activity system and related tensions are illustrated in Figure 5.

Conclusion

Chapter One introduced the areas of study for the two manuscripts and established the two research questions, along with the research theoretical lens and the terminology used in that theory. This series of studies is framed by a review of the pertinent literature (Chapter Two) for the manuscript topics. By using interviews as a data gathering mechanism, a study (Chapter Three) comparing the effects of two distinct interview settings, one traditional and one using emerging technology, was generated. The interviews from these two settings were further used to study the perceptions of the effects of a group activity on the practices of career-changing pre-service teachers (Chapter Four). This activity was analyzed through the theoretical lens of Cultural Historical Activity Theory (CHAT). CHAT and models derived from CHAT were also used to

graphically illustrate the process and provide a representation to its meaning. In Chapter Five, a summary of these two studies, their limitations, suggestions for practice, and implications for further research are discussed.

CHAPTER TWO

Introduction

Chapter One provided an introduction for the two empirical manuscripts (Chapters Three and Four) contained in this dissertation, as well as for defining the overarching subject of this work. This topic, pre-service teachers' perceptions of a cohort-based activity on their abilities as emerging teachers, was examined using the results of phenomenological interview techniques viewed through the lens of Cultural-Historical Activity Theory (CHAT) (Engeström, 1987) to get to the essence of these experiences. A secondary theme, a methodology of a novel data-collection technique for qualitative research interviewing via a virtual world setting, was used to compare results of traditional face-to-face interviews with those obtained in the virtual world environment.

As part of preparation for the research and analysis contained in this study, the pertinent literature on the topics contained within the manuscripts was explored and used to frame the work within the context of existing studies. Hart (2001) characterizes such an academic literature review as:

The selection of available documents (both published and unpublished) on the topic, which contain information, ideas, data and evidence written from a particular standpoint to fulfill certain aims or express certain views on the nature of the topic and how it is to be investigated, and the effective evaluation of these documents in relation to the research being proposed.

(p. 13)

Towards that end, three general subjects were the focus of a search into the applicable published research, forming the base of this chapter. The literature areas evaluated include, first, elements of pre-service teacher experiences in a cohort model, the activity system under study and, second, the use of CHAT as framework for both directing the phenomenology inquiry and as a lens for guiding analysis of its results in the phenomenology manuscript. These two topics are also used to frame the interpretation of the phenomenology findings. The third literature topic researched involved the use of virtual world interviewing techniques, a topic examined in the methodology manuscript.

The technique used to locate significant literature for this review was as follows. An analysis of key words associated with each topic was created to establish a literature base. Keywords are those terms found in the applicable literature and variants of them, as well as a search for prominent authors cited and known in the field. These terms were used as a basis for an initial search of relevant databases, such as Clemson University's EBSCO databases as well as Google Scholar. From the results of this initial search, articles germane to the research topics were noted and examined. The bibliographies of these relevant works were also reviewed for additional pertinent research literature in a process known as "snowballing," (Greenhalgh, Robert, MacFarlane, Bate, & Kyriakidou, 2004) expanding applicable literature by using references of established relevant research, and by utilizing electronic citation tracking via such systems as Refaware, EBSCO Alert, and Google Alert to keep research reviewed current. In

addition to finding important literature, reviewing it, and synthesizing the research, studies similar to the manuscripts, if any, were noted and examined to provide direction regarding research technique and important literature cited and to insure the novel perspective of the research questions answered in these manuscripts (Lovitts & Wert, 2009).

Pre-Service Teacher Cohorts

One primary topic explored in this literature review, the lived experiences of pre-service teachers during an activity, centers on themes examined in the phenomenology manuscript. Two aspects of this topic (attributes of pre-service teacher cohorts and cultural-historical activity theory) have theoretical support in the concepts of social constructivism. As used in pre-service teacher education, this term is operationally defined using Richardson's (1997) two-point description of constructivist teacher education summarized by Dangel and Guyton (2004) as "a) teaching teachers to teach according to a constructivist approach and b) working with teacher-learners in a constructivist way to help them understand their tacit beliefs and introduce new concepts as possible alternatives to those held by the learner" (p. 3). Both of these definitional aspects are important in understanding the constructivist attributes of pre-service teacher cohorts.

In his book *Redesigning Teacher Education*, Alvin Tom (1997) lists 11 principles of teacher education program design that he thought "encourage a teacher education faculty to deliberate on particular conceptual and structural issues while rethinking its programming" (p.14). Of these 11 principles, five of

these ideas related to conceptual issues while six were program structure recommendations. One structural recommendation Tom made suggested that, “rather than being treated as individuals to be managed bureaucratically, prospective teachers should be grouped into a cohort that moves through a professional program as a unit” (p.149). This suggestion came from Tom’s personal and professional experiences and his belief that there is value in common shared ordeals by providing mutual support in a potentially frustrating experience while also providing efficient and effective administrative support to the pre-service teachers (Tom, 1997).

Tom was not the first to suggest the cohort model for pre-service teacher education. Cohort models in university-level programs for education administration were encouraged by the work of the Danforth Foundation in the mid-1980s (Milstein, 1992) and this prototype spread to teacher education programs (Howey & Zimpher, 1989). As Mather and Hanley (1999) noted, “some evidence that collaborative, thematic, cohort programs offer the best opportunity for identifying and reconstructing entry-level candidates’ misconceptions about teaching” (p. 236). Other researchers found overall support for cohorts as a model program from professors, clinical faculty, and students (Radencich et al., 1998), as an academic and personal support system (Howey & Zimpher, 1989), as a source of insight from students from various backgrounds (Warring, 1990, July), and as a contributor to joint effort and teamwork (Rolheiser & Hundey, 1995).

Pre-Service Teacher Cohorts Described

Goodlad (1990) depicts a cohort to be a program where a group of pre-service teachers remains in a group throughout the program, sharing experiences, instruction, and opportunities to mature professionally in a common social environment. In the latter 1980s, Goodlad found few formalized instances of the cohort model in use in US teacher education programs. However, in recent years, the cohort model has become more prevalent in teacher education programs, as teacher educators look for efficient and effective ways of preparing pre-service teachers for entry into teaching practice (Bullough, Clark, Wentworth, & Hansen, 2001; Mandzuk, Hasinoff, & Seifert, 2005).

In their study of non-traditional age (defined, in part, for their study as students 25 years old or older) pre-service teachers, Dinsmore and Wenger (2006) characterize cohorts simply as, “having four or more classes together in a given semester” (p.59). In a broader study of teacher education, The Holmes Group (1995) explained the functioning and purpose of teacher education cohorts far more broadly as one where

the members of each cohort [are] journeying together along a common path of professional learning and socialization that leads to lifelong personal and professional growth and development. No longer should any student in a school of education lack the support of a group of students who form their own small learning community. Each student would be part of a group in which fellow students take an interest in each other’s attainments. We

expect that the members of a cohort will form a mutually supporting network that endures for many of them throughout their professional careers. (p. 50)

This description lists many activities common to pre-service teacher cohorts. In essence, the studies cited above illustrate the student teacher cohort as a mechanism facilitating the group transfer of content learning and pedagogical technique and as a socialization process for pre-service teachers and others involved in the cohort's sphere of learning. Knowledge of teacher socialization is vital in understanding the activities of pre-service teacher cohorts.

Socialization Process of Teacher Training

According to one definition, teacher socialization “is a complex, communicative process by which individuals selectively acquire the values, attitudes, norms, knowledge, skills, and behaviors of the teaching profession and of the particular school or educational culture in which they seek to work” (Staton, 2008, p. 1). It is in this development that teachers acquire the shared distinctiveness of the teaching profession. The idea of teacher training as “...the development of a professional identity by trainee teachers as embedded in the sociocultural practice in which they are participants” (van Huizen, van Oers, & Wubbels, 2005, pp. 281-282) is attributed to Lev S. Vygotsky's cultural-historical psychology theory. Here, Vygotsky's concept is defined as “the study of the development of psychological functions through social participation in societally-organized practices” (Chaiklin, 2001, p. 21). van Huizen et al. (2005) summarized

a Vygotskian model for pre-service teacher education into five principles, the first of these being, "...that professional learning and development are best conceived and conditioned as an aspect of evolving *participation in a social practice*" [emphasis added] (p. 274).

The theory entitled *communities of practice* (Lave & Wenger, 1991) is central to the idea of teacher socialization. According to one of its developers, communities of practice, "are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly" (Wenger, 2006). That interaction provides a vehicle for socialization by fostering pre-service teacher involvement in a program featuring the achievement of individual goals and values, social relations, and teamwork within a teacher education program setting (van Huizen et al., 2005). Other learning models follow a related theme, influenced by the same concepts as teacher socialization. Such theories include *mediated action* (Wertsch, del Río, & Alvarez, 1995), *cultural nature of human development* (Gutierrez & Rogoff, 2003), and *community of learners* (Rogoff, Matusov, & White, 1996). The MAT cohort studied in the phenomenology follows this premise of community and social activity-based learning, specifically in the integrated unit assignment.

As Dinsmore and Wenger (2006) found, "cohorts must be infused with a strong sense of community to enhance the learning of nontraditional pre-service teachers," noting that "relationships within the field experience, with peers, and with the instructors are important to pre-service teacher learning. When the

relationships are negative, learning is hindered” (p. 71). Research on negative matters within the cohort as a social-cultural entity illustrate these issues come from many sources.

Issues in Cohorts

As Dinsmore and Wenger (2006) note, cohorts “create the structural opportunity to maximize and create a community minded culture that supports these central tenents [sic] of teacher learning” (p.58). Yet, some research indicates cohort-based teacher preparation is not without significant issues in the formation of that culture.

For example, Barnett and Muse (1993) refer to detrimental competition in cohorts, due to scarce resources, the conflict of group goals, and the demands of traditional grading. Additionally, Radencich et al. (1998) found “professor scapegoating,” where the group members blame the instructors for problems within the group, an issue for teacher education cohorts. Other issues of this training model occur when some cohort members non-assimilated into the cohort, for personal, social, or academic reasons (Mandzuk et al., 2005). Mandzuk et al. also found that “many challenges of student cohorts were attributable to too much bonding and not enough bridging” (p.180), in that a muffling effect occurs for some members of the cohort when “[s]ome student teachers stifled their own growth as individuals because the dominant personalities in their cohorts unduly influenced them” (p.180). This consequence

is the negative cohort effect of what Dinsmore and Wenger (2006) call, “the power of relationships” (p. 71).

It is the inter-personal relational characteristics of cohorts that are often most problematic. In their study of a graduate teacher program in Special Education, Sapon-Shevin and Chandler-Olcott (2001) refer to the problems within the cohort as one of conflicting personalities, and, in their opinion, partly due to differences between the majority of their participants (female, white) and others (male, persons of color), suggesting that males and persons of color (both representing a minority in their study) were disruptive and domineering in the cohorts they researched. Indeed, they state that these negative dynamics were not present in other cohorts, exclusively female in membership. This troubling conclusion was disputed by Agnew, Mertzman, Longwell-Grice, and Saffold (2008), who found, to the contrary, an exclusionary and silencing effect on males and persons of color in a teacher education cohort program, suggesting that additional faculty training and additional research is necessary to, “improve the cohort system to reduce marginalization and silencing of its non-dominant members” (p.31).

In other analyses of teacher education cohorts, a common focus has been on interpersonal relationships within the group, as opposed to the functioning of the learning environment. Seifert and Mandzuk (2006) described what they defined as “the unintended effects of cohorts” as both positive, such as the establishment of friendships, empathy, and compassion between cohort

members, and negative, such as exclusion of some cohort members from activities and inaccurate and unproductive communications between cohort members, resulting in near “mass hysteria” over such issues as miscommunicated or misunderstood assignments. Sapon-Shevin and Chandler-Olcott (2001) expressed the challenges teacher educators face in working with cohort structures, due to variations between students in ethnic background, personalities, political beliefs, socio-economic status, and sex, and described splits in cohort cohesion as an analogy to a “dysfunctional family.”

Other research provided additional insights. Goss (2007) questioned the purpose of using cohorts, suggesting that the utilitarian and administrative function of cohorts may be the principal reason for its use in higher education. Clarke, Erickson, Collins, and Phelan (2005) argued that “the number of ideas that are generated and the opportunity to engage, share, and interrogate those ideas that are of primary importance” (p. 174) in the operation of a teacher education cohort, and conclude that this form of organization allows students to “sustain conversations about practice that allow us to discard those practices that are destructive to our learning community while selecting more ‘useful’ practices” (p 171). In a similar conclusion, Bullough, Clark, Wentworth, and Hansen (2001) note their study’s conclusion “supports the value of cohorts to teacher education as a means of providing beginning teacher support, enhanced opportunities to learn from other beginning teachers, and realizing that learning to teach is a community responsibility” (p. 108).

Research into the social interaction of teacher education cohorts and their operations provides the basis for this study, principally in the phenomenology manuscript. The socio-cultural underpinnings of teacher education cohorts necessitate the use of research tools and theories designed to produce meaningful data and interpretations of the experience. One such theory, and the theoretical basis of this inquiry, is *Cultural-Historical Activity Theory*, the lens used here to focus the phenomenological study and the second topic of this literature review.

Cultural-Historical Activity Theory (CHAT)

Rooted in Lev S. Vygotsky's general ideas of historico-sociological development, as he was influenced by Hegel, Kant, Marx, and others (Sawchuk, Duarte, & Elhammoumi, 2006), CHAT is important as an analytical tool to study education in general, pedagogy, and the development of pre-service teachers, by providing a lens by which to view the common social activity essence of teaching. As teaching is a social process, CHAT provides a structure to investigate the means by which education practice uses various elements of social mediation to achieve educational ends.

Philosophical Origins of CHAT

Called a "well-kept secret" (Engeström & Miettinen, 1999) and "Vygotsky's neglected legacy" (Roth & Lee, 2007), as recently as 2009 some researchers held the view that the study of activity was mostly absent from any meaningful discussion. This view is summarized concisely in the observation that "[t]he

concept of activity...had, and continues to have, no place whatsoever on the Anglo-American philosophical scene” (Bakhurst, 2009, p. 198). It appears, for the most part, the negative visceral reaction that some academics in the United States and its sphere of influence have towards Marx may have stunted scholarly interest in utilizing a worthwhile activity analysis theory tangentially associated with Marxism.

The philosophical genesis of CHAT is found in *Theses on Feuerbach*, (Marx, Engels, & Arthur, 1970, pp. 121-123), Marx’s notion of reality as “sensuous human activity, practice...” (p. 121). His pragmatist disagreement with Feuerbach’s materialism and mysticism philosophy argued that “the *active* side was developed abstractly by idealism – which, of course, does not know real, sensuous activity as such” [emphasis his] (p. 122). Vygotsky was affected by Marx’s analysis, as well as the language and cultural theory elements of the classical German philosophy of Kant and Hegel. It is the blend of Marxian ideas of the human activity that, along with the lens of Kantian thinking on subject-object relations in language and the focus of the Hegelian dialectic method, created for Vygotsky a theoretical framework that over time morphed into CHAT (Engeström, Miettinen, & Raija-Leena, 1999; Hardcastle, 2009).

A Brief History of the Development of CHAT

The historical lineage of CHAT as an active explanation for human activity traces to the work of a collaboration of educational psychologists working in the former Soviet Union during the early part of the twentieth century. Vygotsky,

influenced by Marxian concepts of socio-cultural analysis and practical human labor action as a general explanation for human activity, is considered the developer of first-generation CHAT. Best viewed as the notion of artifact-mediated action (Vygotsky, 1978), it is the foundation of the early work of Vygotsky's cultural-historical school of psychology (Engeström & Miettinen, 1999).

Cole (1996) explains Vygotsky's artifact-mediated action model in this manner. The relationship between the subject and object are considered "natural" or "unmediated," while the mediating factors are the relationship between subject, object, and tools (Figure 1), what Cole also labels *mediating artifacts* and an important distinction in the development of CHAT.

Vygotsky's students, Aleksandra Luria and A. N. Leont'ev, expanded Vygotsky's ideas of artifact-mediated action by developing its concepts further to explain human functioning in its societal, cultural, and historical aspects. Specifically, while acknowledging Vygotsky's impact on the study of activity, Roth and Lee (2007) note :

It was left to Leont'ev to make historically evolving object-practical activity the fundamental unit of analysis and the explanatory principle that determines the genesis, structure, and contents of the human mind. By taking practical labor activity as coextensive with cognition, the work of the latter is recognized as the cornerstone for present forms of activity theory,

together with its broader application to classroom learning, linguistics, and speech act theory. (p. 189)

The research of these Vygotsky's associates, especially Leont'ev's work, is considered the foundation of second-generation CHAT.

Second-generation CHAT was further developed in the latter 20th century as a continuation of the object-practical activity focus found in Leont'ev's work by such researchers as Yrjö Engeström, Jean Lave, Barbara Rogoff, and James Wertsch (Roth & Lee, 2007). This study relies on the research and literature of Engeström's second-generation CHAT (Engeström, 1987) as it is used in the field of education and its application in teacher education.

Engeström's CHAT Model

Pivotal to understanding second-generation CHAT is Engeström's often-referenced *activity triangle* model for examining an activity system. When analyzing the components of the activity system, a practical, operational definition is needed for analysis focus. Engeström's Activity Triangle (Figure 2) graphically illustrates its use for analyzing human activity according to CHAT and contains additional points of focus (rules, community, and division of labor) not found in Vygotsky's Model of Artifact-Mediated Action (Figure 1). Engeström's model of second-generation CHAT forms the analytical foundation for this research.

Exchanges within the elements of the activity triangle may create tensions (such as conflict in interpersonal relations and time constraints) that add to or

distract from the process of attaining of the object and outcome of the activity (M. Cole & Engeström, 1997; Engeström, 1993; Engeström, 1987; Yamagata-Lynch, 2007). Tensions should be recognized as part of a second-generation CHAT model; in this study, they will be recorded and analyzed for meaning.

CHAT as a Practical Theory

Cole and Hatano (2007) assert that CHAT is defined as an explanation of “culturally mediated, historically developing, *practical activity*” [emphasis added] (p. 110), a theoretical underpinning of Vygotsky’s cultural-historical school of psychology. For the purposes of this study, CHAT is also defined operationally as a practical theory (Foot, 2001), since CHAT’s pragmatic application is consistent with Cronen’s (Cronen, 1995) five-point description of a practical theory.

Cronen’s definition of a practical theory states that such a theory contains 1) a concern with interpersonal action that creates a pattern of practice, 2) an applicable grammar to describe the practices of the theory, 3) a “family of methods for the study of situated social action” (p.231) to describe the practice, 4) the promotion of “useful description, explanation, critique, and change in situated human action” (p 231), and 5) the ability to evolve with its continued use, “thus forming a tradition of practice” (p. 232). Examples of this process in education gives researchers a paradigm consistent with its use in analyzing processes—in the instant case, an activity model for the training of pre-service teachers. The phenomenology study in this work uses the representations of CHAT as a practical theory, based on the work of Engeström as an analysis tool.

Additional Models of CHAT

CHAT has further evolved to provide some additional explanations for human activity. Because of criticisms of second-generation CHAT, such as its apparent indifference to social interactions with other systems and its implied insensitivity to diversity (Cole, 1988), an additional CHAT paradigm was developed. This third-generation of CHAT assumes two separate second-generation CHAT activity systems and adds the intersection of these systems (Figure 3) as an additional unit of analysis (Engeström, 2001). Although not a major focus of this study, third-generation CHAT provides a model for analysis of two (or more) activity systems and looks for meaning within the individual systems and at the point where they intersect. This intersection provides a point of investigation to analyze further human action across many activity systems, providing potential benefits to identify that point of action.

An additional idea associated with CHAT is Engeström, Engeström, and Vähäaho's (1999) idea of *knotworking*. Knotworking has been used to explain loosely defined group activity in a variety of settings (Engeström, 2008). This concept is defined in this description:

Knotworking is characterized by a pulsating movement of tying, untying and retying together otherwise separate threads of activity. The tying and dissolution of a knot of collaborative work is not reducible to any specific individual or fixed organization entity as the center of control. The center

does not hold. The lotus of initiative changes from moment to moment within a knotworking sequence. (Engeström et al., 1999, p. 346)

Knotworking provides an explanation of the common loose thread between individual subjects in an activity system, providing an inter-subject view of activity between subjects who have no real relationship to each other, outside the activity itself. This idea is illustrated in Figure 4. As Engeström, et al. (1999) note, “[k]etwork situations are fragile because they rely on fast accomplishment of intersubjective understanding, distributed control and coordinated action between actors that otherwise have relatively little to do with each other” (p. 352). It collectivizes the aspects of CHAT by use of that common thread, allowing for an additional view of the activity. Engeström, et al. (1999) cite communities of practice (Lave & Wenger, 1991) as an example of knotworking, as these two concepts share a purposeful collective action based on the same task for extended periods of time. The connection of CHAT to well-accepted models of activity in multiple educational settings, such as communities of practice, provides the study of education and the related processes of pedagogy and pre-service teacher education with an additional tool for the study of such group action.

CHAT and Education

The application of CHAT to education in general is significant. Based on an analogy of Marx’s production explanation as a social process (where production is invariably linked to distribution, exchange, and consumption)

applied as a didactic progression (Roth, 2004), the use of CHAT to explain educational processes has gained some, if belated, influence in recent decades. Various education researchers have used the CHAT model in its various iterations to explain and refine such educational constructs as self-directed learning in out-of-school settings (Bailey & Thompson, 2008; Brown & Cole, 2002), as well as traditional and online classroom organization (Barab, Barnett, Yamagata-Lynch, Squire, & Keating, 2002; Benson, Lawler, & Whitworth, 2008; Jonassen & Rohrer-Murphy, 1999). CHAT has also been used as a tool to analyze content teaching in various disciplines, such as literacy (Grossman, Smagorinsky, & Valencia, 1999; Hull & Schultz, 2001; Johnson, 2003; Twiselton, 2004), math and science (Goodchild, 2007; Lerman, 2001; Schmittau, 2003; Venkat & Adler, 2008), and social studies (Haenen, Schrijnemakers, & Stufkens, 2003; Lee, 2005).

CHAT and Pedagogy

Of particular importance to pedagogy are the concepts of how “social, cultural, historical, and intuitional factors may be seen to impact on processes of teaching and learning”(Daniels, 2001, p.1). Vygotsky’s ideas and their influence on CHAT had a direct bearing on the subject of pedagogy, as Moll (1990) describes it:

Vygotsky’s primary contribution was in developing a general approach that brought education, as a fundamental human activity, fully into a theory of psychological development. Human pedagogy, in all its forms, is the

defining characteristic of his approach, the central concept in his system.

(p.15)

The influence of CHAT on the development of pedagogy is logical, given the nature of teaching as a human activity and the importance of CHAT as an explanation for that activity.

Researchers interested in the point where teaching practice meets cultural relevance find CHAT a ready tool to explore their interests and explain their findings. CHAT has been used by numerous researchers in the areas of instructional design (Fiedler & Kaner, 2009; Jonassen, 1999; Major & Palmer, 2006; Rogoff et al., 1996; Webb & Jones, 2009; Wells, 2002). Studies of online pedagogy (Barab, Schatz, & Scheckler, 2004; Benson et al., 2008; Joyes, 2008) and instructional technology (Blin & Munro, 2008; Lim, 2007; Rybacki, 2009; Schlager & Fusco, 2003) used CHAT as an analysis tool to explain activity in these educational delivery methods.

CHAT and Pre-Service Teacher Training

The elements of CHAT are equally yoked to the concept of meaningful activity and cultural relevance involved in pre-service teacher training. “The Vygotskian framework,” according to van Huizen et al. (2005),

sees the development of a professional identity by trainee teachers as embedded in the sociocultural practice in which they are participants. The practice of teaching includes a mission and programme, guided by values

and goals, forms of social interaction, and communication in an institutional setting. (pp. 281-282)

With this socio-cultural link, CHAT has been the theoretical lens for various research projects in teacher education, including the preparation of teachers for the instruction of underachieving learners (Gordon & Fittler, 2004; Hoffman-Kipp, Artiles, & López-Torres, 2003) and special needs students (Ferretti, MacArthur, & Okolo, 2001; Pearson, 2009; Pearson, 2007). As an activity model, CHAT has been used to examine how neophyte educators prepare for their professional practice during teacher training in methods (Ellis, 2007; Lerman, 2001; Schmittau, 2003; Venkat & Adler, 2008) and pedagogy and instructional design courses within teacher education programs (Blanton, Simmons, & Warner, 2001; Edwards & Protheroe, 2003; Edwards & Mutton, 2007; Perks, Prestage, & Edwards, 2005; Post Holm, 2008; Rivera, Galarza, Entz, & Tharp, 2002; Roth & Tobin, 2002; Wells, 2003; Wilson, 2004).

These applications and the work of other applicable learning theorists serve to characterize this study of CHAT as a meaningful explanation for the activities of pre-service teachers.

Critical Viewpoints of CHAT

In a themed issue of *Educational Review* entitled “Critical Perspectives on Activity Theory,” Bakhurst (2009) summarizes a major criticism of CHAT by noting the seemingly different traditions of activity, as expressed by Engeström’s various utilitarian mechanisms of CHAT (Engeström, 1993; Engeström et al.,

1999; Engeström, 1987; Engeström, 2001) as compared to the political moorings of activity theory, centered in Marxism and Russian socio-cultural psychology reflected in Marx (Marx et al., 1970), Vygotsky (Davydov, 1995; Vygotsky, 1978), and Ilyenkov (Bakhurst, 1997), among others. Bakhurst expresses this idea of difference by noting that in the Anglo-American tradition, CHAT has become more of an analysis tool to explain an activity, and less a philosophical one that sees, “the concept of activity as a fundamental explanatory category that is the key to understanding the nature and possibility of mind” (p. 205). Similar criticisms are expressed by Peim, (2009), Martin and Peim (2009), and Avis (2009).

Other researchers state a like view. Writing from the perspective of adult education and its relationship to CHAT, Niewolny and Wilson (2009) convey their opinion that CHAT lacks “particular focus on the way in which such analyses discount or neglect the relational or dynamic concept of context” (p .40). While Yamagata-Lynch (2007) also notes the apparent separation of socio-cultural psychology from CHAT as activity analysis, her opinion does not concur with these philosophical critiques of CHAT. She defends Engeström’s theory as one that “attempts to capture the complicated nature of the human psychology” and that is “focused on identifying the simplest form of human activity to enable researchers to analyze the dynamic interactions among the individual, historical setting, ecological context, and cultural setting” (p. 480).

Yamagata-Lynch (2007) also considers two additional issues, both relating to the suitability of CHAT as a research method. One question she raises is the potential inappropriateness of generalizing findings from activity theory studies, while a second question relates to the comparative difficulty of CHAT research as qualitative research, compared to quantitative research. Both issues are common concerns expressed regarding qualitative research, and, within the paradigm of the quantitative research tradition, Yamagata-Lynch concurs with the observation, while noting the appropriateness of CHAT as a qualitative research method, especially in conjunction with other qualitative research methods.

It appears from the body of research previously presented in this literature review that CHAT is a legitimate tool in the realm of qualitative educational research. Its purpose in this research is as an activity analysis lens, and accordingly, the phenomenology manuscript explores an extension of CHAT as a qualitative research tool.

Virtual World Interviewing

The third topic addressed in this literature review, and the subject of the empirical study in Chapter Three, are on pertinent aspects of data collection for the phenomenology. The research contained here in these manuscripts compared the interview results obtained from face-to-face interviews with those obtained in a virtual world interview environment. Accordingly, the use of virtual world environments as a tool for qualitative research is addressed in this section of the literature review.

As O'Connor and Madge noted (2003), "the suitability of cyberspace as a venue for more qualitative online research, for example, in-depth interviewing, has received less attention" (p. 133) than other forms of qualitative research methods, such as surveys. Indeed, some academic researchers have shunned the exclusive use of online interviewing for data gathering. One of the first qualitative studies to use the internet for data collection in a qualitative study was *Life on the Screen: Identity in the Age of the Internet* (Turkle, 1995). Turkle acknowledged she did not rely solely on online interviews, in an attempt to reflect what she referred to as a "real life bias" (p. 324) in reporting her own findings and implied that an online environment may not completely reflect realism in data collection for a research setting.

Since Turkle's study, other researchers have come to opinions that reflect their own findings regarding the suitability of online environments as a research tool. Fetterman (1998), in following Turkle's thinking, expresses his own similar research philosophy of using online interviews only after a face-to-face meeting, stating, "software cannot replace face-to-face communication and interactions" (p. 80). Clarke (2000) noted both benefits (communication facilitation, practical, and economic) and limitations (technological issues, missing conversational cues) for online interviewing. These particular limitations are germane to the empirical study in Chapter Three. In their review of three case studies in text-based interactive interviewing, Crichton and Kinash (2003) noted the lack of face-to-face interview characteristics, such as the absence of verbal and visual cues

and emotional empathetic communications, as a shortcoming of online data gathering methods.

Virtual World Interview Environments

These studies regarding online interviewing (Turkle, 1995; Fetterman, 1998; Clarke, 2000; Crichton & Kinash, 2003) were done before the advent of virtual world environments such as Second Life™ (Linden Research Inc, 2003). While there are many and varied definitions of virtual worlds, one characterization combining multiple elements from various views defines virtual worlds as a “synchronous, persistent network of people, represented as avatars, facilitated by networked computers” (Bell, 2008, p.1).

The arrival of virtual world technology and its subsequent popular adoption as a social networking mechanism opened up new interview venues for the qualitative researcher. Research in such areas as engineering (Johnsen, Raij, Stevens, Lind, & Lok, 2007; Klopfer & Squire, 2008; Schall, Mendez, & Schmalstieg, 2008) and medicine (Bond et al., 2007; Raij et al., 2007; Wiecha, 2010) illustrate the use of virtual worlds in both the training of students and in the collection of qualitative data in those fields. Such examples are not limited to the physical sciences realm. Virtual worlds have been studied in business (Bryman & Bell, 2007; Kaplan & Haenlein, 2009) and by social scientists as a novel phenomenon of human interaction, for their use as an observational tool in virtual social settings, and as a laboratory setting to create experimental conditions

effectively and more efficiently than in their real world counterparts (Chesney, Chuah, & Hoffmann, 2009; Fox, Arena, & Bailenson, 2009).

Factors Influencing Virtual World Communication

These applications of virtual world interview environments have generated additional studies aimed at measuring the efficiency and effectiveness of responses given in the virtual world interview environment. Most research on the virtual world allows for a variety of analysis (i.e., quantitative, qualitative, or mixed methods) over both short and long-term research timeframes (Schroeder, 2002). The focus of many studies in virtual world research, as it applies to the social interaction between participants, has to do with presence, or “being there” in a world setting, and copresence, a sense of “being there together” with others in the virtual setting (Schroeder, 2002). While the sense of presence and copresence in virtual worlds, as in real life or face-to-face encounters, should correlate in the same direction (Slater & Steed, 2002), there are factors, such as the loss of novelty for the virtual world, that may offset the effect of copresence (Schroeder, 2002).

Blascovich, Loomis, Beall, Swinth, Hoyt, and Bailenson (2002) note two additional social factors relevant to the discussion of virtual world engagement and its effect on social science research: self-relevance and behavioral response or target response system. Self-relevance in the virtual world is defined as the meaning or value the participants give to their self-concept because of the social interaction. Those interactions considered mundane, such as those common to

daily life (grocery shopping, daily commute) have little self-relevance, while those communications with significant importance or meaning for the participant (job interview, academic examination) have higher self-relevance (Blascovich et al., 2002). In their study, these authors note that in the virtual world environment there is a relationship between social influence and realism, with higher social influence/realism related to higher self-relevance and vice versa.

An additional social factor Blascovich, et al. (2002) cite is the behavioral reaction participants in a virtual world display in reaction to a targeted response system. Low-level responses, such as those defensive reactions to unexpected stimuli (i.e., a loud noise), are associated with lower social influence than those behavioral responses connected to higher social influences, those responses providing cognitive feedback such as a performance appraisal. Both self-relevance and targeted response systems are social factors that should be considered in planning and evaluating virtual world social science research.

Computer Mediated and Face-to Face Communication

While readily available virtual world communications is a recent phenomenon, there have been some studies comparing virtual world and other computer mediated communication (CMC) modes to face-to-face communications in a variety of settings. Raji, et al. (2007) found that the communication between virtually represented patients and real medical students were similar to those between a face-to-face meeting between patients and medical students—however, the study found the medical students less engaged

and less sincere with the virtually represented patients. Warkentin, Sayeed, and Hightower (1997), studying virtual teams in a business setting, noted that while both teams using CMC and face-to-face meetings demonstrated comparable levels of communication effectiveness, the face-to-face teams were more satisfied with the communication process.

In a study comparing the communication attributes of virtual and face-to-face student dyads in a college course, Tutty and Klein (2008) found that while the virtual dyads outperformed the face-to-face pairs in measures of questioning behaviors and project performance, the face-to-face dyads outperformed in a posttest of content knowledge. In a similar study of a decision-making assignment given to college students, Jonassen and Kwon (2001) found that the focus of messages in CMC groups were more task oriented and were fewer in number than messages from the face-to-face group, whose communications indicated greater reflection and perspective.

Other studies focused on the comparison of CMC with face-to-face communications by utilizing content analysis of the messages themselves. Schneider, Kerwin, Frechtling, and Vivari, (2002) analyzed the characteristics of discussions comparing four online focus groups with four similar groups meeting face to face. This study found online participants contributed fewer words and shorter statements than the face-to-face participants did. In a similar study of focus groups, Underhill and Olmstead (2003) found no significant differences in the number of contributions to the group discussions, but found that face-to-face

members used significantly more words than online participants did. Reid and Reid (2005) also found that face-to-face focus group members contributed significantly more words to the discussion than the online members contributed, but found no significant difference in the number of ideas generated.

These focus groups cited above used typed text as CMC input. In a study of Taiwanese focus groups to research, “the effects of online audio communication for focus group effectiveness by comparing it to the conventional FTF [face-to-face] method” (p. 222), Cheng, Krumwiede, and Sheu (2009) measured quality and quality of information provided by the groups, among other attributes. These researchers found, “the online audio produces results that are superior to those that can be achieved in the FTF context (e.g. quality and quantity of information)” (p .237). However, the authors caution against generalizing the study’s results, as the subjects were all from Taiwan, potentially injecting the influence of national culture into the results, and noting that all subjects were adept at internet technologies, creating the potential of bias towards the CMC technology.

Conclusion

The studies reviewed in this chapter create a literature foundation for the two research manuscripts contained in this dissertation. Additionally, this literature is an underpinning for interpreting the results of the research designed to answer the two questions contained within the studies making up the methodology and phenomenology manuscripts, as well as providing an

explanation of the research lens used for the interpretation of the phenomenology.

The literature shows that the link between pre-service teacher training as a socio-cultural activity and cultural historical activity theory (CHAT) justifies the use of that theory as a research tool to explain the activity studied and to clarify the perceptions of the pre-service teachers as they related their experiences with group activities, as they become emerging teachers. Additionally, the research on virtual word communications for the methodology manuscript provides some guidance on similar data gathering techniques research, giving structure to the study of this novel phenomenology interview technique.

CHAPTER THREE

METHODOLOGY OF A NOVEL VIRTUAL PHENOMENOLOGY INTERVIEW TECHNIQUE--RESULTS OF A PILOT STUDY

Abstract

With the dramatic increase in the use of virtual world technology in the early 21st century as a social and communications medium, it seems logical that virtual world interview environments would be an emerging tool for the qualitative researcher, as either a supplement to or replacement for traditional face-to-face interview settings. This manuscript explores the effect of the influence of a virtual world interviewer, as compared to those obtained from a face-to-face interview, on participants' responses as part of a phenomenology study. This research is framed in the literature on prior explorations, mostly comparing computer-mediated communications to face-to-face interviews. While the results of those studies were mixed regarding various attributes examined, they appear to confirm the notion that there is no difference in meaning extracted from interview transcripts from the interview settings. This study confirms that conclusion by finding no significant difference in meaning units found in the coded transcripts of virtual world environment interviews and face-to-face interviews. Study limitations and additional research topics are discussed.

Introduction

Any list of the tools needed for qualitative research in the early 21st century should include all media available for transmission and recording of data, along with all information communication relevant to the topic of the study. The explosion in the use of the World Wide Web and its interconnected modes of broadcasting messages and data have made these types of communication, in various forms, vital to most people in the developed world. These electronic communications are also rich data sources for the qualitative researcher.

One of the recent sources of this qualitative data is found in information recorded from virtual world environments. Virtual worlds are defined as a, “synchronous, persistent network of people, represented as avatars, facilitated by networked computers” (Bell, 2008, p. 1). Popularized by Second Life™ (Linden Research Inc, 2003) and other virtual environments, interacting with others in such a setting is becoming common in social communications (Yee, Bailenson, Urbanek, Chang, & Merget, 2007), business transactions (Malaby, 2006), and academic environments (Bielaczyc, 2006). Data from these virtual worlds can be captured and stored safely and efficiently, and then disseminated to multiple researchers instantaneously as needed. Moreover, both audio and visual information can be recorded and analyzed for meaning, if desired.

This manuscript describes a methodology, here defined as the study of a method, comparing the results obtained from face-to-face interviews with that data obtained during interviews conducted in a virtual world environment. These

interviews were conducted as part of the data collection for another study—a phenomenology examining the experiences of a cohort of career-changing pre-service middle school teachers in their training viewed as an activity through the analytical lens of Cultural Historical Activity Theory (Engeström, 1987).

The focus of this particular qualitative study is on examining the methods used to explain differences in data recorded and analyzed using these two distinctly dissimilar interview settings by answering the following research question:

How might the use of a virtual world interviewer influence the answers received, as compared to an in-person interview?

The backgrounds of the authors of this study provide unique insight into these data collection settings and the interpretation of the data in answering the research question. One author has significant experience in multiple teaching situations (including traditional and online settings) across a number of content areas, as do the other authors, who additionally bring considerable expertise in virtual world environments in a number of settings, including teaching and research milieus. It was their combined interest in conducting research on qualitative data collection techniques in the immersive world environment that led to this investigation.

Literature Review

Face-to-Face interviews, dialogues conducted in person between a researcher/interviewer and participant or participants in connection with a topic

under study, are typically considered the “gold standard” in research interviewing. Some studies on the result of mode of questionnaire administration regarding data quality were inconclusive on the effectiveness of face-to-face interviews compared with other interview modalities, such as telephone interviews or internet surveys (Bowling, 2005; Newman et al., 2002).

Other researchers have addressed comparisons between aspects of computer-mediated communications (CMC) and face-to-face contact. While some studies have concluded that CMC is as effective or more effective as face-to-face communication in the areas of overall communication effectiveness, other studies, using more defined measures of meaning and analysis, have found differing results. Tutty and Klein (2008) and Jonassen and Kwon (2001) found conflicting results of effectiveness using multiple measures, such as questioning behaviors and content knowledge (Tutty and Klein) and task-orientation and perspective (Jonassen and Kwon), between CMC and face-to-face groups.

Using content analysis, other studies found differing results as well. Content analysis, “extracts desired information from a body of material by systematically and objectively identifying specific characteristics of the material” (C. P. Smith, 2000, p. 314). In studies of focus groups, Reid and Reid (2005), Schneider, Kerwin, Frechtling, and Vivari, (2002), and Underhill and Olmstead (2003) found that CMC participants used significantly fewer words than face to face participants in communications analyzed in their studies, while finding no significant differences in other meaning measures in the two groups. While the

studies cited above comparing CMC and face-to-face communications used typed messages as a medium of communication, Cheng, Krumwiede, and Sheu (2009) used online audio as a means of messaging. Contrary to the research cited above, these researchers measured quality and quantity of information provided by the groups and determined that CMC group members produced significantly higher measures of quantity and quality of information than did face-to-face groups.

Initial Research Study

Background of the Research Study

The participants in this study were pre-service teachers in a Master of Arts in Teaching (MAT) program in middle level education at “Southland University,” a major research university located in the Southeastern United States. This initial-certification teacher education program consists of a 36-hour curriculum where its graduates become certified and highly qualified to teach in the middle grades (Grades 5-9 in most of the US) in one or more of the following content areas: Language Arts, Math, Science, and Social Studies. Usually, students complete the program in 12 to 16 months. All of the students in this study are career-changers, where the student originally trained for and practiced a profession other than education for a significant period (two or more years) before beginning training for a career in education.

The MAT program is based on a cohort model, where students take classes, gain experience in a semester-long practicum, and then student teach

on a common timeline before graduating with their cohort. In the underlying phenomenology study, of which this methodology research was an element, the common experience pertained to an assignment given to all members of the cohort.

Summary of the Primary Research Method

The primary research study underlying this methodology is a phenomenology of the perceptions of career-changing pre-service middle school teachers, expressed from experiences in their training, which included participation in an activity-based project. A comparison of the two modes used to record the interview data required for the phenomenology is the topic of this study.

Phenomenology is based on the transcendental philosophy expressed by Husserl that a person's knowledge is framed by their lived experiences. According to Marshall and Rossman (1999), phenomenology is, "the study of lived experiences and that we understand those experiences to develop a worldview" (p.112). Additionally, this type of interview is done, "to describe the meaning of a concept or phenomenon that several people share," (p. 112). The phenomenology technique used is directed toward answering the question "What is the essence of the experience?" (Creswell, 2009), a method, "that stresses the interconnections of embodied subjects and their mutual constructedness" (Shildrick, 2009, p. 38) and as, "the act of observation that gets re-interpreted" (Ihde, 1999, p .20).

In the underlying study, the phenomenology followed a modified method of the technique prescribed by Moustakas (Moustakas, 1994) by bracketing the research by expressing the researchers' own experiences with the phenomena and citing relevant literature regarding the topic of the study. Next, and the gist of this methodology, was an examination of interview transcripts, principally the analysis of answers to semi-structured interview questions (Appendix A) collected in both face-to-face and virtual interview environments from the underlying study's participants. Follow up interviews were done to assess the accuracy of qualitative data transcribed, confirm or expand themes uncovered in the interviews, and explore perceptions of the interviewees regarding the interview setting (face-to-face or virtual). The results of these interviews were coded, using the framework of Cultural-Historical Activity Theory or CHAT (Engeström, 1987) as initial coding classifications to derive meaning units. In the phenomenology, those meaning units were reduced to meaning themes, and a composite meaning of the experience was reported and bracketed by the supporting literature (Moustakas, 1994).

Method

Description of Data Collection Techniques

The core of this methodology is an analysis of the results of the interview data collected in two disparate methods used for the underlying phenomenology study. One-half of the participants ($n_1=5$) were interviewed using traditional face-to-face interviews, conducted in the office of one of the authors. In the remainder

of the interviews, the researcher and participants ($n_2=5$) were not in the same physical location for the interview, but instead met in a virtual world location.

The purpose of interviews in phenomenology research is to gain research perspective on a lived experience, familiar to those participants taking part in the research. These perspectives are best obtained via a semi-structured interview of the participants—one that takes the form of an everyday conversation but focused on getting to the essence of the phenomena by centering on certain themes as guiding the conversation and questions asked (Kvale & Brinkmann, 2009). As recommended by Kvale and Brinkman, the interviews for this study were transcribed and both the transcripts and audio recordings, along with the researcher's field notes, were analyzed for meaning.

Interview Question Development

For the phenomenological study, semi-structured questions were developed using the framework of CHAT. CHAT is a model used to understand activity by explaining qualitative changes in human practices over time (Engeström, 1987). For the purposes of the phenomenology, CHAT served essential roles in the development of both question development and a lens for analysis of the responses.

Certain terms and vital elements make up Engeström's (1987) activity triangle, the tool used here as a graphic representation of an activity system according to CHAT (Figure 2). The elements of this system were used in

development of the semi-structured guiding questions during the phenomenology interviews and the results reported from that research in a separate manuscript.

In this methodology, certain elements of CHAT (community, division of labor, meaning, outcome, tensions, tools, and rules) were used as meaning units for content analysis. Additionally, other attributes recorded during the interviews (length of interview in minutes, total words, number of quotations analyzed, total codes assigned, number of meaning units, number of interviewer questions, and number of conversational units) were recorded for study.

Data Collection Protocol

Prior to the interviews, Institutional Review Board approval was obtained for the study (#IRB2009-285; Appendix B) and the criteria for participation was communicated to Coordinator of the MAT program, a co-researcher in a series of studies resulting from the phenomenology. Those criteria required the participants' enrollment in the middle grades curriculum course and classification as a career-changer, as defined earlier in this manuscript, creating a purposeful sample (Trochim, 2001). A sign-up sheet was passed out in the curriculum class among all MAT students in the cohort ($N = 38$), asking for volunteers for the study. From those students indicating interest in participating, the MAT Coordinator identified those candidates that, in her professional opinion, met the career-changer criterion for participation. Of those students qualifying, the first author selected ten ($n=10$) of these students with a distribution roughly

representing the sex distribution of the MAT cohort--50% female, 50% male. A mutually agreeable time was then scheduled for an interview.

As noted earlier, interviews were conducted in two modes and participants were assigned to these two groups by convenience sampling (Trochim, 2001). The research plan called for half of interviews to be in a face-to-face meeting between the first author and the participant. These meetings were conducted in the office of the first author, located in the classroom suite used by the MAT program (Figure 5). After providing the participant with information for informed consent (Appendix C), the interviews began. The interviewer asked semi-structured questions and took field notes (Appendix A) to record additional information during the interview. As is typical of phenomenology research, these discussions took the form of a conversation, with interviewees encouraged to freely discuss and describe their experiences in response to the questions without restriction (Kvale & Brinkmann, 2009). These face-to-face interviews were recorded using a digital audio recorder. While the audio from these interviews was transcribed, no video of the interview was recorded in the face-to-face interviews.

The other interview mode involved the use of a virtual world setting. The virtual world platform used was the AET Zone (Bronack, Riedl, Tashner, & Greene, 2006), a 3D web-based learning environment developed in part by one of the authors of this study. The AET Zone is designed as, "a means to build virtual worlds for students and instructors and other invited guests to meet and

work together in ways not found in other learning environments that are currently available” (Cheney, Bronack, Sanders, Riedl, & Tashner, 2007). Developed at Appalachian State University, the AET Zone is principally a pedagogical tool designed to bring the classroom experience into the virtual world by allowing both novice student and content expert to have a personal presence in a common virtual learning space, regardless of distance between them. Built to foster a social constructivist process in an online learning environment, the AET Zone is used to advance, “a peer-based approach to teaching and learning” (Bronack et al., 2008, p.63), consistent with the Vygotskian principle of learning from a more knowledgeable other and expanding that concept to the virtual world via the idea of presence pedagogy.

The use of the AET Zone in this research was as a mechanism to capture audio and video responses to the same questions used in the face-to-face interviews with field notes (Appendix A) used during these virtual interviews. Additionally, a visual recording of the interviewer’s screen during the virtual interview was recorded using CamStudio™ (Rendersoft Software, 2001) and used for analysis of interaction between the avatars of the interviewer and interviewee (Figure 6). Any interaction between the avatars was also noted in the field notes.

The procedure for these interviews conducted using the AET Zone was somewhat different from those carried out face-to-face. The participant was asked to meet the interviewer at his office, previously described in the face-to-

face protocol. The participant was informed of the virtual world setting of their interview and taken to another office where the AET Zone system was started on the internet-enabled system in that office. As all participants stated they had no experience in virtual worlds, they were instructed in the use of the AET Zone system and given a tour of the virtual world environment. The participants were provided instructions on how to respond to audio and visual prompts, and shown how to move avatars around in the virtual environment with unscripted movements and preset emotions when responding to questions. After the participant indicated his or her comfort in using the system, the researcher showed available avatars in the AET Zone environment and encouraged the participant to pick one that best represented him or herself.

After establishing these elements of the interview in the virtual world environment, the researcher returned to his office, where his computer was also linked to the AET Zone with a pre-established avatar representing him. At that point, the interview began, using the same questions as in the face-to-face interview protocol.

Regardless of mode used, the interview was concluded by thanking the participant for participating in the research and indicating brief follow-up interviews to clarify information provided in the first interview would be scheduled in a timely manner. These additional discussions took place approximately one month after the initial interview and were used in validating the results of both the phenomenology and this methodology.

Analysis Technique

After completion of the initial interviews, the resulting digital audio files were transcribed, printed, and read for initial understanding, clarification, and adjustment of erroneous transcription. After any needed corrections, the transcription was prepared for analysis by assigning each participant a pseudonym and classifying the transcript as either the result of a face-to-face interview or one conducted in the virtual interview environment.

To facilitate the next phase of analysis, a coding manual (Appendix D) was prepared for use in evaluating the interview transcripts by two trained coders, one the first author. This coding manual presented a system detailing the necessary information needed in order to encode the transcribed interview for further analysis by providing operational definitions of terms utilized in this study and the underlying phenomenology. This system was intended to supply a measure for comparison of the transcripts, by means of a priori categories derived from CHAT with an inductive approach to assign the codes (Rourke & Anderson, 2004; C. P. Smith, 2000). These codes were generated to identify 1) the existence of a significant statement and, 2) if present, assignment to a category of meaning according to CHAT.

At the next step of analysis, each transcript was further analyzed according to phenomenological technique described earlier in this manuscript in the summary of the primary research study, and utilized in that research. The

remainder of this specific methodology focuses on the comparison of the narrative text generated using the two interview modes previously described.

Content Analysis

Content analysis was used for the comparative analysis of the interview transcripts. Content analysis is a procedure used to pull out information from qualitative information, such as text material, and used to examine it in a reliable and verifiable manner by using defined and explicit quantitative techniques (C. P. Smith, 2000). Smith notes, “when categories of analysis are explicit, this type of study provides a powerful method by challenging ideas concerning differences...between groups” (p. 315).

In analyzing these transcripts for this study, the appropriate unit for measurement was determined to be the message level. De Wever, Schellens, Valcke, & Van Keer (2006) reviewed various methods designed to evaluate the transcripts of computerized discussion groups using a critical approach to compare these various schemes. From their work, multiple studies reviewed (Anderson, Rourke, Garrison, & Archer, 2001; Dillenbourg, Veerman, & Veldhuis-Diermanse, 2001; Fahy, 2001; Weinberger & Fischer, 2006) indicated that for transcripts with a similar focus to the underlying phenomenology (social networking; social constructivism; community), the message was the appropriate unit of analysis.

Validity was attained using several approaches. Negative cases found in the transcripts were reviewed. All participants were given a copy of their interview

transcript to note discrepancies (none were noted) and were given a follow up interview questionnaire to insure dependability of the interview process.

Reliability for the transcript analysis was achieved by the use of a robust inter-rater reliability measure. Studies reviewed by De Wever, et al. (2006) indicated suitable measures of inter-rater reliability for such transcripts. Inter-rater reliability is defined as, “agreement or consistency among peers; the extent to which raters judge phenomena the same way” (Vogt, 2005, p.157). Two often-cited measures of inter-rater reliability are percentage of agreement and Cohen’s Kappa (Anderson et al., 2001; Dillenbourg et al., 2001; Fahy, 2001; Weinberger & Fischer, 2006).

While percentage of agreement, the simple measure of how often raters agree in their coding classification, is commonly used, this method fails to take into account the frequency a coding category is used or correct for the coders’ agreement occurring purely by chance (C. P. Smith, 2000). Cohen’s Kappa (Cohen, 1960) is used to account for these limitations. By one description, “Cohen’s Kappa coefficient κ relates the number of concordant ratings to the number of discordant ratings while taking into account the agreement of ratings that could be expected by chance” (Burla et al., 2008, p.114). Cohen’s Kappa yields values between +1 and -1, with +1 indicating absolute agreement between the raters, -1 indicating absolute disagreement, and zero indicating pure coincidence. Values less than zero indicate agreement worse than that obtained

by chance (Burla et al., 2008). In this study, Cohen's Kappa was used as a reliability measure.

Results

The following sections illustrate the outcome of the syntactical (interview length, word total, and message count) results, inter-rater reliability, and content (meaning units, questions, and conversational units) analysis of the interview transcripts. Furthermore, participant satisfaction with the interview process was noted via a follow-up narrative questionnaire. A larger number of participants are required for meaningful statistical analysis, but implications can be drawn from these results. All statistical analysis were performed for $n_1=n_2=5$.

Interview Length, Word Total, and Message Count

Table 2 shows the interview length, word total, and message count for the ten interviews conducted, by interview means (face-to-face or virtual). Several differences are noteworthy. Interview time (in minutes), word total, and message counts are all remarkably lower in the virtual group when compared with the face interviews. These differences are somewhat accounted for by the presence of two outliers, Frank and Ralph, in the face-to-face group.

Mean ranking of interview length, word total, and message count differences in the two groups were examined for statistical significance using two-tailed Mann-Whitney tests (U) (Table 3). Between the two groups, interview time differed significantly ($U = 0.000$, $Z = 2.61$, $p = 0.009$). Differences in word

total ($U = 5.000$, $Z = 1.567$, $p = .117$) and message counts ($U=2.000$, $Z = 2.93$, $p = .028$) did not differ significantly.

Kappa Analysis

Table 3 summarizes the Kappa calculations for meaning units, questions, and conversational units assigned, by interview mode. The Kappa range for that category is shown, along with the number of responses given for that category. Acceptable reliability for this study was defined as $\kappa > .60$ (Landis & Koch, 1977; Viera & Garrett, 2005). These Kappa calculations are shown by participant in Appendix G. Of the 772 total units assigned, 30 meaning units with $\kappa \leq .60$ were excluded from further analysis, leaving 742 reliable meaning units for further content analysis.

Content Analysis

Table 4 shows the total reliable meaning units assigned for content analysis, consisting of the number of *meaning units*, *questions*, and *conversational units* assigned and listed by interview mode. *Meaning units* are those answers fitting the classification of the elements of CHAT, the analysis lens of the underlying phenomenology. Those classifications consist of answers coded *community*, *division of labor*, *meaning*, *question*, *rules*, *tensions*, and *tools*. *Questions* are those direct questions asked by the interviewer, while *conversational units* are interviewer comments and conversation between the interviewer and participant without meaning in the CHAT framework. Differences

in mean ranking of meaning units, questions, and conversational units of the two groups were examined using two-tailed Mann-Whitney (U) tests (Appendix F).

Differences in meaning units ranking did not differ significantly ($U=5.5$, $Z = 1.467$, $p = 0.142$). Questions differed significantly ($U= 1.500$, $Z = 2.333$, $p = 0.020$) as did differences in conversational units ($U = 2.0$, $Z = 2.193$, $p = 0.028$).

Observations of Avatar Responses

As noted previously, interviews in the AET Zone were recorded in both audio and visual aspects. Additionally, field notes were kept during the interview process for both interview modes. No interaction between the interviewer and participant's avatar was observed in any of the five virtual world interviews, even upon prompting by the interviewer's avatar. No movements, beyond those considered artifacts of the AET Zone, were observed in the participant's avatar.

Participants Satisfaction with Interview Mode

In a follow-up questionnaire (Appendix E), participants were asked if the interview experience had allowed them to express fully their insights and perceptions of the experience studied in the underlying phenomenology. Additionally, the participants were asked in what positive and negative ways the interview mode had contributed to that experience. Two participants did not provide an answer or were unavailable. Of the eight participants answering these questions, all participants expressed satisfaction with both the interview experience and the interview mode. Two typical interview responses are noted below:

John (face to face): I believe that during the interview experience I was able to express my insights. I felt comfortable with the in-person interview. It felt more like a pleasant conversation than an interview.

Abigail (virtual): I felt that doing a virtual interview made it a little more of a relaxed process. I probably expressed myself a little more freely doing a virtual interview than I would have during a face-to-face interview.

Discussion

We approached this methodology as a pilot study for studying the differences between participant responses in a face-to-face interview setting compared with those found in the virtual world. We looked at several aspects of potential differences, from the framework of similar studies comparing face-to-face and CMC communications in various settings, by asking how the use of a virtual world interviewer might influence the answers received, as compared to an in-person interview.

Our results indicate important findings in several areas. Interview time in the face-to-face mode was significantly different from those conducted in the virtual environment, yet total words and total messages analyzed were not found to be significantly different. These findings imply that interview communications in the virtual environment were more efficient, with a higher words and message per minute ratio in the virtual interview setting than in a face-to-face meeting.

This conclusion is bolstered by the determination of no significant differences in meaning units found in the written transcripts between the virtual

and face-to-face discussions. Meaning units were the crux of the related phenomenology study used for this methodology, as they expressed the lived experiences of the participants. Accordingly, for the purposes of a phenomenology, these findings suggest that the measured amount of perceived meaning of an experience can be shared in a virtual environment with no significant difference than in a face-to-face encounter.

A caveat to this conclusion is found by examining the significant differences between the virtual and face-to-face interview modes regarding the mean ranking of the number of questions asked and conversational items coded in the interview transcripts. The phenomenology interview has as one of its purposes the gathering of, “rich and nuanced descriptions,” as well as the use of, “critical interpretative questions during the interview” (Kvale & Brinkmann, 2009, p. 216). Moreover, Kvale and Brinkman note, “the research interview is an interpersonal situation, a conversation between two partners about a theme of mutual interest” (p. 123). Based on the results of our study, we question if the differences in question and conversation mode could distract from the finding of the lived experience—the essence of phenomenology research.

Additionally, the qualitative finding of participant non-interaction during the interview using a self-created avatar is notable. To quote one of the virtual world participants, “Having a person standing in the middle of the virtual world with no real purpose was a little strange.” While all virtual interviewees expressed satisfaction with the interview process and its capacity to capture the lived

experience under study in the phenomenology, it appears that interaction between the interviewer and participant's avatar added no additional value to the data gathered to capture that experience. A simple explanation of this observation is that none of the participants had any meaningful experience or knowledge in the use of virtual worlds; hence, it had no meaning to them.

As a pilot study with a low number of participants, any statistical inferences found lack significant power for a generalized application of our findings, but our goal was to create a frame for further studies in this area. Additionally, the participants of this study do not represent a broad sample of the overall population of individuals undergoing the experience studied in the phenomenology. As more of the population becomes familiar with virtual world technology, and as researchers become more adept at using the virtual interview, the results of new studies comparing face-to-face and virtual world research interview settings may yield new and important insights.

CHAPTER FOUR

TEAMS, TEACHERS, AND TENSIONS: PERCEPTIONS OF GROUP ACTIVITIES OF CAREER-CHANGING PRE-SERVICE TEACHERS

Abstract

How do career-changing pre-service middle school teachers perceive the effect of group-based training activities on their abilities as emerging teachers? This manuscript attempts to answer that question in a study of Master of Arts in Teaching students, using a modified version of Moustakas' (1994) phenomenology techniques viewed through the theoretical lens of Cultural Historical Activity Theory (CHAT) (Engeström, 1987). In a study based in the literature on pre-service teacher cohorts and teacher socialization, ten pre-service teachers were interviewed using semi-structured interview questions regarding their experiences in a group-based training activity. The transcripts of these interviews were analyzed using the structure of CHAT. From this analysis came five themes. These themes were used to create composite textural and structural descriptions of the experience, and then to produce a narrative essence of the experience. Study limitations and suggestions for additional research are discussed.

Introduction

Activities in teacher education programs typically entail working cooperatively in small groups to assist in the learning process of the profession. This process is often aided by organizing such programs into cohorts and further dividing the cohort into smaller teams to work on various projects as a group activity. This phenomenology looks at the experiences reported by a group of career-changing pre-service teachers undergoing one such process, examined through the lens of Cultural Historical Activity Theory (Engeström, 1987). The theory creates a structure to identify the sociocultural aspects of the activity as well as a framework for analyzing tensions resulting from it, suggesting areas for teacher educators and others to review practices in the preparation of pre-service teachers.

One Researcher's Journey

(RK) This study arises from my personal and professional experiences in teacher education. During my own initial certification training, which took place several years ago in the same program as the one studied here, I took part in identical activities experienced by this study's participants. Later, as part of my own doctoral training, I taught that very class in the same program and used the identical group project activity as part of my course requirements. As both a student and instructor, I was required to use the activity, as the project was part of a required assignment for graduation.

This activity was a semester-long group project used in the training of pre-service teachers and designed to simulate the operation of an in-service teaching team in a middle school curricula using integrated units and lesson plans as part of instruction. The type of integrated curricula used for this project is a shared one where, “important concepts are sometimes overtly shared across disciplinary fields, although discussions continue to be located within one or another of the independent disciplines” (Applebee, Adler, & Flihan, 2007, p. 1006). An integrated unit incorporates the spirit of *This We Believe: Keys to Educating Young Adolescents* (National Middle School Association, 2010). This monograph, a foundational document of the National Middle School Association, calls for curriculum that is “challenging, exploratory, *integrative*, and relevant” (p. 15) [emphasis added] in an attempt to define best curriculum practices for the middle grades. Additionally, the National Middle School Association (NMSA) uses part of the work product of this assignment as an artifact for assessing continuing accreditation of this Master of Arts in Teaching (MAT) middle-level teacher preparation program.

My outcome and sentiment, as both student and instructor, were mixed. While one idea of this assignment was to simulate real life teamwork in a professional middle school environment using an integrated team lesson plan, as a career-changer and pre-service teacher in the MAT program I did not see any meaningful integrated team teaching in the public schools where I did my teacher training. Additionally, many of my pre-service cohort teammates were openly

ignoring the teamwork aspects of the assignment, leaving the burden of the work to the rest of the team. Later, as a practicing middle school teacher, I found that while I occasionally had the enjoyable chance to use this worthwhile pedagogical technique, those opportunities were rare, creating a dissonance between theory and practice.

When I became a university instructor and gave the same integrated team assignment to my own middle school curriculum class, many of my students reported the same issues I had some years before. While some teams evenly split the work and seemed to benefit from the assignment, there were numerous complaints about the project. Most, if not all, centered on the same two issues I had as a student—inequitable division of workload within the team and inapplicability to actual professional teaching practice as experienced in the MAT practicum experience.

This study intends to examine the dynamics of a group activity in a socialization context, by looking at the perceptions of a recent cohort of MAT students with the same assignment I had as a student and gave as an instructor. This time, I am neither student nor instructor—my view is now that of a researcher. While my background certainly influences my thinking as I investigate the topic, I will attempt to set aside my own prior experiences with this group project and focus on those factors that influence it as a socio-cultural activity.

I wondered what in this process would complicate what seemed to be a straightforward assignment. I attributed my own less than positive experience to issues of a poorly matched team. I wasn't sure if my experience was a generalizable case or if my situation was unique until I saw many of my own students struggle with the same assignment, organized in a similar manner. That realization removed the idea of uniqueness from my own experience. Accordingly, I felt that the common experience was worthy of further study as an example of a social process within pre-service teacher training.

Literature Review

As it is commonly practiced, the process of teacher training is partly a social experience, a development often facilitated by the organization of teacher training programs into cohorts. This organizational practice has its theoretical basis in socio-cultural psychology, specifically constructivism, and it is facilitated by teacher socialization. Teacher socialization is that process where pre-service teachers are acclimated into the societal elements of the profession, such as attitudes, social norms, and behaviors (Staton, 2008). The development of the professional teacher identity has a theoretical foundation in the socio-cultural psychology of Lev Vygotsky, where pre-service teacher training is explained as an ongoing process of "participation in a social practice" (van Huizen et al., 2005, p. 274). Teacher socialization is also considered as an integral part of constructivist teacher education, by promoting a constructivist pedagogy and,

additionally, by introducing new ideas about teaching through the process of working with others (Dangel & Guyton, 2004; Richardson, 1997).

Teacher socialization has been further explained by additional theories focused on professional interaction. Communities of Practice (Lave & Wenger, 1991) is one such model designed to build an individual's professional development within the larger community of pre-service teachers by regular interaction, instilling the social elements of teamwork and professionalism through engagement with the community, imagination in making connections, and alignment with the broader community (Au, 2002). Professional socialization models such as mediated action (Wertsch et al., 1995), cultural nature of human development (Gutierrez & Rogoff, 2003), and community of learners (Rogoff et al., 1996) have expressed the same general concepts of teacher socialization.

The idea of community is similar to the concept of cohorts for pre-service teachers, where relationships with the community of peers and instructors is vital to the pre-service teachers learning (Dinsmore & Wenger, 2006). The use of cohorts in teacher education programs originated in other professional training programs (law, medicine) and spread to teacher education in the 1980s (Howey & Zimpher, 1989; Milstein, 1992). While the term teacher cohort has multiple operational definitions (Dinsmore & Wenger, 2006; Goodlad, 1990; The Holmes Group, 1995), teacher cohorts are, in essence, a means for conveying the participant and pedagogical knowledge to a defined group of pre-service

teachers, as well as providing a socialization process into the teaching profession.

Cohorts have been a recommended mode of organization for teacher education programs for nearly 25 years (Howey & Zimpher, 1989; Milstein, 1992; Tom, 1997). Their use is supported by research indicating they promote clarification about the teaching profession (Mather & Hanley, 1999), provide a professional support system (Howey & Zimpher, 1989), offer perspective from other backgrounds (Warring, 1990), and add to shared effort and teamwork (Rolheiser & Hundey, 1995). Other studies have noted issues arising from the use of cohorts in teacher education programs. Research on teacher education cohorts has illustrated examples of negative competition (Barnett & Muse, 1993), conflict with faculty (Radencich et al., 1998), and non-assimilation into the cohort for some members or a stifling effect on other individuals as a result of cohort bonding (Mandzuk et al., 2005). Further negative effects seen in some teacher cohorts are the results of demographics differences within the cohort. In the finding of some studies, conflicting personalities and issues of gender and race interject themselves negatively into the functioning of the cohort (Agnew et al., 2008; Sapon-Shevin & Chandler-Olcott, 2001), leading one researcher to describe teacher cohorts as “dysfunctional families.”

The above-cited studies of teacher cohorts were based on overall perceptions of the participants regarding the attributes of cohort operations and the positive and negative aspects of them. These studies approached cohort

operations holistically, as opposed to viewing specific cohort operations as a socio-cultural activity. As previously noted, cohorts are social constructs, closely tied to the concepts of constructivism and teacher socialization. It seems logical that any view of teacher cohorts would be well served by approaching this professional training mechanism as a series of socio-cultural activities. This study focuses on those aspects in an attempt to provide teacher educators and higher education administrators additional insight on teacher education cohorts, based on the perceptions of cohort members. To provide that view, the phenomenological approach was used in this study of a cohort of career-changing pre-service middle school teachers to answer the following question:

How do career-changing pre-service middle school teachers perceive the effect of group-based training activities on their abilities as emerging teachers?

Theoretical Lens

The theoretical lens used to analyze the narratives collected in the phenomenology interviews is Cultural-Historical Activity Theory (CHAT), a model used to understand activity by explaining qualitative changes in human practices over time (Engeström, 1987). CHAT has a philosophical foundation in the pragmatism of Marx along with the subject/object relationship of Kant's philosophy and the dialectics of Hegel (Engeström et al., 1999; Hardcastle, 2009). These viewpoints shaped the thinking of Vygotsky and his students Aleksandra Luria and A. N. Leont'ev on the topic of activity as an artifact-

mediated action by linking the relationship between subject and object by means of the use of tools (or artifacts; Figure 1) (Cole, 1996). Leont'ev further developed this artifact-mediated action model by making "historically evolving object-practical activity the fundamental unit of analysis" (Roth & Lee, 2007, p. 189) to provide the basis for the evolution of CHAT.

CHAT was developed in the late 20th century as a continuation of Leont'ev's work, initially by Yrjö Engeström (Roth & Lee, 2007). Engeström's development of the activity triangle model (Figure 2) is pivotal in the analysis of activity by extending the work of Vygotsky and Leont'ev and expanded those concepts by adding additional points of the model (rules, community, and division of labor) to account for additional influences on human activity and its outcome (Engeström, 1987). Figure 2 contains the Engeström's activity triangle and the elements of its use as a theoretical base in this study.

Since its first development by Engeström, CHAT has influenced theoretical work by Michael Cole, Jean Lave, Barbara Rogoff, and James Wertsch in the study of organizations and cultural activity (Roth & Lee, 2007). Engeström and others have further expanded the initial formulation of CHAT to include analytical tools to examine the intersection of two connected activity systems (third generation CHAT) (Engeström, 2001), and the tie between multiple and loosely connected individuals in an activity system (knotworking) (Engeström et al., 1999). Additionally, CHAT has been identified as a practical theory to explain human interactions (Foot, 2001).

Phenomenology Technique

According to Titchen and Hobson (2005), phenomenology “is the study of lived, human phenomena within the everyday social context in which the phenomena of those who experience them” (p .121). Originating in the philosophy of Descartes and Kant and expanded by the work of Husserl and Heidegger (D. W. Smith, 2009), it is the idea of lived experience as a source of knowledge that is the essence of phenomenology. According to Giogri (2009), the assumption of the “phenomenological attitude means to regard everything from the perspective of consciousness, that is, to look at all objects from the perspective of how they are experienced regardless of whether or not they are being experienced” (pp. 87-88).

In the phenomenological approach used in this study, four basic research suppositions are stipulated (Creswell, 1998). First, a description of the experience is obtained from those involved in the activity under study. Second, all judgments about the veracity of the experience are withheld, in a process called epoche, until examination. Third, the supposition is that the consciousness of the subject is inextricably directed at the object. This postulation relies on the fourth assumption, repudiation of subject-object dichotomy, expressed as where the “object is only perceived within the meaning of the experience of an individual” (Creswell, 1998, p. 53). It is the experience of those pre-service teachers during an activity making up part of their training that is the focus of this study.

Phenomenology technique suggests that up to ten participants should be sufficient for the study (Creswell, 1998). This phenomenology followed a modified method of the one summarized by Moustakas (Moustakas, 1994) as follows. First, the researchers' own views and experiences on the issue under study were expressed in a process called epoche (see introduction), and the study was framed by the relevant literature to the participant under study—group activity experiences of pre-service teachers.

Second, the collection and analysis of interview information, principally the answers to semi-structured interview questions (Appendix A), was gathered in both face-to-face and virtual interview environments. This information was transcribed and from that documentation significant statements were extracted. From these significant statements, themes or meaning units were found by noting repeating or overlapping statements. Follow-up interviews were done to assess the accuracy of qualitative data transcribed, confirm or expand themes uncovered in the interviews, and explore perceptions of the interviewees regarding the interview setting.

Third, these themes were examined by forming meaning clusters of connected units from analysis of the themes. Five overarching key themes were developed from these connected units. From these themes, a narrative summary of the essence of the experience and its meaning was created and bracketed by the literature pertaining to that meaning.

Method

Semi-structured interviews were conducted with ten participants over the period October 2009 to January 2010. The purpose of interviews in phenomenology research is to gain research perspective on a lived experience, familiar to those participants participating in the research. These perspectives are best obtained via a semi-structured interview of the participant's lived experiences—one that takes the form of an everyday conversation but focused on getting to the essence of the phenomena by centering on certain themes as guiding the conversation and questions asked (Kvale & Brinkmann, 2009). These participants were graduate students in a cohort of the Southland University's (a pseudonym) Master of Arts in Teaching (MAT) in Middle Grades (Grades 5-8) Education program, located at a branch campus of this research-intensive university in the Southeastern United States. Purposeful sampling (Trochim, 2001) was used to select participants who fit the career-changer criteria, as stated in the research question. For the purpose of this study, a career-changer was defined as a person who originally worked in a field other than education for some meaningful time (more than two years) before beginning his/her professional preparation in education. The MAT program coordinator contacted the cohort and those cohort members who were qualified were asked to consider participation in the study.

We obtained Institutional Review Board approval before beginning the interviews (#IRB2009-285; Appendix B). Ten qualified participant volunteers

were selected based on their availability for interview and the desire for the final sample to reflect the approximate gender proportion of recent cohorts of the MAT program. Five males and five females (all but one White) ranging in age from 25 to 61 participated in the study. The time the participants spent in the workplace prior to entering the MAT varied from three to 40 years. The teaching content areas of participants included all content areas offered for teacher certification in the MAT.

Semi-structured interviews, lasting from 19 to 75 minutes (average 41), were conducted with the participants. Two venues for interviewing were used, a face-to-face location (five interviews) and a virtual world (five interviews) setting. An analysis of the interview content yielded from these two methods was done as part of a separate study (the transcriptions from all interviews conducted are included in this study analysis). All interviews were conducted in the office of the first author or in the virtual environment established by him. Of the participants interviewed, two were former students of the first author in another course; however, none of the participants were students of any of the researchers of this study in the class where the activity under study was assigned.

After personal introductions and providing the participants with informed consent information (Appendix C), permission was obtained from all participants and the semi-structured interview protocol began (Appendix A). For this study, all interviews were digitally recorded and transcribed for analysis. The names of the participants (Table 1) were anonymized before further analysis was performed, to

insure no personally identifying information would be present in the final manuscript. The transcripts were then entered into Qualitative Data Analysis Program™ (University of Pittsburgh, 2009) to allow for coding and data analysis available in that program.

The data analysis utilized a modified version of Moustakas (1994) phenomenology technique. These modifications were made in order to make use of Engeström's (1987) second-generation cultural historical activity theory (CHAT) and, additionally, to increase reliability and validity of the results.

As recommended by Kvale and Brinkman (2009), the interviews for this study were transcribed and the transcripts and researcher's field notes were analyzed for meaning. To begin the analysis, all transcripts were read to obtain a general perspective of the narratives. Then, as a validity step, the interview answers contained in the transcripts were coded by two trained raters (one, the first author) and these coded answers were compared by inter-rater agreement using Cohen's Kappa κ (Cohen, 1960) for classification as a meaningful statement within the definitions of CHAT as expressed in Figure 2. A cutoff for classification meaningful statement was established at $\kappa > .60$ (Landis & Koch, 1977; Viera & Garrett, 2005). By use of this cutoff point, 742 significant meaning units were identified describing the experience within the analytical lens of CHAT (Table 4).

As described by Moustakas (1994), the following steps were used to produce the analysis and essence of the experience of those participants in the

activity under study—the integrated team plan unit. After listing all relevant statements and by using the elements of Engeström’s activity model (Figure 2) of CHAT as a preliminary grouping classification, these statements were reduced to those necessary to understand the experience by eliminating superfluous statements. Those statements found to be non-repetitive, unambiguous, and non-overlapping were abstracted and labeled. These statements became the invariant constituents, which were then clustered into units of similar meaning to create the core themes of the experience. Tables 5 and 6 show examples of some of the invariant structures and the resulting meaning units.

These themes were checked against the research records, such as transcripts and field notes to insure compatibility with the documentation, and then synthesized into a textural description of the themes using verbatim examples from the interview transcripts. A structural description of the experience supported by the textural descriptions was constructed. These descriptions were verified using a process of imaginative variation, where the meaning of the structural and textural descriptions were tested to see if the structural descriptions changed if a theme were omitted or altered. None of the themes were omitted or altered. In Table 6, we illustrate the five themes and the meaning units from which they were resulted. Then, we produced a composite textural and structural description of the phenomena. Finally, we created a narrative of the essence of the experience that represents the entire group.

Validity and Reliability

In arguing for a post-modern definition of validity and reliability as these terms are applied to qualitative research, Seale (1999) suggests that, "...the modernist headings of *validity* and *reliability* no longer seem adequate to encapsulate the range of issues that a concern for quality must raise" [emphasis his] (p. 471). In their "synthesis of community viewpoints" (p. 522) broadening the traditional definitions of validity, Whittemore, Chase, and Mandel (2001) create a schema of the elements of validity in qualitative research, with primary (authenticity, credibility, criticality, integrity) and secondary (congruence, creativity, explicitness, thoroughness, and vividness) elements needed to evaluate the presence of validity. These aspects of reliability and validity were noted in Creswell (2009) and used to establish those attributes. The steps employed to insure validity and reliability in this study are detailed as follows.

For the purposes of our research, *qualitative reliability* attempts to measure consistency in findings across various researchers and projects whereas *qualitative validity* uses steps to insure the accuracy of the findings (Gibbs, as cited in Creswell, 2009, p. 190). Reliability was attained by evaluating interview transcripts via coding by two trained coders (one was the first author), sharing the results between the coders, and use of a robust inter-coder reliability measure, Cohen's Kappa (Cohen, 1960) established at $\kappa > .60$.

Validity was achieved using multiple strategies. The research was bracketed with the researcher's experiences to illustrate reflectivity and to clarify

any researcher bias. A complete literature search was performed on elements of the phenomenon under study, negative cases found in the transcripts were followed, the participants were given a copy of the interview transcript to note discrepancies (none were noted), and all were given a follow-up interview questionnaire to insure accuracy. The final narrative composite description was reviewed by all participants to insure validity of the findings. Finally, a peer review was done with a faculty member not involved with the research, but practiced in the phenomenology method, in order to gain additional perspective on the research.

Activity Triangle Analysis

Using Engeström's activity triangle (Engeström, 1987), the group-based training activity system of creating an integrated lesson plan was examined (Figure 2). Within the framework of CHAT, the graphical representation provides structure to understand the socio-cultural elements affecting pre-service middle school teachers' perceptions of this activity on their abilities as emerging teachers.

The *subjects*, the pre-service teachers, were required to engage in a group activity directed towards the production of an *object*, the integrated unit, as part of a required course in their teacher training. The program instructors organized these participants into teams within this teacher education cohort. Team membership was not voluntary but was assigned in an attempt to simulate a teaching team approach in an actual middle school setting.

The production of the object was mediated through *tools* used by the participant. The most common tool cited by the participants was the internet, where the participants found material similar to that needed for the object. Cooperating teachers in the participants' practicum and materials from the practicum school were also cited frequently, as were teacher education instructors. Surprisingly, the participants infrequently mentioned content area or other textbooks as a tool.

In addition to the team itself, other elements made up the *community* sharing or influenced this activity for the participants. The overall teacher education cohort itself was one part of this *activity system*, as were the schools where the pre-service teachers served their practicum experience. Additionally, several participants mentioned family members, such as spouses or siblings, who were already in the teaching profession as part of their outside community influences on this activity.

Within the assigned teams, two socio-cultural elements influenced the participants' production of the integrated unit. As part of that production, all teams attempted to divide the task in various manners. The most common *work division* was along the individual participant's content area, but this division was not always the case as not all content areas were represented on each team. Participants' individual interests and special abilities (such as technology expertise) were also used to divvy up the work. In some cases, personalities played a role in the division of labor.

The other socio-cultural element influencing the activity system was *rules* ascribed to by the participants. These rules took two forms—explicit and implicit. Explicit rules most cited by the participants were state standards stipulated for the teaching of content material and those contained in the course syllabus established by the program instructor for the production of the integrated unit. The participants also noted implicit rules. These rules were not those mandated by academic content or the MAT program, but were those generally understood by the participants as guiding the activity system, such as honesty, politeness, and fairness in dealing with the team and others in the community.

Two other elements of the activity system, outcomes and tensions, complete Engeström's activity triangle model. Outcomes are the purposeful result of a subject acting on an object through mediating tools and socio-cultural elements of an activity system (Engeström, 1987). Note, this action is intentional. It represents perceived meaning by the subject for the activity system in the production of the object. Tensions are those contradictions between elements of the activity system that in some way shape its outcome (Cole & Engeström, 1997; Engeström, 1993; Engeström, 1987; Yamagata-Lynch, 2009).

Outcomes and tensions resulting from the group-based training activity reflect the perceptions of the career pre-service middle school teachers and their observations of that process. We used the phenomenological technique outlined previously to get to the essence of their identified experiences as reflected in the

outcomes, or themes, and the related tensions they encountered during that process.

Themes

After analyzing the data collected from a CHAT activity system perspective by the phenomenological method, we were able to develop a compilation of themes to describe the experience of the participants as they produced the integrated unit plan. These themes were then used to create a structural and textural description of the experience and then an essence of the experiences of the participants (Moustakas, 1994). From this process, five meaning themes emerged: Teamwork Function, Grade Orientation, Assignment Structure Conflict, Theory versus Practice Divergence, and Tool for Future Practice.

Teamwork Function

One of the main points of the integrated lesson plan assignment was to give participants an experience simulating team teaching in the middle school environment. All participants commented on various aspects of the process of organization and functioning of their own team.

Early and successful initial organization of the task was a hallmark of this experience. Most participants had a similar experience in establishing the team's initial task. As one participant related, "First, the five of us had to come up with what kind of integrated unit we wanted to work around. That was pretty easy. We came up with a decision in no time."

This organizational function occurred at the beginning of the semester, before students had spent significant, if any, time in their practicum experience. Accordingly, there was time to plan and approach the process with a fresh and uncluttered perspective. There was general agreement and intentionality on who was to do what from these early meetings, as seen in participants' comments such as "I think the original meeting or two went smoothly," "You know, it was just seamless," and "We looked at the assignment and we divvied up those tasks." This early teamwork had a sense of purpose as well, as seen in this participant's comment:

For that project we were assigned to the groups so we made sure that we had one of each content area represented and then we wanted to come up with a theme or a topic for us to do the project on, so we sat there and threw around some ideas and we decided that it would be easier to pick a social studies type topic and then have everyone else work around that

As teams formed, some members began to take on leadership roles, in an attempt to insure the team stayed on track toward the production of the integrated lesson plan.

I printed out a copy of [the team assignments] so that the next time we worked together as a group in class, I showed a copy of it to each of my group members and I said "Please look at this. Does

this look okay to each of you”? They all just thought it was great so that is what we went with.

Other participants articulated a much more open expression of leadership, such as, “It was just obviously someone had to emerge as the leader from the get go to guide the process and that person was me.” Some teams had a loose leadership structure that still seemed to work for them, as in this case: “I don’t know if we really have a team leader or anything. We just kind of talk about stuff and say yes, I like that and no, I don’t like that.”

While all participants reported similar reports of a good beginning to the process of creating an integrated lesson plan, conflict and contradictions soon arose in that process. For some groups, tensions arose between the concept of effective leadership and the perceived lack of it. Some leaders were seen as unqualified, as one participant noted, “We had one lady who was taking on kind of the leadership role and it was fine but then I realized that she wasn’t in a school system this year. She wasn’t in a school system doing a practicum.” Such a perceived unqualified leader generated a comment like this from one participant: “You can make somebody a leader, but those folks don’t have to follow that leader.” Another participant noted this tension because of the lack of team leadership, noting, “One thing that we don’t do in this program--there is not a leader of these teams and because of that, there is a tendency to do everything last minute.”

The noted tendency towards tardiness created other tensions as well. A clear conflict seen is in the observation of different work standards within the teams. Groups with concordant work ethics were in agreement with this participant's description

I really think that our work ethic and our group worked really well together. I think there were a couple of times where you just had to talk things out as a team; that we all had different ideas and to kind of make sure that everyone's voices were being heard.

Tensions occurred in most groups when one or more members did not share a similar work ethic. One participant reported, "Some people have different standards, and so they want to work harder than others in terms of making it perfect or something like that but in general and I mean that is very, like you probably would never see that." Some participants reported that other team members were like one example of one member who "went his own way and did his own thing," leaving the rest of the team without input or coordination for the integrated unit. This varying level of effort within some teams had perceived negative consequences on the integrated unit, as one participant commented.

I guess by not having their input [the integrated unit] may have suffered somewhat. But that was the only tension really is you are at the mercy of others and it is not something that you can control yourself and just do it. You have to wait for your other team members to come through and contribute.

Another perceived outcome of the team function was the ability of some teams to communicate effectively, despite geographic differences in both the locations of students' homes and practicum school settings. These distances seemed to be no problem for some teams, as one participant recalled:

We will send an email out and I think that is the easiest way so instead of trying to call every person or get everybody to meet because we are extremely busy between practicum and our classes so we have used email a tremendous amount versus anything else. That has worked out well for us.

Other team members did not report satisfaction with the level of communications within the team. One team member implied that those non-communicating members had lower expectations for the integrated unit plan when noting, "There are a couple of team members we have heard very little from and then and so it turns out there are three core members in our team that are very involved and want to succeed with the project." Another participant reported that the lack of communications between his team and others had caused problems with the quality of their project, stating, "Well, I feel like we needed to interact more with those that are outside of our group. If we would have, then we wouldn't have made a kind of a boo-boo on the group plan."

The participants addressed the differences in life experience in varying ways. Some appeared to embrace this diversity, as one participant noted, "So we have little 10 year jumps [in age] between us but we respect each other and we

work together for a common goal. I think that we have enjoyed working together on this project. It was a good idea.” Others seemed unsympathetic to the idea of teamwork involving individuals with various life experiences:

I keep getting back to it. When you have somebody that is 22 years old, graduated in May, and started in June in a masters MAT, they can't contribute to a team in a tangible way that has somebody that is 46, 35, 30 and 29 on [the team].

Age was not the only measure of life experience for which participants addressed concern regarding life experience differences. Differences in lifestyle and other personal living situations seemed to invoke tension along with age for some participants:

I mean, one thing I will tell you is that some people in this program are younger, but there are some of us that are older. We are married, and we have children and you know, we are consumers of our education. I just appreciate [that] intentionality because it means that time is not being wasted.

Differing levels of content area expertise and interest between the team members were also noted. Most participants reported comments similar to this remark: “Well, we each are responsible for our own content area, so that kind of divided it a little for us.” Others expressed a willingness to try, as one participant said, “I think, too, opening your mind to realize that the different content areas

can go from one class to another.” This transformation was also expressed by this participant’s comment:

For example, I don’t care about rocks and I don’t care about science. I care about history. I care about the way people interact within society but in order to operate within a team each team member has to find a level of respect for each content area regardless of your passion and so I believe that’s what makes it significant because education has to be holistic for the child.

Grade Orientation

Overwhelmingly, participants reported concern for their own grade on the integrated unit plan. One widespread sentiment was “I don’t want to let a team project bring me down from an A to a B or something like that, so I feel like I am gonna do whatever I need to do to make sure a project is up to my standards.” Others expressed distain for fellow team members who did not share a grade outcome orientation in comments like:

I like to make A’s in my classes. Some people just want to get a degree, you know. So I feel like sometimes those that want to succeed and do well more than succeed; kind of pull more than their fair share. I feel like that’s what’s happened.

Some participants expressed the desire for high grades as a team effort towards a common goal, and still others felt personal accountability for the team’s success. One participant noted, “I know other people are depending upon

me so I would be less likely to procrastinate because I am responsible for someone else's grades. So, I have to really be responsible."

Assignment Structure Conflict

As noted, the grade outcome was an area of conflict within the functioning of the teams. Another was the very way the integrated unit plan assignment was structured. According to the course syllabus, the final grade for this assignment was the same for all members of each group. This grading policy created a sense of inequity, as participants perceived that effort did equal reward. As one participant reported, "If [the other team members] did not follow the rules but received the group grade, there won't be a consequence for them because the rest of us have brought [the grade] up."

Additionally, some members expressed dissatisfaction with how team members were assigned. Comments like "We were assigned these people. I did not get to choose them" and "We didn't have the option of choosing our group members. It was chosen by a professor" expressed that frustration. Some took a more realistic view of the assignment process.

I know why we were assigned to the groups but sometimes it is easier in these group projects if you get to pick who you work with because you can kind of pick people that you tend to know better or work with better. But I know that out in the real world we will not be allowed to pick the team members that we teach with.

Theory versus Practice Divergence

The most cited conflict revealed in the interviews of the pre-service teacher participants is best described as the participants' realization of differences between what they were taught regarding integrated lesson plans in their teacher training and the professional practices they observed in their practicum schools. All ten participants, in various forms, expressed this divide. Some participants reported their cooperating teachers had a seemingly skeptical view on the use of integrated units such as, "that is good in your training, but it doesn't work in the real world." Others indicated their cooperating teachers expressed pragmatic reasons for not using integrated units. One participant stated, "I know just speaking with my cooperating teacher and the rest of the team that they would like to do other projects like that but the time restraints of teaching the standards gets in the way of that a lot."

Some participants reported open hostility on the part of their cooperating teachers towards the concept of integrated units, as reported in this exchange between one participant and her cooperating teacher.

I mentioned it to her and she was just very curt. She said "Well I don't know how to use that." And I said, "Well, would you be interested in me showing it to you sometime?" She replied, "I really don't have time." I think something like this integrated unit is the same thing.

Tool for Future Practice

Despite these tensions, all ten participants indicated the worth of the integrated unit for their future professional teaching practice. Many expressed the idea similar to “I have some lessons that I can already have done for when I start teaching, something in my toolbox I guess that I can pull out when I start teaching” or “I think my takeaways are learning and understanding different ways to differentiate, learning and understanding different ways to work as a team to teach things.”

Having seen the reluctance of their cooperating teachers to embrace integrated units, many participants remained positive on their prospects for their future use. One participant commented. “I thought it could work well in this [the curriculum class] setting and I am sure that it would work well in the school.” Another participant was more methodical in her assessment, saying “Even if I could not get other team members at my school to do it, I think I would try to do something; maybe just the science person would work with me.”

Other participants couched their future use of integrated units in context. One participant, looking toward a forthcoming job search, noted his guardedness in mentioning the use of integrated units in job interviews:

If it is a school that is not doing these kinds of projects, then they could have one of two responses. They could say well that is not something we would ever do so I am not going to worry with it. Or

they could say maybe this is something we might do in the future, so this person might be a good resource for us.

Another participant noted a similar concern:

In my first year of teaching, that would be a secondary goal. I just want to get my feet wet and learn how to manage my class but further down the road, three years after I have gotten the professional teacher thing, I would be interested in maybe doing an integrated unit.

Composite Textural Description: Teams, Teachers, and Tensions

The process of creating an integrated unit plan begins with excitement and agreement on unit topics. Although composition of the unit teams is not always ideal, by agreement members initially take on tasks designed to produce the integrated unit based on training, talents, or interests. Once beginning the practicum experience under the direction of a veteran cooperating teacher, contradictions between what was taught in the teacher education program and local professional practice become obvious. Content area differences caused some concern and lack of team unity. Dissimilarity in members' work ethic, ability to communicate, age, and life experiences created tensions in team function, as did a sense of inequity regarding grade outcomes. Despite these multiple conflicts, there was a guarded optimism about using integrated units as part of future professional teaching practice.

Composite Structural Description: The Tie That Doesn't Bind

Moustakas (1994) states, “[t]he Composite Structural Description is a way of understanding how the co-researchers [participants] as a group experience what they experience” (p. 142). By creating a structure for understanding, the various influences affecting the process of producing an integrated unit plan and their affects on the abilities of the emerging teachers become clearer.

Additionally, this structure also provides some understanding of the influence of teacher socialization on these pre-service teachers during their training period.

We use another of Engeström’s models to illustrate this framework. Within the cohort and, specifically within the individual groups, a loose sense of connection ties the participant to the mission of creating an integrated unit. This idea of loosely connected individuals around a temporary common task is explained by the concept of *knotworking* (Engeström et al., 1999). This idea is illuminated using an analogy of an organization as a loose knot, where the activity system is described as a, “rapidly pulsating, distributed, and partially improvised orchestration of collaborative performance between otherwise loosely connected actors and activity systems” (p. 346).

We believe the integrated unit plan activity fits this description. Figure 4 illustrates this process for this activity system. In this illustration, team members representing the content areas form a loose tie only for creating the integrated lesson plan. No further collaboration between these pre-service teachers is anticipated after this singular purpose (the integrated unit) is accomplished.

The activity of knotworking “is dependent on fast accomplishment of intersubjective understanding and distributed control” (Engeström et al., 1999). It is those tensions between participants and the struggle for that control within the integrated unit teams that mark this activity as a loose knot, as opposed to functioning of an organized team (with a stable membership and established communications and operations).

Participants described this wobbly sense of organization in many ways in the production of the unit plan and its concluding activity, a presentation to the cohort. One participant, who observed, “I am not sure how that is going to happen yet,” noted the distributed control aspect of this assignment. Another participant commented, “People are going to work on it individually and then that team is going to get together within a week or so and do what that team is going to do with it.” One participant drew this analogy:

This might sound crazy but it is sort of like a tossed salad. Like everybody, we start with a bed of lettuce, and everybody brings something to put on top. I know that sounds crazy but that is how I see it. You have this common theme, the lettuce, say I bring the black olives, somebody else brings something, and then we have a final product at the end.

Essence: Frustration and Futures

Becoming a teacher as a career-changer is a frustrating process. It is difficult to go from competence and experience in one profession to one of

developing proficiency and relative inexperience in another, unrelated field. Prior professional competence creates an artificial sentiment of current superiority. This sense is either affirmed or disputed by new professional colleagues, who may not share a common sense of purpose or passion. The disjointedness of various processes creates dissatisfaction as well. More so, the rules of the old profession may not apply in the new one. That conflict also extends to the reward systems; where individual hard work and effort may have been the norm in a prior profession, group work and common group reward is the custom in another, creating a feeling of inequity. Communications needed for successful teamwork in one occupation are sometimes moot in the new one.

Timeliness appreciated in the past may not be as valued in the present. Life experience and personal lifestyle, cherished individually, may not have any relevance in a group setting. Prior knowledge gained in one setting may be disputed when applied in another. Still, the passion that drove a change from the old profession allows a cautious separation from current frustrations to see future professional potential from the socio-cultural experiences of the present.

Conclusions

This study was framed in the experiences of career-changing pre-service middle school teachers during a vital group activity in their training. Those experiences were defined within the literature on teacher socialization using the lens of Cultural-Historical Activity Theory (CHAT) to produce an understanding of

the perception of these pre-service teachers on the effect of the group activity on their abilities as emerging teachers.

While some participants reported that having cohort and assignment teammates of different backgrounds gave additional insight into the teaching process (Mather & Hanley, 1999), many of the participants found these differences to be a distraction in the process of becoming a teacher. Unlike prior research that indicated cohort operations provided a professional support system (Howey & Zimpher, 1989), the integrated unit project did not provide this structure in the professional preparation of the participants. Instead, the project was better defined as knotworking (Engeström et al., 1999), with participants finding themselves on an individual activity course, as opposed to the shared effort and teamwork other cohort studies found (Rolheiser & Hundey, 1995). Rather than providing clarification about the teaching profession (Mather & Hanley, 1999), this group activity highlighted dissonance between theory and practice for the pre-service teachers.

Another finding of this research was expressed by the tension noted between teammates within the cohort. Differences in age, life experience, and work ethic or habits generated conflict between teammates, involuntarily joined to produce a work product unfamiliar to them. These differences and the participants' reactions to them are consistent with some literature on teacher socialization and cohorts. Negative competition for grades was noted (Barnett & Muse, 1993), expressed as inequity. Some team members did not cooperate or

function well in the team environment (Mandzuk et al., 2005). Issues of individual differences in age, life experience, and other personal attributes created a negative aspect to the participants' perception of their training experience regarding this activity (Agnew et al., 2008; Sapon-Shevin & Chandler-Olcott, 2001).

Limitations and Future Research

This study is limited in several ways. While the participants participating in this study accurately reflect the current cohort in sex distribution, the sample is slightly older than the average over the life of the MAT program and is slightly skewed towards males more than the sex distribution found over the program's history. Larger limitations include the racial make up of the sample. While all but one of the participants was White, accurately reflecting the racial predominance of the program, cultural differences are not accounted for in this study. Although the class in where the activity occurred was not taught by any of the researchers, some of the authors have significant teaching roles in the MAT program. That limitation is mitigated by the obviously candid responses of the participants.

Several avenues might prove fruitful for future research in the area. A longitudinal study of former students and their use of integrated units might reveal any ongoing use of this group activity. A similar study of in-service teachers might indicate reasons for resistance to this practice. Along that line, a study using third-generation CHAT to explore the interaction between the pre-service and in-service teacher activity systems might provide additional insights,

especially regarding the theory-practice gap so prominently mentioned in this study.

The teamwork aspects of this integrated unit plan activity also provide an opportunity for using other theoretical lenses in additional studies of the group functioning during an assigned task. For example, Salas, Sims, and Burke (2005) synthesized multiple studies on teams over a twenty-year period to create a definition of the “Big Five” core components of teamwork. These five elements (team leadership, mutual performance monitoring, backup behavior, adaptability, and team orientation), along with what these researchers call the “Three Coordinating Mechanisms of Teamwork” (mutual performance monitoring, backup behavior, and adaptability) provide a structure for examining this experience from a teamwork perspective. While not the theoretical focus of this manuscript, additional studies using such a framework might further explain the tensions found within the integrated unit activity system.

Implications

There are implications from this study that affect pre-service teacher education in general and career-changers going into education specifically. The predominance of local teacher practices had a significant impact on the perceived effect of the activity on the participants as emerging teachers. When local teaching custom wildly differs from accepted good practice and theory-based instruction, pre-service teachers experience a dissonance that affects their

early professional development. Teacher educators must be aware of that effect and be sensitive to local custom, while still instructing using best practices.

In addition, from the interviews analyzed in this study, consideration should be given to preparing career-changers for the differences between workplace culture and those found in public education and in teacher education programs. While many of the tools used in the non-education work experience are helpful in education, there are significantly different expectations regarding communication, reward systems, and teamwork between the two workplaces. These differences should be explained and clarification provided to assist career-changers into a successful transition to teaching.

CHAPTER FIVE

Findings of the Studies

The overarching purpose of this series of studies was to examine the perceptions of a specific group of career-changers as they underwent a specific group activity experience as part of their training as pre-service teachers. This activity was familiar to me, as I had undergone the same activity during my own pre-service training and had directed it as a university instructor. Using Cultural Historical Activity Theory (CHAT) as a theoretical lens to examine this activity gave a framework to the research and its results.

From this structure, five meaning themes surfaced. Teamwork Function, Grade Orientation, Assignment Structure Conflict, Theory versus Practice Divergence, and Tool for Future Practice. Regarding teamwork function, participants found that after an initial successful task organization, perceived issues arose over the activity due to problems with leadership, differing work ethics among team members, dissimilarity in communication ability, and variations in life experiences and professional experience. There was concern among the participants regarding differing grade expectations and grade inequity, as well as the participants' inability to choose teammates for this group activity.

The dichotomy between the best practice taught in the MAT program by this integrated unit activity and the local practice encountered by the subjects during their practicum, occurring simultaneously for the participants, created significant incongruence. Practicum cooperating teachers held attitudes ranging

from skepticism to outright hostility toward the idea of using integrated units in the middle school setting. Despite these negative reactions, the participants saw some future professional value in their teaching practice for integrated units, although their prospects of using it appeared guarded by the uncertainty of how it would be received by potential employers.

This structure of Engeström's activity triangle (1987) gave a graphic illustration to the experience, organization to the research and its results, and a sense of flow that made the process definable. The end-point of that process, outcome as perceived meaning of the integrated unit activity for the participants as career-changing pre-service teachers on their abilities as emerging teachers, answered the research question. These participants saw the process as one replete with tensions. Subject/Community tensions included conflicting ideas on how an integrated team should function and frustration with the team group structure, while Subject/Rules tensions included differing thoughts on grade orientation and perceived grade inequity between individual grades versus effort. Another conflict, Subject/Tool tension, was seen in the contradiction between what the participants were experiencing as part of this training activity and what they saw as actual local professional practice during their practicum experience. This incongruity influenced how they would consider using the integrated unit in their own early practice, demonstrating a reflection of its professional value, but indicating caution in its early career use for new teachers.

When examining the activity and the perception of the participants of the effect of the group activity on their abilities as emerging teachers, an additional observation beyond the five meaning themes involves the structural description of this activity. The loose connection of the participants and the temporary nature of the integrated assignment define this activity as a knotworking (Engeström et al., 1999). Wobbly organization and the need for a relatively quick accomplishment of the team task are hallmarks of knotworking, and it appears that some of the tensions that arose during the activity were consistent with improvised organization among loosely connected actors noted in such activities.

The other study in this series, a pilot study of a methodology comparing the phenomenology interview results obtained in a virtual world setting with those from a traditional face-to-face interview location, provided measures of how the virtual world milieu would influence the answers received. All participants indicated comfort with their personal individual setting. There were no statistical differences in meaning units found between those seen in the written transcripts from the virtual and face-to-face discussions. As meaning was the outcome examined for the phenomenology study for which the interviews were conducted, this conclusion indicates the use of the virtual world interviewer had no influence on the answers received.

Implications for Practice

The topic of this dissertation was the experiences of pre-service teachers as they underwent a group activity. A tangential research matter was an exploration of the use of a virtual world environment to capture those lived experiences under study here. The findings of both lines of inquiry resulted in practical implications applying to both qualitative research and teacher education.

Regarding virtual world qualitative research, this pilot study indicated that the virtual world environment seems appropriate for such research, yet there is a learning curve for both researcher and subject in order for this mode of data collection to function effectively. Researchers must be certain that both technological constraints, such as having appropriate bandwidth and equipment, are acknowledged and resolved well in advance of beginning the study. Additionally, it is vital for the interview questions or other research methods to be appropriate for use in a virtual world setting. Only those methods creating data that can be recorded and measured from virtual worlds are suited for this research milieu. Care must be given to designing and implementing this research locale to insure that all meaningful data can be captured and recorded. It is advised that multiple trial runs or pilot studies in the virtual world be used as part of any such research design.

There are numerous practical applications to the findings of the phenomenology study. For teacher educators and others involved in the training of pre-service teachers, one implication of these results is to provide pre-service

teachers with an understanding of the theory/practice divide in such a way that continues promotion of best teaching practices while acknowledging the dynamics of change, including resistance by existing practitioners.

Additionally, teacher educators must be sensitive to the tensions created by any activity system. While it may not be possible or even desirable to attempt to circumvent these tensions, they must be acknowledged by the subjects and communities affected by the system. For example, geographic distance was noted as a tension in this study—a tension that might have been ameliorated by instructor forethought. Another is the seeming unintended consequences of grade inequity, one that is easily addressed by revising assessment practices. While lessening all tensions may not be in the pre-service teachers best professional interest (one example is the tension noted between content areas), awareness of all tensions and training on professionally appropriate resolutions is a worthwhile goal.

Limitations

Several limitations are present in the studies. Overall, the narrowing of the participant pool to career-changers clearly limits the relevance of any findings to that population, as opposed to pre-service teachers in general. The lack of ethnic diversity among the participants is also a limiting factor. Regarding the methodology, the observation that none of the participants had any experience in virtual world environments may have limited their interactions in verbal responses, as it clearly did as shown in their non-interaction with the avatar.

Opportunities to get at a richer description of the experience may have been lessened by use of the virtual world environment from its use by these virtual world virgins.

Specifically regarding the phenomenology, it is possible that my own experiences with the activity unintentionally skewed the conversational portions of the discussions with the participants. However, this potential limitation is mitigated by the use of CHAT as a framework to analyze the activity and as a guide in the creation of the semi-structured questions. Additionally, while I did not teach the participants the subject matter studied in the analysis of the activity system, I am a known instructor in the program in which this system operates. It is difficult to tell what, if any, consequence that status might have on the results.

Future Research

There are three general areas for future research that I believe come from this series of studies. First, the area of a virtual world interview setting warrants a much larger study, with participants that are more sophisticated and a bigger sample. While the findings of this pilot study confirmed many of the findings of previous studies contrasting CMC with face-to-face communications, evaluations of virtual world communication compared to face-to-face exchanges are scant. Further research using virtual world environments as an interview data collection method will add to the knowledge needed to advance this technique and perhaps further validate it as a significant tool for qualitative research.

Second, the findings of the phenomenology research could be expanded in several areas. The themes found could be further explored, both as they affect the pre-service teacher experience and on-going experiences as the induction teachers enter the classroom. Tensions identified in the study could also be examined further in the same way, over both short and long-term time horizons. Aspects of this experience could be studied along other theoretical frameworks to explain the phenomena noted, such as the hegemony of local teaching customs contributing to the theory/practice gap. The training of pre-service teachers could be further examined within the structure of andragogy, as it informs the practice of teacher education faculty in training career-changers.

Third, the theoretical lens used to modify the qualitative technique, Cultural-Historical Activity Theory (CHAT), could be researched further for its appropriateness in practical and theoretical applications and in phenomenological research. Using CHAT to create additional theoretical tools for the study of pre-service teachers within the realm of practical theory (Foot, 2001) and other existing frameworks (such as Salas et al., 2005) would be a potentially valuable expansion to existing knowledge. Reconciling the structure of CHAT to Husserl and Heidegger's ideas of reality as lived experience poses a philosophical question regarding the confines of structure versus the vast array of individual experiences. In an editorial on his view that Heidegger's philosophy supposes the order of CHAT, Roth (2010) suggests that Heidegger's "being in the world" axiom is dependent on the "order always precedes our understanding

of the order” (p. 1), an order brought into being through the lens of CHAT. While philosophical debates are not within the scope of this dissertation, the merits of CHAT used within the concept of the phenomenology research tradition is worth further exploration.

Table 1:

Summary Description of Study Participants

Name	Sex	Age	Undergraduate Degree	Description of Previous Career	Content Area(s)
Abigail	F	25	Business	Marketing	Math
Bill	M	33	Psychology	Automotive Management	Language Arts, Social Studies
Frank	M	46	Business	Manufacturing	Math, Science
John	M	36	Biology	Transportation	Science
Misty	F	45	Business	Not-for Profit	Math
William	M	27	Business	Communications	Social Studies
Ralph	M	61	Science	Computers	Math, Science
Sandra	F	31	Business	Hospitality	Language Arts
Sheri	F	39	Science	Chemistry	Science
Sue	F	28	Business	Education	Language Arts

Table 2:

Interview Length, Total Words, and Message Count by Interview Setting

Subject	Interview Length (in min)	Total Words	Message Count
Face to Face			
Sheri	47	4,941	124
John	38	3,592	164
Frank	79	12,341	170
Misty	45	5,110	149
Ralph	63	8,806	93
Average	54	6,958	140
Virtual			
Bill	35	5,308	137
Sue	19	3,283	72
Sandra	20	3,317	82
Abigail	29	4,540	66
William	34	4,181	80
Average	27	4,126	87

Table 3:

Inter-Rater Reliability Analysis Results by Interview Setting

	Kappa Range	Satisfactory Units	Unsatisfactory Units	Total Coded Units
Face to Face				
Meaning Units				
Community	0.61-1.00	123	0	123
Division of labor	0.60-0.78	46	0	46
Meaning	0.50-1.00	27	5	32
Tensions	0.63-0.95	94	0	94
Tools	0.57-0.84	72	9	81
Rules	0.86-1.00	95	0	95
Conversational Units				
Conversation	0.64-1.00	178	0	178
Comments	0.63-1.00	70	0	70
Questions	0.85-1.00	240	0	240
Virtual				
Meaning Units				
Community	0.82-0.95	111	0	111
Division of labor	0.58-0.86	38	7	45
Meaning	0.43-0.88	22	6	28
Tensions	0.50-0.92	51	2	53
Tools	0.62-1.00	43	0	43
Rules	0.73-1.00	22	0	22
Conversational Units				
Conversation	0.95-1.00	118	0	118
Comments	0.63	24	0	24
Questions	0.88-1.00	156	0	156

Table 4:

Codes Analysis

Subject	Total Codes Assigned	Meaning Units	Questions	Conversational Units
Face to Face				
Sheri	165	84	51	30
John	193	74	55	64
Frank	252	135	51	66
Misty	180	68	51	61
Ralph	139	80	32	27
Virtual				
Bill	199	97	41	61
Sue	93	47	28	18
Sandra	108	53	31	24
Abigail	102	59	24	19
William	127	75	32	20
Total	1558	742	396	429

Table 5:

Examples of Invariant Structures and Resulting Meaning Units

Invariant Structures	Meaning Unit
We basically just took our subjects and that is it	Initial division of tasks went smoothly
Somebody was a leader of that virtual team and we had deadlines and assignments that were made and handed out.	Tensions in leadership role
I like my work done a certain way and certain standards and not everybody has those same standards.	Differing work ethics within team
We have not had a whole lot of communication with some other team members	Varying level of team communication
But here again you have got a kid a couple of years out of school. I don't know if he has done anything tangible in his life.	Difference life experience among tem members
It can be approached in the different content areas and maybe I get another idea that I didn't get before or wouldn't have had before about how you can integrate things	Differing levels of content area expertise and interest between the team members
We've got some folks that are focused strictly 100% on I need to make an A in every class I take period, end of discussion, and that is how they are motivated and focused.	Concern for grade on the integrated unit plan
There was no consequence for the team members that didn't do their fair share.	Integrated unit plan assignment structure
If I could have picked a dream team to work with, I think I would have had a completely different learning experience	Dissatisfaction with team assignments
I can't imagine there's a whole lot of conversation that goes on amongst the team, I don't know, there may be. It doesn't in my school where I am doing my practicum	Differences in material taught and classroom practice observed
I don't feel like she wants any Social Studies teacher telling her what book they need to read.	Hostility on the part of their cooperating teachers towards the concept of integrated units

I think hopefully it will be maybe some stuff that we can use when we are actually teaching.	Worth of the integrated unit for their future professional teaching practice
I need to maybe introduce it into my school where I'll work	Impact on first job

Table 6:

Examples of Meaning Units and Resulting Themes

Meaning Unit	Themes
Initial division of tasks went smoothly	Teamwork Function
Tension in leadership role	
Differing work ethics within team	
Varying level of team communication	
Difference life experience among team members	
Differing levels of content area expertise and interest between the team members	
Concern for grade on the integrated unit plan	Grade Orientation
Integrated unit plan assignment structure	Assignment Structure Conflict
Dissatisfaction with team assignments	
Differences in material taught and classroom practice observed	Theory versus Practice Divergence
Hostility on the part of their cooperating teachers towards the concept of integrated units	
Worth of the integrated unit for their future professional teaching practice	Tool for Future Practice
Impact on first job	

List of Figures

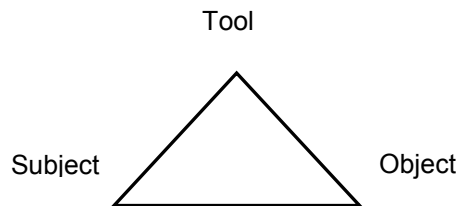


Figure 1: Vygotsky's Model of Artifact-Mediated Action (Adopted from Cole, 1996)

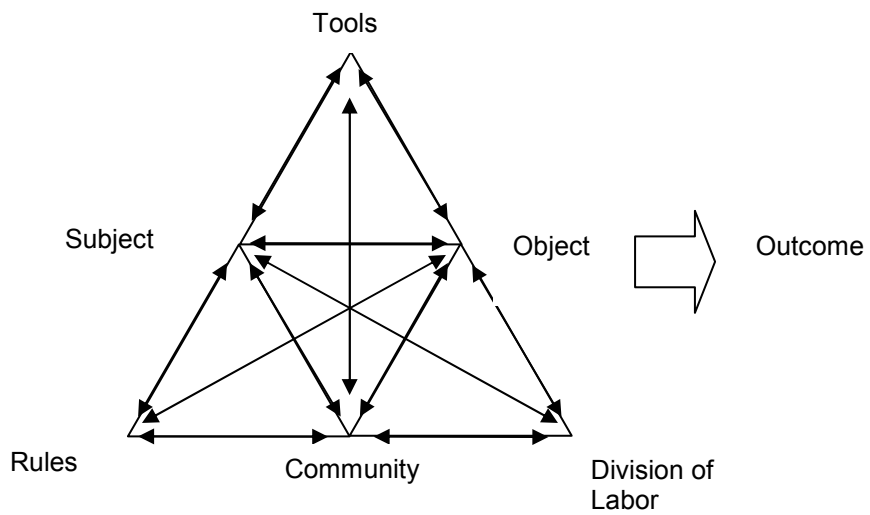


Figure 2: Engeström's Activity Triangle (Adopted from Engeström, 1987)

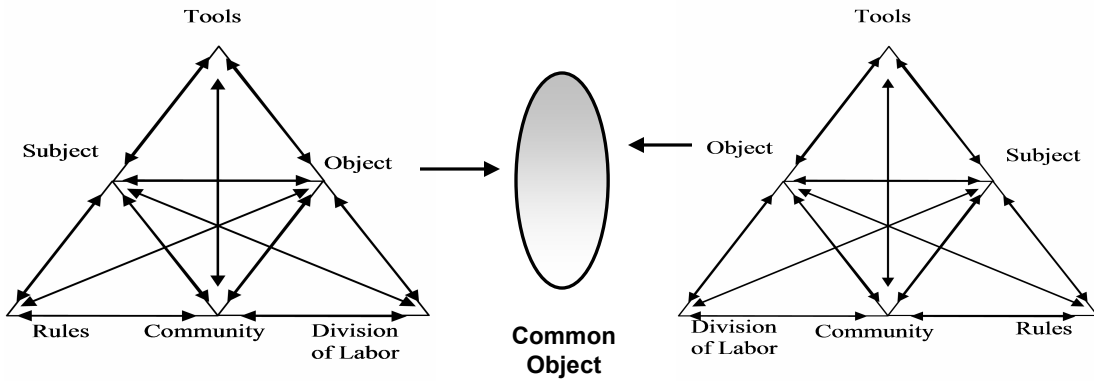


Figure 3: A Model for Third Generation Activity Theory (Adopted from Engeström, 2001)

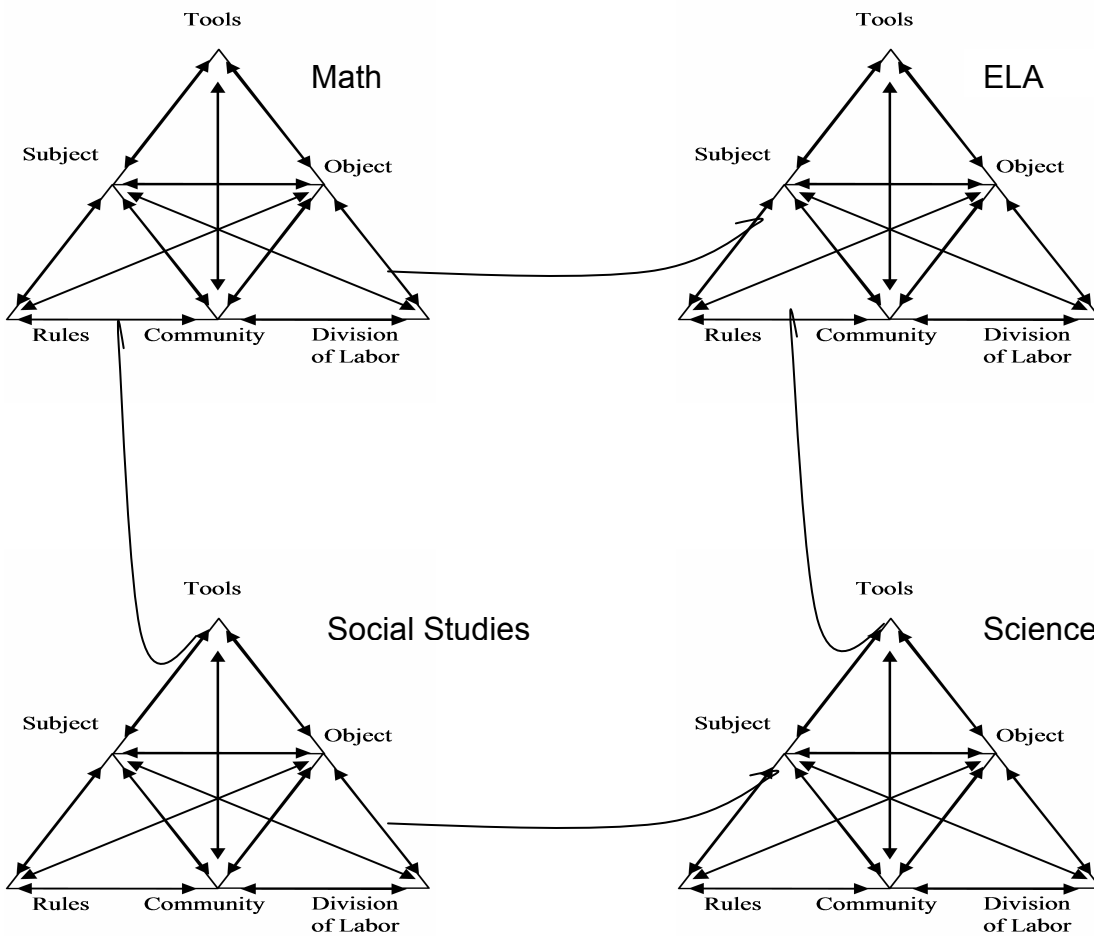
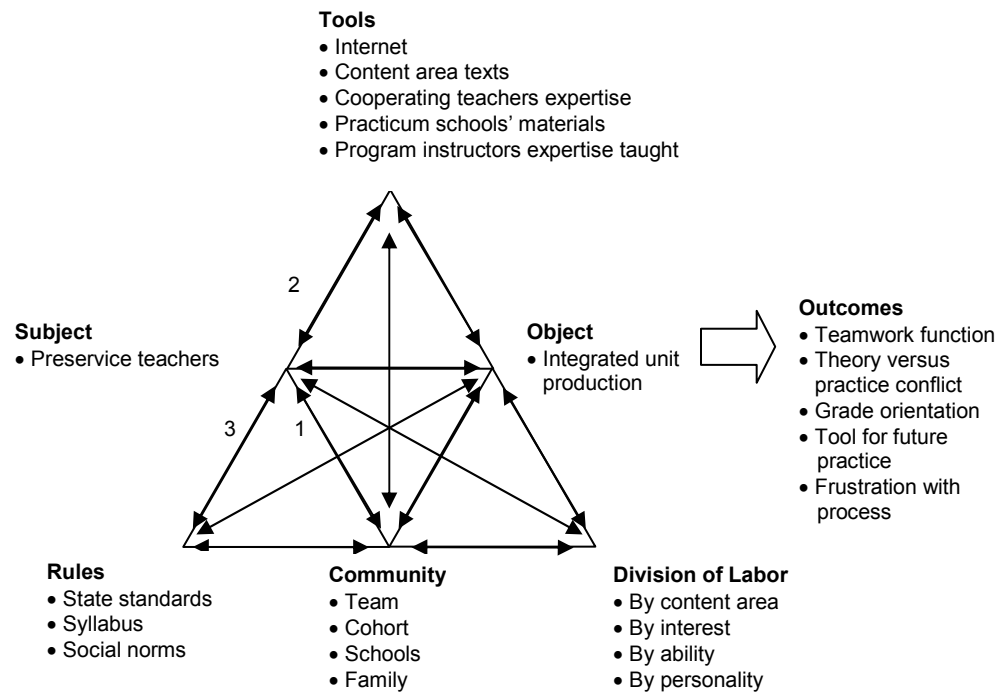


Figure 4: A Model of Knotworking (Adopted from Engeström et al., 1999)



Tensions

1. Subject/Community Tensions

- Team work ethic versus individual work ethic
- Individual content expertise versus team lack of content familiarity
- Team geographic nearness versus individual geographic distance
- Individual life experience versus team life inexperience
- Team leadership versus individual lack of leadership
- Effective team communication versus individual lack of communication

2. Subject/Tools Tensions

- Teaching theory taught team versus teaching practice observed by individual

3. Subject/Rules Tensions

- Individual inequity versus team rules
- Individual grade orientation versus team goal

Figure 5: Integrated Unit Plan Activity System (Adapted from L. C. Yamagata-Lynch & Haudenschild, 2009)



Figure 6: Face-to-Face Interview Setting



Figure 7: Virtual Interview Setting

APPENDICES

Appendix A

Interview Protocol

Date:
Participant:
Interviewer:
Time interview began:
Time interview concluded:
Interview Mode: Face-to-Face AET Zone

Introductory Questions:

Participant

What is your name?

What is your age?

What is your professional background before entering into the MAT?

How long did you work in this profession before entering into the MAT?

What areas are you certifying in your MAT training?

Semi-Structured Questions (the system):

Tell me about some group activities you've experienced as part of your training in the MAT?

Notes/Observation:

I want to ask some questions about your experiences with your team lesson plan—the one where you worked with teachers from other content areas- the integrated lesson plan

Activity system

Tell me about the process of creating an integrated lesson plan?

Notes/Observation:

Community

Tell me about your group? How did you form a working community? How did you think that process (of forming a community) worked out for you? Can you give me an example of that? Besides your teammates, were there others who influenced the work of your team? How so? What was your perception of the interaction with people on your team? How about those outside the team?

Notes/Observation:

Division of labor

You've told me about the team you worked with. How did this team divide the work? How were the decisions made as to who what perform what work in the integrated lesson plan? Did that teamwork process function smoothly? Why do you have that opinion?

Notes/Observation:

Rules

Relating to teamwork and that process, how was the work of the group guided by rules and regulations. By rules and regulations, I mean state standards for that content, as well as any other rules you feel guided your group. What rules were used to guide the work of your group? How do you think these rules affected your group's ability to complete the assignment?

Notes/Observation:

Tools

In completing this integrated lesson plan assignment, your team used a variety of tools to prepare the integrated lesson plan. What tools did your team use? How effective do you think these tools were? Why was this situation the case?

Notes/Observation:

Object

As you see it, what was the point of this activity? What was there about the team process that would provide a model for your future professional work? Can you relate this process as a symbol, a metaphor, or the like? How would this symbol serve you in the future?

Notes/Observation:

Tensions

Besides what you have already mentioned, were there conflicts or tensions during this unit plan project? What were they? How did they affect the project negatively? Did some affect the project positively?

Notes/Observation:

Meaning

What meaning do you think the members of the group would give to the project? What meaning would you give to it? How about other people – what meaning might they give to it?

Notes/Observation:

Outcome

Regarding the final unit plan, how did you perceive that project? Did it meet the goals for **the** group? What were those goals? How did the project meet those goals? Did it meet your personal goals? What were those goals? How did the project meet those goals?

Notes/Observation:

Other Notes:

Appendix B

Validation of IRB protocol #IRB2009-285

"Pre-Service Middle School Teachers Perception of the Impact of Group-Based Training Activities on Their Abilities as Emerging Teachers"

The Chair of the Clemson University Institutional Review Board (IRB) validated the protocol identified above using Exempt review procedures and a determination was made on **October 23, 2009**, that the proposed activities involving human participants qualify as Exempt from continuing review under **Category B1**, based on the Federal Regulations (45 CFR 46). You may begin this study.

Please remember that no change in this research protocol can be initiated without prior review by the IRB. Any unanticipated problems involving risks to subjects, complications, and/or any adverse events must be reported to the Office of Research Compliance (ORC) immediately. You are requested to notify the ORC when your study is completed or terminated. Please review the Responsibilities of Principal Investigators (available at <http://media.clemson.edu/research/compliance/irb/pi-responsibilities.doc>) and the Responsibilities of Research Team Members (available at <http://media.clemson.edu/research/compliance/irb/research-team-responsibilities.doc>) and be sure these documents are distributed to all appropriate parties.

Good luck with your study and please feel free to contact us if you have any questions. Please use the IRB number and title in all communications regarding this study.

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Appendix C

Information Concerning Participation in a Research Study

Pre-Service Middle School Teachers' Perception Of The Impact Of Group-Based Training Activities On Their Abilities As Emerging Teachers

Description of the research and your participation

You are invited to participate in a research study conducted by Dr. Deborah Switzer and Mr. Ronald Knorr. The purpose of this research is to investigate how pre-service teachers perceive their experiences in group-based training activities.

Your participation will involve answering questions about your experiences with group projects during your teacher training. Your participation includes the use of an audio recording of an interview between you and a member of the research team. These recordings will be transcribed prior to their erasure at the end of this study and will be accessible only by members of the research team.

The amount of time required for your participation will be approximately 60 to 90 minutes for an interview session and 15 minutes for any follow-up sessions (if necessary).

Risks and discomforts

There are no known risks associated with this research.

Potential benefits

There are no known benefits to you that would result from your participation in this research. This research may help us to understand pre-service teacher experiences during their training.

Protection of confidentiality

All participant responses (interview recordings and transcripts) will be kept in will be stored in the secured facilities (locked file cabinets or secured servers) of Clemson's University Center of Greenville Campus until the study's conclusion, when all individually identifiable participant responses will be deleted/destroyed. Only members of the research team will have access to this information. We will do everything we can to protect your privacy. Your identity will not be revealed in any publication that might result from this study.

Voluntary participation

Your participation in this research study is voluntary. You may choose not to participate and you may withdraw your consent to participate at any time. You will not be penalized in any way should you decide not to participate or to withdraw from this study.

Contact information

If you have any questions or concerns about this study or if any problems arise, please contact Dr. Deborah Switzer at Clemson University at 864.784.9006. If you have any questions or concerns about your rights as a research participant, please contact the Clemson University Office of Research Compliance at 864.656.6460.

Appendix D

Coding Manual

Introduction

This manual was created using an a priori approach to this coding process, defined as one where the categories are specified before the coding begins as opposed to codes empirically arising from the from reading the text (C. P. Smith, 2000). These codes are specific to the meaningful terms illustrated in Cultural-Historical Activity Theory (CHAT) (Engeström, 1987), so keep these definitions in mind as you code each sentence. Each sentence may have multiple codes.

As you code, you will be examining each sentence for two attributes. First, is it a meaningful statement? This idea simply means “does the sentence have anything to do any of the other coding categories?” So, first familiarize yourself with those categories. If it does not, then code the statement by indicating NM as non-meaningful and go on to the next sentence. Second, if it is meaningful, then code it as meaningful by indicating M and give it a code or codes from the code definitions.

Term	Operational Definition from CHAT	Examples	Meaning Codes
Community	Those subject sharing the same object.	Classmates; instructors	1
Division of labor	The partition of tasks among subjects in the activity system	Roles in group; Assignment by content knowledge; skills; prior experience; interest	2

Meaning	Shared interpretation resulting from group interactions	The subjects perception of the object	3
Object	The point of the activity	Proficiency in the production of the Integrated Unit	4
Outcome	The end product of the activity	Meaning of the Integrated Unit	5
Tensions	Contradictions and conflicts that shape the functioning of the activity system, as a catalyst for change.	Incongruity within the elements of the activity system.	6
Tools	Instruments used by the subject to accomplish an object	Technology; texts, communication systems	7
Rules	Codes for governing the activity system	Conventions of learning; regulations; professional standards	8
Subject	The person(s) using the tool(s) to accomplish an object	The pre-service teachers	9

Appendix E

Follow Up Questions for Interviewees

Name: _____

Thank you for participating in our study on the integrated team plan assignment used in the MAT program. Your insight is valuable as we continue to study and refine the MAT in our goal of constant improvement. There are two follow-up questions we would like you to answer and turn in this afternoon to complete our data. You may use the front and back of this sheet for your answers. Please return this questionnaire this afternoon to your instructor or by sliding under Ron Knorr's door. These questions are vital to the success of our study, so please answer them by providing your honest feedback. Also attached is a copy of your anonymized transcript. This transcript is yours to review and keep. If you have any comments or corrections to the transcript after you review, please contact Ron Knorr (rknorr@clermson.edu).

Question One: Now that your integrated lesson plan is complete, what additional insights and perceptions can you share about the experience and its role in the MAT program?

Question Two: Do you believe that your interview experience allowed you to express fully your insights and perceptions of the integrated lesson plan process? In what positive and negative ways did the format (virtual or in-person) of your interview contribute to your experience?

Appendix F

Mann-Whitney Test

NPART TESTS

```

/M-W= Min Words Message Meaning Questions Conversation BY Type(1 2)
/STATISTICS=DESCRIPTIVES
/MISSING ANALYSIS.
    
```

NPART Tests

[DataSet0]

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Min	10	40.90	18.687	19	79
Words	10	5541.90	2871.221	3283	12341
Message	10	113.70	39.691	66	170
Meaning	10	74.20	25.879	45	135
Questions	10	39.60	11.530	24	55
Conversation	10	42.00	20.795	19	70
Type	10	1.50	.527	1	2

Mann-Whitney Test

Ranks

	Type	N	Mean Rank	Sum of Ranks
Min	1	5	8.00	40.00
	2	5	3.00	15.00
	Total	10		
Words	1	5	7.00	35.00
	2	5	4.00	20.00
	Total	10		
Message	1	5	7.60	38.00
	2	5	3.40	17.00
	Total	10		
Meaning	1	5	6.90	34.50
	2	5	4.10	20.50
	Total	10		
Questions	1	5	7.70	38.50
	2	5	3.30	16.50
	Total	10		
Conversation	1	5	7.60	38.00
	2	5	3.40	17.00
	Total	10		

Test Statistics^b

	Min	Words	Message	Meaning	Questions	Conversation
Mann-Whitney U	.000	5.000	2.000	5.500	1.500	2.000
Wilcoxon W	15.000	20.000	17.000	20.500	16.500	17.000
Z	-2.611	-1.567	-2.193	-1.467	-2.333	-2.193
Asymp. Sig. (2-tailed)	.009	.117	.028	.142	.020	.028
Exact Sig. [2*(1-tailed Sig.)]	.008 ^a	.151 ^a	.032 ^a	.151 ^a	.016 ^a	.032 ^a

a. Not corrected for ties.

b. Grouping Variable: Type

Appendix G

Kappa Calculations

Abigail

Code	Coder 1	Coder 2	Exact Match	Kappa
Community	18	17	17	0.94
Division of labor	9	10	8	0.73
Rules	4	4	4	1.00
Tensions	10	8	8	0.80
Tools ¹	7	9	6	0.60

¹Code omitted from further analysis

Bill

Code	Coder 1	Coder 2	Exact Match	Kappa
Community	30	30	27	0.82
Division of labor	18	21	18	0.86
Rules	5	4	4	0.80
Tensions	24	27	23	0.82
Tools	11	14	10	0.67

Frank

Code	Coder 1	Coder 2	Exact Match	Kappa
Community	31	19	19	0.61
Division of labor	17	19	14	0.64
Rules	7	7	7	1.00
Tensions	43	52	41	0.76
Tools	27	31	23	0.66

John

Code	Coder 1	Coder 2	Exact Match	Kappa
Community	31	31	31	1.00
Division of labor	7	10	7	0.70
Rules	6	6	6	1.00
Tensions	6	8	6	0.75
Tools	15	17	14	0.78

Misty

Code	Coder 1	Coder 2	Exact Match	Kappa
Community	31	31	31	1.00
Division of labor	7	10	7	0.70
Rules	6	6	6	1.00
Tensions	6	8	6	0.75
Tools	15	17	14	0.78

Ralph

Code	Coder 1	Coder 2	Exact Match	Kappa
Community	23	23	23	1.00
Division of labor	7	9	7	0.78
Rules	6	7	6	0.86
Tensions	15	12	12	0.80
Tools	16	19	16	0.84

Sandra

Code	Coder 1	Coder 2	Exact Match	Kappa
Community	19	18	18	0.95
Division of labor	4	6	4	0.67
Rules	2	2	2	1.00
Tensions	5	7	5	0.71
Tools	9	7	7	0.78

Sheri

Code	Coder 1	Coder 2	Exact Match	Kappa
Community	18	19	17	0.85
Division of labor ¹	7	9	6	0.60
Rules	8	8	8	1.00
Tensions	20	21	20	0.95
Tools	14	15	12	0.71

¹Code omitted from further analysis

Sue

Code	Coder 1	Coder 2	Exact Match	Kappa
Community	20	19	19	0.95
Division of labor	7	8	6	0.67
Rules	2	2	2	1.00
Tensions ¹	2	4	2	0.50
Tools	6	6	6	1.00

¹Code omitted from further analysis

William

Code	Coder 1	Coder 2	Exact Match	Kappa
Community	24	22	21	0.84
Division of labor ¹	7	12	7	0.58
Rules	9	10	8	0.73
Tensions	12	13	12	0.92
Tools	10	10	8	0.67

¹Code omitted from further analysis

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