Collaborative Learning and Support Environment for Teachers in Native American Pueblo

Schools in New Mexico

by

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ABSTRACT OF THE DISSERTATION

By Josephine Kilde
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Collaborative Learning and Support Environment for Teachers in Native American
Pueblo Schools in New Mexico

Dissertation Directed by Professor Clayton Lewis

Teachers in rural Native American Pueblo schools in New Mexico lack professional development opportunities due to the long distances between the Pueblos and academic institutions. Previously, most schools received "hit and run" professional development sessions conducted once or twice a year that did not address the real issues faced by teachers each day. To remedy this, Los Alamos National Laboratory established the Math & Science Academy (MSA) in 2000, a K-12 professional development program for teachers that provides intensive and continuous three-year training and support for schools in Northern New Mexico. Though very successful, the MSA program was limited by lack of an online component of the program therefore lacking continuity between professional development sessions. This led to a desire to incorporate a collaborative online component that could bridge gaps between professional development sessions by making the program accessible anytime, anywhere, and on any device, while capturing the camaraderie and collaborative spirit shared in the physical meetings. This research is an ethnographic study of the design, development, and implementation of this online component, herein referred to as CLASET (Collaborative Learning and Support Environment for Teachers). The study setting is in rural, low socioeconomic, resource-poor Northern New Mexico, and involves 67 teachers and 6 principals in seven Native American schools distributed within a 100-mile radius from MSA's staff office.

Data was collected via observations, interviews, focus group, math assessment, and web analytics. The data analysis shows that CLASET was not successful in bridging the MSA gap due to lack of adoption by the teachers. Further investigation demonstrated that five assumptions made implicitly at the beginning of the study, based on pre-assessment data, were violated. The five assumptions were: 1) teachers had math content mastery that they could feel comfortable sharing among peers; 2) CLASET would not require technical knowledge and skill beyond what teachers had acquired; 3) schools had Internet and technology support structures to allow teachers to use CLASET; 4) CLASET's purpose was clear to teachers; and 5) teachers had time to dedicate to CLASET use. Lessons from the study suggest that CLASET has a place in bridging the professional development gap in the communities in this study and in other rural, low socioeconomic, and resource poor environments, but only if the basic assumptions are first met

DEDICATION

I dedicate this thesis to my Mom, Jennifer Njambi Kienjeku, who gave up all so I could have it all.

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My heartfelt and sincere gratitude go to the following:

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Chapter 1

Introduction

Modern technologies have influenced how economies view and conduct business globally. The once isolated stretches of land connected by large bodies of water are now interconnected into one large economy through information and communication technologies (ICTs). ICTs have also influenced the way teachers teach and students learn As education has evolved from single room schools to include virtual learning environments, ICTs have broadened the scope of education and opened avenues that have redefined education and schooling. Innovation in education, as in other industries, has been pushed to the limit by the interplay between designers and users, where production is no longer about the product but is a process that is driven by consumers' ever changing wants and needs (Silverstone & Haddon, 1996). As this social shift happens, it is important that teachers be exposed to effective professional development regarding the effective use of technology in the classroom. This will help redefine teaching methods by exploiting technology affordances that facilitate effective teaching and learning.

Professional development for teachers is a vital process that facilitates teacher reflection through analyzing needs, questioning epistemologies, enhancing cognition, and improving practice (Avalos, 2011). The traditional "sit and get" professional development methodologies, however, do not address these deep levels of transformation and reform that require more than sporadic workshops from trainers who provide generic solutions that are often not realistic in specific situations (Beck, D'elia, & Lamond, 2015). Effective teacher professional development not only appeals to content mastery but requires an environment that is collegial, job-embedded, and that provides for

integration of alternative forms of inquiry, such as peer observation, collaboration, and continuous cycles of improvement (Burbank & Kauchak, 2003; Croft, Coggshall, Dolan, & Powers, 2010).

With an emphasis on collaboration as a means of effective teacher professional development, ICTs can help in the formation and maintenance of teacher networks by providing sustainability, scalability, and constant and consistent availability of resources anytime and anywhere (Schlager & Fusco, 2003). This study investigates the effectiveness of using ICTs to form learning communities in New Mexico Native American schools for the purpose of collaborative online teacher professional development.

Problem Statement

Native Americans suffer the lowest academic achievement rates among all ethnic groups in the United States. Though embedded in a developed nation, Native Americans suffer many of the socioeconomic challenges experienced by developing nations—challenges comparable to those in the top ten poorest nations in the world (Musa & Paul, 2011). About 40% of Native Americans live in poverty, only 11.5% possess a bachelor's degree, unemployment is at 35%, and they suffer higher rates of child malnourishment, crime, alcoholism, and health-related deaths compared to their fellow Americans (Sarche & Spicer, 2008). Coupled with these social problems is minimal access to Internet, especially high speed Internet. In 2012, broadband access was at 10% in Native American nations, compared to 63% in the United States ("Native Nations | FCC.gov," n.d.).

In New Mexico, Native Americans live in small communities call Pueblos. Each Pueblo relishes its culture and language, which are passed down from generation to generation through stories, cultural dances, and rituals ("Native Arts and Cultures," 2010). Most of the languages have never been recorded but passed between community elders and children through mentor-protégé relationships in which communal living and learning are encouraged. Each Pueblo has its own school, usually for grades K-8, with a centralized high school that serves several Pueblos. Currently practiced K-16 curricular methods employ a procedural learning style that does not readily accommodate Native American collaborative learning styles. This discontinuity between Western and Native American cultural epistemologies creates a missed opportunity to employ communication methods and pedagogies that are culturally relevant to the Native American students (Morgan, 2006).

In addition to academic and cultural variances, the current demands of everyday school activities deny teachers, especially rural teachers, the opportunity to pursue professional development. Teachers of Native American students require training in discourse and pedagogy that covers effective and culturally relevant methods of instruction and learning. Hord (2009) called for teachers to work together toward improving student learning through continuous professional learning that can be cultivated among teachers through peer (sometimes referred to as professional) learning communities (PLCs) (Hord, 2009).

This study was done in collaboration with the Math and Science Academy (MSA), a professional development program established by Los Alamos National Laboratory to support teachers in Northern New Mexico. At the time of the study, MSA

had entered into an agreement with the Bureau of Indian Education (BIE) to be the main professional development body for teachers in Native American schools in Northern New Mexico. At the time of this research, MSA desired to create an online component of the program that would capture the camaraderie and the collaborative spirit shared at physical MSA professional development session and that would make the program continuous and accessible to teachers anytime, anywhere, and on any device in the time between physical meetings. The questions MSA had were: could technology be used to mediate the creation of online communities of practice, and would these communities facilitate professional development?

Statement of Purpose

The plan at the beginning of the study was to develop a platform that would allow teachers to create short courses to describe the strategies they employed in their classrooms that would be beneficial to other teachers. During this planning period, we called the platform MOOC (Massive Open Online Courses), a term used to refer to free online short courses developed by colleges in the attempt to make college education accessible (Yuan & Powell, 2013). After a demographic survey of the teachers and upon realizing they did not have the technological familiarity or fluency to execute such a project, we changed the research focus to the development of a platform that used collaborative technologies to allow teachers to interact without the requirement of development courses. Hence, the project changed to CLASET (Collaborative Learning and Support Environment for Teachers).

Research Questions

Four research questions guided this study initially: 1) Under what circumstances and expectations were the teachers willing to use CLASET? 2) How did CLASET support Native

American teachers' cultural ways of thinking? 3) How did the teachers use CLASET? and 4) What were the spillover effects in the classroom that were attributable to technology? As discussed below, these questions were replaced during the progress of the research.

Overview of Methodology

Ethnography was the research method used for this study as further discussed in Chapter 3. Data collected through field notes, surveys, focus group, and teacher math assessment were used to answer these questions. The findings are discussed in Chapters 5 and 6.

Rationale and Significance

The purpose of this ethnographic study was to investigate whether ICTs could be used to bridge time and distance in building online communities of practice for teachers in rural schools; whether these online communities of practice could provide a platform for continuous teacher professional development; and how ICTs and culture converge to impact the success or failure of these online communities of practice. The significance of the study, if successful, was that the model could be scaled for use in other Native American and tribal communities across United States and elsewhere.

Researcher Role and Assumptions

My role was a participant observer; I participated in teacher activities as I observed and recorded the occurrence of events. My assumptions at the beginning of the study were that teachers would have a fair exposure to technology since all the schools had a computer lab, had computers in the classroom, and had Internet connectivity. I also assumed that teachers would have mathematics content mastery of the grades they taught therefore I assumed the main hurdle of the project was training teachers how to develop and share short courses.

Going into the research project, I did not know much about the Native American communities other than what I had briefly read from books and heard from discussions with peers. Not being native to the United States myself, I was open to learning about the culture of the Native American communities, as I admired their cultures and traditions. Coming from a developing country that possesses similar characteristics to the Native American communities, including a tribal structure, I assumed that the systems would be fairly similar. Hence, I would need to carry the proper respect and honor demanded by such systems, and courteously follow the proper channels of authority so as not to offend the communities. The cultural etiquette turned out to be a fair assumption, in contrast to the other assumptions presented above, which turned out to be inaccurate, as discussed in Chapter 5.

Definitions of Key Terminology

Math and Science Academy (MSA)

> MSA is a professional development program for teachers established by Los Alamos National Laboratory to provide professional development for K-12 schools in Northern New Mexico.

Bureau of Indian Education (BIE)

> BIE is an educational body of the Bureau of Indian affairs that ensures the education of the whole Indian child, including formal and cultural education.

Collaborative Learning and Support Environment for Teachers (CLASET)

> CLASET is an online platform developed in this study to provide Pueblo teachers an online collaborative environment for professional development in mathematics content mastery, pedagogy, epistemologies, and best practices.

Pueblo

A Pueblo is a community of Native American people living in New Mexico.

Organization of the Dissertation

The dissertation is organized into six chapters.

Chapter 1: Introduction

The introduction provides an overview of the purpose of the study, its significance, and

the assumptions that went into its design.

Chapter 2: Literature Review

Chapter 2 presents a review of the literature and theories that guided the CLASET

development, data collection and analysis, and conclusions.

Chapter 3: Methodology

The methodology chapter provides a description of the participants and the

instrumentation used. It also describes the reliability and validity of the study, as well as

the ethical measures employed.

Chapter 4: CLASET Design and Development

This chapter describes the stages of CLASET design and development, including the

development cycle and requirements.

Chapter 5: Results and Discussion

Data analysis and data interpretation are discussed in this chapter.

Chapter 6: Conclusions and Future Work

Answers to the research questions and opportunities for future work are described in this

chapter.

Chapter 2: Literature Review

New Mexico is a mainly rural, sparsely populated by small communities of generally Hispanic and Native American people. The Native American communities, or Pueblos, each consist of members of the same tribal group. Nineteen Native American tribes are represented in New Mexico, with the majority located in the northern part of the state. Many Pueblos suffer high rates of poverty, unemployment, and alcoholism, and students suffer from low academic achievement and high dropout rates. In 2013, New Mexico ranked 50th in the nation in terms of sixteen socioeconomic indicators, including economic security, education, and health, with Native American communities holding the bottom ranks in each of these categories (Provasnik et al., 2007).

Given these facts, the following background information was helpful for addressing the research questions: the factors contributing to low student achievement, the quality of teacher professional development, cultural responsiveness, and design considerations. The research was guided by Vygotsky's Cultural-Historical Activity Theory (CHAT), which was used as the theoretical framework.

Human beings learn in a socially mediated process.

CHAT is a theory derived from the work of Lev Vygotsky (1978), who argued that human beings learn in social environments, and that learning is mediated by artifacts to obtain a desired outcome (Vygotsky & Cole, 1978; Yamagata-Lynch, 2010). Vygotsky developed a mediated action triangle that included a subject (an individual or individuals engaged in an activity); the mediating artifact/tool (this could be an artifact, social others, language, or prior knowledge that mediates the subject's experiences within the activity); and the object (the goal of the activity)

(Foot, 2001; Yamagata-Lynch, 2010). Vygotsky's framework has been termed as the "first generation" activity theory (Daniels, 2004).
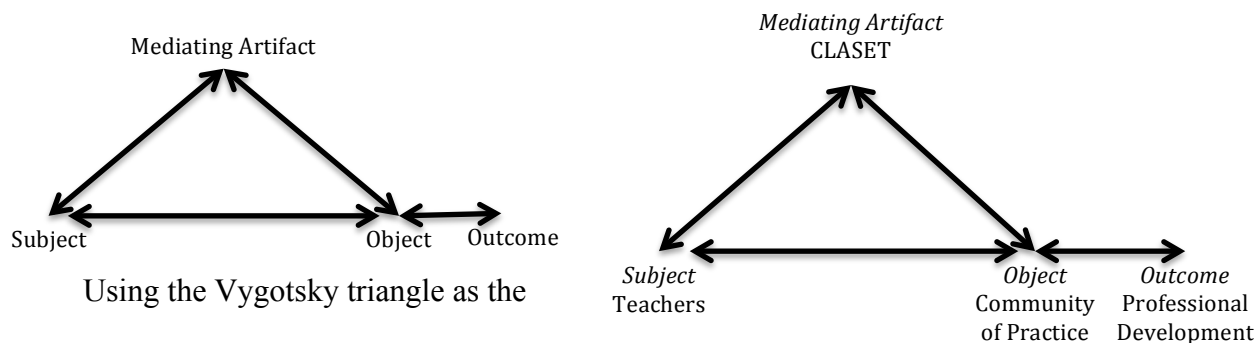
Figure 1: (a) First generation activity triangle (based on Engeström, 2001) and (b) the activity triangle in this research context.

framework for this research, we identified the subject to be the teachers working in the seven Native American schools, CLASET as the mediating artifact, the object being creation of communities of practice, and the desired outcome being community-based professional development.

Learning in a socially mediated environment is a complex activity system influenced by rules, communities, and division of labor, all of which affect the learner's outcome.

Engeström (2008) realized a limitation of the Vygotsky's triangle: it was individually focused and did not consider other factors that influence learning and sense making in a learning environment, including rules, community, and division of labor (Engeström, 2008). Rules are regulations involved as the subject interacts with the mediating artifact and social others towards achievement of the object; community are people who share an interest with the subject and have a similar object; and division of labor is the "horizontal division of tasks and the vertical division of power, positions, access to resources, and rewards" (Foot, 2001). Engeström saw the first generation triangle as just the tip of a larger and more complex structure of interaction between an individual engaging in "group actions embedded in a collective activity system," and thus he

developed the second generation CHAT model (Daniels, 2004; Engeström, 2001a). He examined

this concept using the following four questions: "(1) Who are the subjects of learning, how are

they defined and located? (2) Why do they learn, what makes them make the effort? (3) What do

they learn, what are the contents and outcomes of learning? and (4) How do they learn, what are

the key actions or processes of learning?" (Engeström, 2001b, 2008). The complexity of this

model is amplified by the subject's interaction with the various aspects within the triangle,

leading to multiple roles being played in each environment. For example, a subject who is a

teacher also plays the role of a parent, daughter/son, relative, community member, leader, and

subordinate to higher authorities (Foot, 2001).
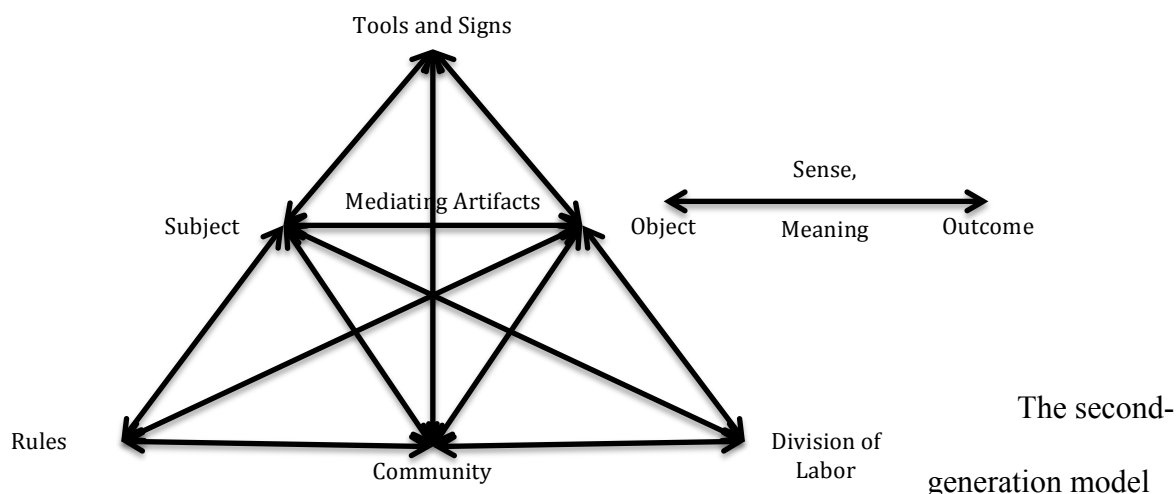
Figure 2: Second generation CHAT (based on Engeström, 2008)

shows that learning is not a linear process. Many factors contribute to and influence the learning

process and contribute to the success or failure of the object and desired outcome. For the

purposes of this research, the framework includes the rules that govern the teachers, classrooms,

schools, the BIE, and school districts; the communities that teachers are engaged in (teacher, peer, tribal, and cultural); and the division of labor among the communities and stakeholders, as introduced in the previous chapter. These interactions are further discussed in Chapter 5.

Five principles govern the outcome of interacting objects from two activity systems.

Engeström summarized the activities within CHAT using five principles that led to development of a third-generation CHAT model (Engeström, 1999, 2008). The third-generation model includes conceptual tools for understanding interactivity between two CHAT systems via dialogue, multiple perspectives, and network interactions. The importance of this is that the process of two interacting activity systems leads to the creation of new knowledge through negotiated meaning derived from individual objects to create a shared mutual object between the activity systems. The first principle states that an activity system is the prime unit of analysis, that is, new information is interpreted and given meaning by the multiple components within the activity system. The second principle is the multi-voicedness of activity, which means that multiple interpretations and points of view are derived based on interactions among various components within the system. These interpretations are compounded through interactions between multiple systems, therefore becoming "a source of trouble and a source of innovation, demanding actions of translation and negotiation" (Engeström, 2008). The third principle is the historicity of activity. Activity systems are evolving systems that develop and transform over time, and are measured and understood against their own history. The fourth principal states that contradictions are a driving force for change and development. "Contradictions are not the same as problems or conflicts. Contradictions are historically accumulating structural tensions within and between activity systems" (Engeström, 2001a). When a new element is introduced into a system, the dynamics of the system shift, creating a collision between the old system and the

transformed system influenced by the new element. The fifth principle is the possibility of expansive transformations in activity systems. "An expansive transformation is accomplished when the object and motive of the activity are reconceptualized to embrace a radically wider horizon of possibilities than in the previous mode of the activity" (Engeström, 2008). That means that as systems go through transformations over long periods of time, the subjects may begin to question and even deviate from established norms, leading to some interactive systems pursuing collaborative effort for change (Engeström, 2001a, 2008).
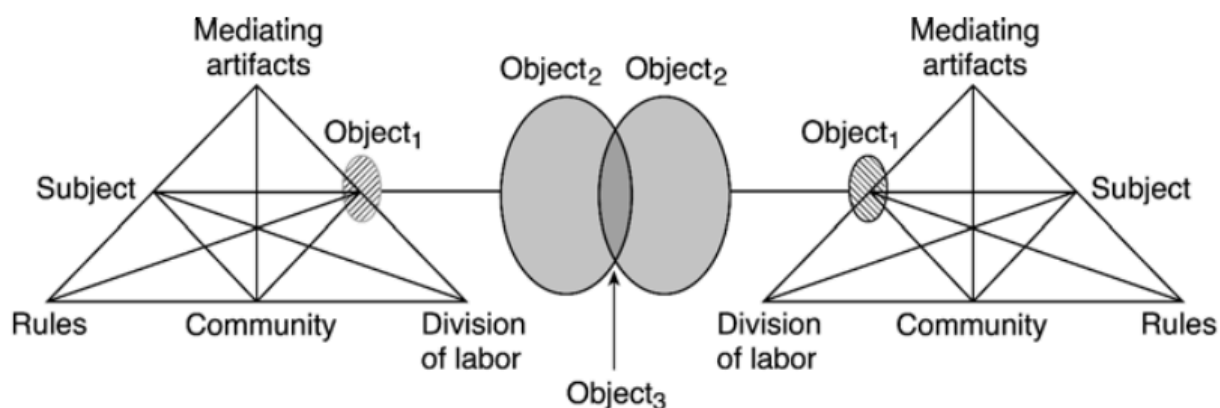
Figure 3: Two interacting activity systems (Engeström, 2001)

These principles were used to guide the understanding of CLASET as the mediating object within the subject of teachers, each teacher being his or her own activity system and interacting differently with CLASET to obtain the desired outcome of creating a community of practice among MSA teachers, or many activity systems, for the purpose of professional development. In other words, our study looked at how the introduction of CLASET, and the rules, principles, and practices that came with this introduction, affected each system's (teacher's) ultimate object, and how this object was shared within the teacher community. All three CHAT generations were crucial for achieving a systematic understanding of the teachers and the Native American communities, informing the CLASET design and development.

CHAT, supported by other learning and design theories, played a major role in defining the CLASET design, development, and redesign process.

CHAT provided an appropriate theoretical structure for this study of community formation and shared knowledge because; it not only focused on the teacher as learner and CLASET as the mediating tool for learning, but also expanded the scope to examine the extended environment surrounding the learner that affects learning. The expanded scope included culture, rules, learner's multiple communities of engagement, and other roles played by the learner within and outside the learning community (Blanton, Warner, & Simmons, 2001). Each CHAT generation informed different parts of the CLASET design. To further understand how interactions within activity systems work, an ethnographic study was designed to look at how the teachers interacted with CLASET (the mediating artifact) and how other aspects of their activity systems influenced the choices made around CLASET use. A description of the ethnographic study is provided in the next chapter.

The first-generation activity theory was used to take snapshots of the teachers' learning within certain environments, holding all other factors constant. This gave a primitive understanding of how the teachers generally learn, and an account of existing mediating tools. The second-generation CHAT brought in each teacher's mediated learning within natural environments, accounting for rules, communities, and others who affected the activity systems. This painted a more realistic image of the learning environment because who we are and how we interact with others affect our decisions and how those decisions influence our ultimate goal. The third-generation CHAT was used to explore how the teachers shared their objects to create new objects, and how those new objects, introduced back into the activity system, affected the

system. This was used to inform the design of the medium meant to facilitate sharing and collaboration.

Although CHAT was helpful in structuring and informing the CLASET design process, other learning and design theories gave us a better understanding of the multiple components within the activity system, including how communities are formed (peer learning communities and communities of practice), how adults learn (adult learning theory), what motivates learning (motivation), how knowledge is shared in a learning environment (connectivism), how the subject's perception of mediating tools influences interaction with the tool and subsequent object (affordance theory), prediction of failure (failsafe theory), and lessons learned from using ICTs for development in rural and underdeveloped locations with minimal Internet access, similar to the Pueblo communities (ICTD).

Peer Learning Communities

First of all, we need to understand the term "community" and then define how learning happens in communities, how we know that learning is happening, and what successful learning looks like. According to Barab and Duffy (2000), a community is defined as a group of people that has "a significant history, a shared cosmology, a common cultural and historical heritage, social interdependence, and reproduction cycle." Barab, Kling, and Gray (2004) defined an online community as "a persistent, sustained [socio-technical] network of individuals who share and develop an overlapping knowledge base, set of beliefs, values, history, and experiences focused on a common practice and/or mutual enterprise." A community of practice, according to Wenger (2001), is a group of people "who share a concern or a passion for something they do and learn how to do it better as they interact regularly." Charalambos, Michalinos, and Chamberlain (2004) stated that learning within an online community is a social process that

involves building connections among what is being learned and creating relationships among participants with similar goals while being bound by a set of conditions and practices that give rise to the community, such as media, forms of communication, social and learning practices, political values and commitments, and the design of the learning environments. Cross (2005) defined learning communities as "groups of people engaged in intellectual interaction for the purpose of learning." She continued to say that collaborative learning is a distinctive epistemology for learning communities in the development of knowledge, and that learners actively build knowledge as they shape and build mental frameworks to make sense of their environments (Cross, 1998). Drawing from the above studies, a learning community could therefore be defined as a group of people pulled together by a common interest and shared identity that are developing social capital for the purpose of engaging in transformative learning through interaction with community peers.

Not all communities facilitate learning and not all learning environments facilitate community. Lave and Wenger (1991) developed the term 'community of practice,' which they argued is "a system of relationships between people, activities, and the world; developing with time, and in relation to other tangential and overlapping communities of practice." Communities of practice are fertile grounds for negotiation of meaning through a process of participation and reification (reification being a process in which the community gives form to experience by producing abstractions, tools, symbols, stories, terms, and concepts), where learning, meaning, and identity are shaped and formed (Wenger, 1998). Success is associated with members' ability to build coherence through mutual engagement, joint enterprise, and shared repertoire, and to create a sense of social belonging through active engagement, reflective practice, and alignment of activities and practices (Wenger, 1998, 2000). As Vygotsky (2012) discovered, all learning is

social; we learn through interactions and communications with others within social contexts and these social environments influence our learning processes. In teacher community, where teachers are expected to be lifelong learners, the learning process is vital to their professional development and directly proportional to their success as professionals.

Unfortunately, teacher professional development seminars and training centers are sometimes so structured around content, pedagogy, and strategies that they miss the opportunity to give teachers the chance to build communities for sharing and discussing the intuition-based practices they employ within their classrooms to facilitate effective learning or prepare students for learning. It is sometimes not the particular knowledge, strategies, or tools that make teaching and learning effective but the time teachers take to make their students academically ready through intuitive measures. Unfortunately, these intuition-based tactics are left inside the classroom, as they are not given adequate space in professional development or coaching sessions to share them. An online community-based environment could provide teachers a space to share their experiences in a social environment and to initiate discussions that are specific to their community or cultural context.

Communities of Practice

A community of practice is a joint enterprise, as understood and continually negotiated by members through mutual engagement that binds members together into a social entity with a shared repertoire of communal resources developed over time (Smith, 2003; Wenger, 1998, 1999). Wenger (2011) summarized communities of practice as "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." Not every community is a community of practice. Three characteristics are crucial in the formation of communities of practice: a domain, or the identity defined by shared interest; a

community, or the joint activities within the domain; and a practice, or the repertoire of resources developed by the practitioners to create a shared practice. Wenger, McDermott, and Snyder (2002) developed seven principles for designing communities of practice and cultivating an environment that would drive its evolution: 1) design the community with evolution in mind, 2) foster open dialogue between inside and outside perspectives, 3) invite different levels of participation, 4) develop both public and private community spaces, 5) focus on value, 6) combine familiarity and excitement, and 7) create a rhythm for the community. Members of a particular community of practice also belong to other communities, and their experiences in those other communities affect how they respond to each community. Design and development of artifacts and intervention tools within a community of practice cannot ignore the fact that members belong to and practice in other communities within and outside the community of practice (Eckert, 2006; Schlager & Fusco, 2003).

In the case of this study, the teachers are involved in various social and cultural circles as mentioned earlier. These communities influence how teachers engage and respond to other communities they are subscribed to. Introduction of CLASET, for example, added a component of the teachers' social media experience where the same tools used to keep up with their social circles would be used for professional purposes, creating a different kind of community. This study explored how ICTs could mediate the formation and evolution of communities of practice among teachers, and how teachers transferred knowledge from one community of practice to the next.

Adult Learning Theory

Andragogy is a term coined in the 1960s to define adult learning and to differentiate it from pedagogy, a term used for child learning (Knowles, 1970). Andragogy is the art and science

of helping adults learn and is based on the assumptions that adult learners: (1) can direct their own learning, (2) have a wealth of resources based on life experiences, (3) have learning needs closely related to changing social roles, (4) are problem-oriented and interested in immediate application of knowledge, and (5) are intrinsically rather than extrinsically motivated to learn (Knowles, 1970; Merriam, 2001, 2008). This ethnographic study examines how the five assumptions for adult learners apply to adult learning and how adult learning within this community influences teachers' ability to create effective pedagogy and learning environments. Like many other professionals, teachers see the end of their academic journey as being graduation from college, marking the transition from learners to practitioners; they do not see themselves as lifelong learners (Knowles, 1970). This discontinuity of learning affects how they establish a learning climate for their students, diagnose student needs, carry out the planning process, conduct learning experiences, and evaluate learning (Knowles, 1970, pp. 46–49; Mezirow, 1997).

Affordance Theory

Affordance is a term coined by J. Gibson to describe aspects of the relationship between an animal and its environment (Gibson, 1977; Stoffregen, 2003). Gibson (1977) stated, "The *affordances* of the environment are what it *offers* the animal, what it *provides* or *furnishes*, either for good or ill" (p. 128). Chemero (2003, 2007) argued, on the other hand, that affordance is not only an attribute of the environment but of the animal as well. He argued that as much as the environment provides the affordance to be exploited by an animal, the animal must have the capacity to exploit the perceived affordance (Chemero & Turvey, 2007; Chemero, 2003). For example, a coffee cup handle affords holdability, but if one does not have fingers to hold it, the perceived affordance is incomplete. In the same way, CLASET is only as relevant as the

teacher's ability to find meaning in it, the teacher's perception that it affords him or her a benefit that meets a certain need, and the availability and accessibility of the affordance. E. J. Gibson (2010) stated, "Perceiving an affordance entails detecting the relation between the organism's power of control and some offering of the environment." She continued to say that such a relation is determined by an organism-environment fit, where affordances are perceived in the course of development and meaning is discovered.

Motivation

Motivation is an act or process, a condition, and a force or influence instigated by goals, based in needs, or formed as a process governing choices (Ahl, 2006). There are two kinds of motivation: intrinsic and extrinsic. Intrinsic motivation is an internal need or drive connected to survival or self-interest, whereas extrinsic motivation is based on reward or punishment (Sansone & Harackiewicz, 2000). Individual or collective goals, values, hopes, and past regulatory experiences are motivational forces that bring people into contact with each other and keep them interacting, thus shaping their daily lives and long-term experiences (Weinstein & Dehaan, 2014). Lim (2004) identified six types of motivation that influence learning in an online learning environment: 1) reinforcement – grades, instructor feedback, peer support, and technical support; 2) course relevance – whether individual efforts will result in the attainment of desired performance goals; 3) interest – intrinsic motivators such as challenge, fantasy, and curiosity; 4) self-efficacy – beliefs and feelings of self-worth; 5) affect – inclusion, attitude, meaning, and competence; and 6) learner control – of content, sequence, learning pace, and instructional display (Lim, 2004). This study seeks to use these ideas to understand teachers' motivations and their outcomes in terms of online learning and community building.

Connectivism

Siemens (2004) defined connectivism as a "learning process that occurs within nebulous environments of shifting core elements – not entirely under the control of the individual" (Siemens, 2004). In this theory, learning is viewed as actionable knowledge residing outside of a learner but within an organization or network; this learning is focused on connecting nodes of information, whereby the understanding gained from the connected knowledge is more important than the learner's current state of knowing (Downes, 2012; Dunaway, 2011; Siemens, 2004). Unlike the theories of behaviorism, cognitivism, and constructivism, which focus on learning as it occurs within a person, connectivism is driven by the chaos, network, complexity, and self-organization theories and asserts that knowledge resides outside the learner and within the learner's network; this knowledge needs to be connected to the right person in the right context in order for learning to happen (Siemens, 2004). Connectivism has 8 principles: 1) learning and knowledge rest in a diversity of opinions; 2) learning is a process of connecting specialized nodes or information; 3) learning may reside in non-human appliances; 4) capacity to know more is more critical than what is currently known; 5) nurturing and maintaining connections is needed to facilitate continual learning; 6) ability to see connections between fields, ideas, and concepts is a core skill; 7) currency (accurate, up-to-date knowledge) is the intent of all connectivist learning activities; and 8) decision-making is itself a learning process (Siemens, 2004). According to Downes (2012), learning occurs as a distributed process within a network based on recognizing patterns influenced by the diversity of the network, whereby those adaptive patterns are stored in memory and then transferred through a connection process to facilitate learning in a complex and rapidly changing domain. Connectivism provides a theoretical framework for answering questions such as how connections are formed, what a particular constellation of connections

represent, how important technology is in enabling connections, and what is being transferred during an interaction between two or more learners (Dunaway, 2011).

Failsafe

In machinery, a failsafe condition means that if a machine is failing, it will do so in a predictable manner, automatically failing safely and systematically without causing damage (Herena, 2011). This means that in system design and development, prediction of failure and implementation of failsafe mechanisms are as important as predictions of success (Fusco & Sharshon, 1962). In studying sustainability and resilience in socially constructed urban systems, Ahern (2011) found that multifunctionality, redundancy and modularization, bio and social diversity, multi-scale networks, and connectivity were five strategies that contributed to building failsafe systems. Dorner (1996) emphasized the importance of assessing complex problems and creating systematic planning and action models, which include an iterative process of formulating goals, formulating models, gathering information, predicting, extrapolating, planning actions, reviewing effects of actions, and revising strategy. Dorner continued to say that failure rarely strikes like a lightening bolt; it usually develops gradually and if not predicted during the design phase, attempts to react to the failing system to make failure even more likely and eventually inevitable. This study seeks to predict failure and implement failsafe mechanisms from the technological and user perspectives.

Information and communication technologies for development (ICTD)

Information and communication technology for development (ICTD) refers to the use of ICTs for socioeconomic development with the intent of bridging the digital divide between the developed and developing worlds (Burrell & Toyama, 2009; Heeks, 2002). Many challenges impacting the success or failure of ICTD initiatives are not purely design related but stem from

human-centric issues, such as trust (Walton, 2012). Trust is a major factor in determining the success or failure of a development project because trust among participants can mitigate the consequences of failure through people working together to make the best of a challenging situation. Introduction of CLASET into the teacher community would not only shift the dynamics of teacher-to-teacher and teacher-to-MSA interactions but would also shift the dynamics within individual activity systems based on teacher-CLASET interactions. These shifts are magnified in areas of restricted accessibility and connectivity. ICTD seeks to explore the use of technology in resource-constrained environments, as such use can turn out to be disruptive to the norms of the communities involved. The "if you build it they will come" concept does not work in development efforts. Successful ICTD projects require investment in understanding the needs of stakeholders from their perspective, developing effective tools with community involvement, and building the credibility necessary to convince stakeholders to use the tools (Walton, 2012). The community must find benefits that outweigh the disruption caused by use of the tool.

Walton (2012) describes two approaches to development that give context to the view of ICTD projects: modernism and critical perspectives. Modernism frames problems in developing communities as natural instead of historical, that is, they originate from within the community rather than having emerged from a complex political and historical context; whereas critical perspectives emphasize the need to listen early and well to local community members, collaborating to shape the focus and approach of development projects (Quarry & Ramirez, n.d.; Walton, 2012).

Lane (1998) stated that three elements exist in building and maintaining trust relationships: 1) a degree of interdependence between trustor and trustee; 2) a way to deal with risk and

uncertainty in exchange relationships; and 3) an assumption that the vulnerability caused by

taking the risk of trusting will not be taken advantage of (Lane & Bachmann, 1998). The current

ethnographic study uses both the modernism and critical perspectives approaches to examine the

role played by trust in CLASET adoption, as discussed in Chapter 6.

The Fifth Dimension

Dimensions are "different facets of what we perceive to be reality" (Williams, 2014).

According to string theory, the universe exists in eleven dimensions, but we live in a four-

dimensional universe (length, width, height, and time). The fifth dimension is where the "notion

of possible worlds arises" (Williams, 2014). The fifth dimension brings to our attention worlds

that are different from ours and "gives us a means of measuring the similarity and differences

between our world and other possible ones" (Williams, 2014). This means that there are worlds

outside of ours that are hidden from us and are revealed when physicists develop theories that

bring knowledge of those worlds into our four-dimensional world.

The fifth dimension is analogous to what Engeström termed "Object 3" in his third-

generation CHAT model discussed above. First, in order to align CHAT with our world's four

dimensions, we will look at how we acquire knowledge in the four dimensions. Information in

and of itself bears no meaning; it is flat or one-dimensional (first dimension). Mediated by

language, signs, symbols, or other mediating tools, that information is given another dimension

of understanding; for example, if the information is a sentence written in English, the English

language becomes the mediator that gives understanding as to what the sentence means. This

adds another dimension (the second dimension) to the flat information. Once the object is

understood, elements of the activity system—e.g. culture, dialogicality (dialogue), and multi-

voicedness (multiple points of view) (Daniels, 2004)—support sense making, and give meaning

to the object, creating a three-dimensional outcome (third dimension). This 3D image is developed, processed, refined, and tested over time (fourth dimension), to where the image becomes an integral part of the activity system. When this information within the activity system is shared with another activity system through a process of argument, negotiation, and compromise, an overlap of similarities between the two systems is formed and the differences established—hence, the fifth dimension.

The following example of the fifth dimension compares individuals to hidden worlds. When two people meet, the knowledge of each person is hidden from the other until a conversation brings out the other person's knowledge in a way that is understandable to the first person's three-dimensional world or activity system. This interaction between worlds through interacting activity systems "unhides" some of what is currently hidden in each activity system. This is what I term as the fifth dimension.

Referring back to the focal questions of this study, which looked at the role of ICTs in facilitating the formation of online communities and how such communities succeed or fail, it will be important to understand how individual activity systems—in this case, those of the teachers—work. In the analysis, we will look at how the teachers learned, how they processed information, how they made meaning of the information presented, and how they shared information. This will allow us to understand whether they arrived at this fifth dimension of evolution in their practices, and if so, how.

Summary

Cultural-historical activity theory states that human beings learn in a socially mediated process. Learning in a socially mediated environment occurs by way of a complex activity system influenced by rules, communities, and division of labor, all of which affect the subject's

(learner's) ultimate object (outcome). This outcome is derived over time after a process of development and refinement through dialog, history, and culture within and among activity systems. Five principles govern the outcome of interacting objects from two activity systems: 1) the activity system as the prime unit of analysis; 2) multi-voicedness of activity systems via multiple points of view; 3) historicity over long periods of time; 4) contradictions as sources of change and development; and 5) expansive transformations in activity systems (Engeström, 2008). The product of the interacting systems is herein referred to as the *fifth dimension*. CHAT, supported by other theories (adult learning, affordances, the failsafe concept, motivation, and ICTD), play an integral part in guiding the design, development, and redesign of CLASET throughout the course of this study.

Chapter 3: Methodology

This study was designed to investigate the formation, maintenance, and success of an online community of practice in a rural area where access to ICTs is less than ideal. The core method used was ethnography. Although it utilizes quantitative methods as well, ethnography is a predominantly qualitative method that studies people within their cultural context, describing how meaning, social interactions, and practices are derived from the subjects' perspectives (Asher & Miller, 2013; Whitehead, 2004). It is "an analytic description of the behaviors that characterize and distinguish cultures or sociocultural groups… [including] a description and analysis of the knowledge and belief that generate and interpret these behaviors. Ethnography's hallmark is this duality" (Akins, 1980). An ethnographer is a participant observer because of the holistic nature of the research; closeness and engagement are required over an extended period of time of interacting with the subjects in order to understand their ontological and epistemological processes (Atkinson & Hammersley, 1994; Whitehead, 2004).

Ethnography was selected as the method for studying how CLASET interacted with the teacher community and how it disrupted, positively or negatively, the teachers' daily practices as well as their personal lives. As defined by Clifford and Marcus (1986), "Ethnography is actively situated between powerful systems of meaning. It poses its questions at the boundaries of civilizations, cultures, classes, races, and genders. Ethnography decodes and recodes, telling the grounds of collective order and diversity, inclusion and exclusion. It describes the processes of innovation and structuration, and is itself part of these processes."

In addition to studying CLASET-teacher interactions and any resulting disruptions, this study explored the challenges of designing, developing, and implementing ICTs in a resource-poor environment. It also explored the circumstances that contributed to the successes and

failures of ICTs in this environment. It aimed to understand how an online community of practice is formed, and whether such communities could facilitate teacher professional development among MSA-participating teachers.

The four research questions that initially guided this study were the following: 1) Under what circumstances and expectations were the teachers willing and able to use CLASET? 2) How did CLASET support Native American teachers' cultural ways of thinking? 3) How did the teachers use CLASET? and 4) What were the spillover effects in the classroom attributable to technology?

Description of Participants and Study Setting

In New Mexico, Native Americans form autonomous nations within the state. They live in small communities called Pueblos, which mainly consist of members of the same tribe. Each Pueblo has its own elementary school and some have schools that go up to the eighth grade. The Bureau of Indian Education (BIE) or the local Pueblo government manages the schools. Schools managed by the BIE are herein referred to as BIE Schools, and schools managed by local Pueblo governments are referred to as Community Schools. All the schools in this study employed state and federal public education curricula and requirements, including standards-based assessments and common core standards.

Seven schools were involved in the study, of which six were BIE schools and one was a community school. The school sizes varied from 23 students and 3 teachers to 367 students and 23 teachers. The schools were located between 32 and 135 miles away from an academic institution that provided teacher training and professional development.

A total of 73 participants took part in the study, including 67 teachers and six principals, 38 of whom were Native American. Of the 67 teachers, 17 were male. All schools had Internet

connectivity and 91% of the participants had a smartphone, 46% had a tablet, 82% had a laptop computer, and 55% had a desktop computer. During the course of the study, Los Alamos National Laboratory issued iPad Minis to all participants. The majority of the study was conducted during three-week Summer Institutes organized and executed by MSA, although a few observations were made during other professional development courses. All the respondents reported that they used social media and email, and engaged in other online activities like online games, blogs, and teaching management systems (Moodle and Edmodo). One teacher stated that she had a personal website. All respondents claimed that they had access to and used technology in their classrooms. The list of the technology used included overheads, document cameras, computers, tablets, AlphaSmart, an interactive white board, calculators, smartphones, Mimio, DVD players, e-Beam, and AlphaSmart. This list, plus classroom observations, showed me that the teachers had been exposed to different technologies and had varying experience with the use technology in their classrooms. Some teachers only had a document camera and a computer, whereas others had multiple computers and a smart board. Different teachers also had different levels of comfort with technology, some keeping it to bare minimum and others having a fully technology-integrated classroom. All respondents stated they had technology support staff at school, with the rating for this question being between 2 and 5 (average 3.2) on a scale of 1 to 5. This was a surprisingly high rating when compared to comments made in interviews and observations, as further discussed later in the chapter.

A pre-assessment showed that teachers were faced by various challenges, including lack of student attentiveness, lack of adequate time to prepare for lessons, and lack of administrative and parental support. Student behavioral issues and low motivation/morale were the most common statements. Teachers described their students as lacking the desire to learn and as

lacking curiosity. Poor retention, lack of English language foundations, lack of academic preparation for the current grade level, social issues, learning gaps, lack of perseverance, and absences were other challenges stated in the survey. Lack of time for lesson planning was cited with overwhelming frequency. Teachers attributed some of their poorly planned lessons, lack of student learning, failure to implement new strategies, and lack of proper lesson preparation to predict student misconceptions, to a lack of time to properly prepare for these things. Other challenges included lack of classroom management, limited classroom supplies, lack of computers for students, lack of space, and large classroom sizes. Lack of administrative support and disruption coming from a high number of unproductive staff meetings and classroom interruptions for searches and other behavioral issues were the most frequently cited challenges. The teachers stated that staff meetings were called frequently—sometimes up to 50 meetings per semester—taking them away from classroom or preparation time. Furthermore, the teachers did not consider them productive or encouraging. Students' social and behavioral issues were another challenge that disrupted the regular school schedule, as lock-downs and searches took time away from lessons and decreased the morale of both teachers and students. Lack of parental support. As will be further discussed in the discussion section, social and behavioral issues become major obstacles when parents do not partner with teachers to create a conducive learning environment. Other challenges included lack of curiosity and absenteeism.

Description of Instrumentation

This research utilized a mixed method approach, collecting both qualitative and quantitative data. The main data collection method used was observation and field notes collected through spending time with teachers and observing how they operated individually and among their peers, and how they interacted with CLASET and other technologies. Additional

data collection methods used included surveys, interviews, a focus group, and a math

assessment. Though the majority of data was qualitative, quantitative data from CLASET

analytics was collected. The data collection procedures are described below and discussed in

greater detail in Chapter 5.

MSA had a third-party program evaluator whose job was to evaluate the effectiveness of

the MSA program based on the goals set by MSA and the BIE, and who produced reports based

on classroom observations, interviews, teacher and student assessment scores, and performance-

based assessments. I worked closely with the program evaluator and collaborated on data

collection so as not to overwhelm the participants. Although the MSA surveys were designed

primarily to measure teacher improvement in pedagogy, classroom management, and student

learning based on MSA training, they also provided insight into and understanding of the

expectations of the MSA program and provided measures with which to evaluate teacher

performance. Below is a description of the various kinds of data collection methods used and

their purposes.

Observations

Observation of teacher activities was the primary data collection method. This helped

understand the participants' interactions with each other, with the stakeholders, and with

CLASET, and how those interactions influenced each other. It was also important to understand

the cultural subtleties that led participants to choose their actions.

Interviews

The interview questions were designed to illuminate how MSA training fit into the

teachers' personal goals, how the teachers viewed the role of technology in their goals and

practice, and how the teachers felt about CLASET as a technology designed to meet their needs.

Four interviews were conducted. The first was in February 2014 with one of principals. The

second was in May 2014 with a Native American teacher who taught in a southern New Mexico

Pueblo school. I met this person on a plane and asked his permission to interview him, which he

granted after I explained my research. The third interview was held in June 2014 with one of the

teachers, and the fourth was in June 2015 with another teacher.

Focus Group

A focus group comprising seven self-selected teachers was conducted one year after the

introduction of CLASET. In it, issues with CLASET adoption were discussed and possible

solutions from the teachers' perspective were brainstormed. The focus group was held in July

2015.

Surveys

Survey-1: Demographics.

The first survey was conducted at the beginning of the study, in June 2013, during an

MSA professional development session. The survey contained four sections: 1) demographics, 2)

self-rated math proficiency in five math topics (Arithmetic, Pre-Algebra, Algebra I, Algebra II,

Trigonometry, and Calculus), 3) teacher challenges, and 4) technology ownership and use.

Survey-2: Mathematics Assessment.

A mathematics problem solving assessment was derived from research conducted by Ng

and Lee (2005) on the bar modeling method as a problem solving strategy. Bar modeling, also

known as the modeling method, was developed in Singapore and later adopted in United States

as a versatile method for visually representing a problem in order to solve it algebraically (Hoyen

& Garelick, 2007). MSA teaches this method because it not only utilize images (models) to

create a concrete mental image of the problem, but it also opens up avenues for solving problems

in multiple ways. In addition, the visualization helps in solving problems algebraically instead of additively.

Ng and Lee (2005) developed an arithmetic to algebra word problem assessment that gradually increased in difficulty from the first to the fifth problem as a way to measure the contributions of working memory and executive functions in solving mathematical problems. In their study, the assessment was administered to 150 fifth grade students. The authors discovered that students who were able to use the model method to solve problems were the most successful in solving arithmetic problems, but the rate of success was decreased for algebraic problems in which the relationships were homogeneous (involving two additive relationships) or non-homogeneous. Students who used the model method to solve the problems involving fractions showed they had a superior command of how to visualize the problem (Fong & Lee, 2005; Lee, Ng, & Ng, 2009).

Administering this survey in our study was useful because it informed MSA about where the teachers were in their understanding of the ICFLiP (Images, Concepts, Facts, Language, and Procedure) model that MSA was using to train the teachers on how to represent a problem in multiple ways. The survey also helped me understand the teachers' level of comfort with the content. This was important because if the teachers did not understand the mathematics concepts, they would not be in a position to create content for CLASET. Below is a list of the five questions from Ng and Lee's (2005) study, plus an additional random geometry question. We included the geometry question to correlate the teachers' responses to their self-rating of proficiency in arithmetic to calculus from the demographic survey.

Solve the following problems using **Images, Language, and Procedures** to demonstrate your solutions

1. Dunearn Primary school has 280 pupils. Sunshine Primary school has 89 pupils more than Dunearn Primary. Excellent Primary has 62 pupils more than Dunearn Primary. How many pupils are there altogether?
2. At a sale, Mrs. Tan spent $530 on a table, a chair and an iron. The chair cost $60 more than the iron. The table cost $80 more than the chair. How much did the chair cost?
3. A cow weighs 150 kg more than a dog. A goat weighs 130 kg less than the cow. Altogether the three animals weigh 410 kg. What is the mass of the cow?
4. A tank of water with 171 liters of water is divided into three containers, A, B and C. Container B has three times as much water as container A. Container C has 1/4 as much water as container B. How much water is there in container B?
5. A school bought some mathematics books and four times as many science books. The cost of a mathematics book was $12 while a science book cost $8. Altogether the school spent $528. How many science books did the school buy?
6. Federal standards require the angle ramp for wheel chairs to be less than five degrees (5^0). If the length of a ramp is 20 feet and the vertical rise is 15 inches, does it meet federal standards?

The teachers' previous MSA training had taught them how to use multiple methods of representing a problem to reach students who learn differently. Use of images, procedures, and language was taught during professional development days to give teachers a deeper understanding of the mathematical concepts presented, and so that they would be able to visualize the problem in order to present multiple ways of looking at the same problem to access students' multiple entry points. Without visualizing the problem, it would be difficult for a teacher to reach students who are visual learners or who do not understand the concepts presented in a single way. Multiplicative methods—that is, grouping like terms—versus additive methods, and the use of language to explain mathematical concepts in responding to a problem were some of the concepts emphasized in training. In the assessment, however, the majority of teachers did not apply these concepts, especially use of images and language.

This arithmetic to algebra assessment was a measure of teachers' command of problem solving using models and multiple ways of representing problems. The results of this assessment are discussed in Chapters 5 and 6.

Field Notes

  Field notes are notes that I took as I observed activities around the sessions I attended. They were based on my interpretation of what was happening and sometimes included conversation notes with participants. Field notes were taken during the course of the study, between June 2013 and December 2015.

Log Frame

  After establishing a research topic, I developed a logical framework approach document, also known as a log frame. A log frame is a tool originally developed by the US Military and later adopted by United States Agency for International Development (USAID) for international development projects. It has been used for over thirty years by development researchers for setting objectives and predicting outcomes in their research (Bakewell & Garbutt, 2005; Bond, 2003; United Nations Office on Drugs and Crime, 2002). The log frame for this research was a matrix including the research goals, purpose, output, and activities, as described by the project description on one axis; and the indicators of achievement, means of verification, and important assumptions on the other, within an umbrella of expected long term impact. This framework guided discussions with MSA on technology design and development. Although it is difficult to predict outcomes in ethnographic studies, since the participants are being studied in their natural environment with minimal disruption from the researcher and are not in a controlled environment, it was important to develop the log frame to guide data collection methods, especially with regard to knowing what to observe to reduce data noise. Below is the log frame.

CLASET RESEARCH DESIGN AND DEVELOPMENT PLAN

Increased Mathematics Proficiency in K-12 Students

Higher Student Mathematical Scores in Standard Based Assessments

Long-Term Impact

Apply learned concepts and logic in the classroom.

Design interactive methods to teach Math concepts.

Encourage use of Math concepts in daily activities.

Apply Math concepts in other subjects .

Significant Improvement in Mathematics Mastery in K-12 Teachers

	Project Description	Indicators of Achievment	Means of Verification	Important Assumptions
Goal	Increase K-12 teacher understanding of Mathematical concepts and logic.	Increased mathematics mastery as reflected in teacher assessments.	Teacher assessment scores.	Teacher desire to increase Mathematics mastery and proficiency.
Purpose	K-12 teacher professional development in Mathematics concepts and logic.	Online reports that show increased understanding of Mathematical concepts.	Online progressive assessments.	Teacher ability to learn and share ideas through the online application.
Outputs	An online Math collaborative application that tracks interaction and progress.	Functional web application that interacts correctly with the user and collects data correctly.	Test the web application functionalities to ensure proper response.	Teacher computer literacy and ability to navigate the web application features.
Activities	Design and build an online Math training application and tracking tool for data collection.	Successfully meet project specifications and requirements.	Requirements document.	Developers ability to meet project specifications and requirements.

Figure 4: Log frame for CLASET design and development

Ethical Considerations

Compliance with Institutional Review Board (IRB)

The University of Colorado Boulder's Office of Human Research issued an IRB approval at the commencement of the research. Participants were given a consent form, and attended a one-hour session describing the research purpose, activities, time commitment required, and risks of participation. They were told that their participation was voluntary. Although confidentiality was going to be maintained by collecting data anonymously, participants were made to understand that some analytic data collected from CLASET would contain identifying information that would be concealed in any publications and research documents, but which would be shared with MSA and committee members; therefore, total confidentiality was not guaranteed. A copy of the IRB is included in Appendix A1 and the consent form in Appendix A2.

Reliability and Validity

In qualitative research, reliability and validity are important if the data are to usefully represent the situation under study. Reliability is the consistency of the results over time, supporting the claim that replication of the study would yield similar results. Validity is the determination that the research is measuring what it had set out to measure (Golafshani, Nahid., 2003). LeCompte and Goetz (1982) described reliability and validity as follows:

> External reliability addresses the issue of whether independent researchers would
> discover the same phenomena or generate the same constructs in the same or similar
> settings. Internal reliability refers to the degree to which other researchers, given a set of
> previously generated constructs, would match them with data in the same way as did the
> original researcher… Internal validity refers to the extent to which scientific observations

and measurements are authentic representations of some reality. External validity addresses the degree to which such representations may be compared legitimately across groups.

Creswell and Miller (2000) discussed nine types of validity procedures under the following three "lenses": 1) the lens of the researcher (triangulation, disconfirming evidence, and researcher reflexivity), 2) the lens of the study participants (member checking, prolonged engagement in the field, and collaboration), and 3) the lens of people external to the study (audit trail, thickness, rich description, and peer debriefing). All of these lenses were used in the current research, as discussed in the following paragraphs.

Use of Creswell & Miller's lenses in this research

When I decided to collaborate with MSA to develop CLASET for the teachers, the first thing I did was to study literature about the Native American people. Being a Kenyan national and having lived in United States for only eight years at the commencement of the study, I did not know much about the Native American people other than the fact that I had come to really appreciate their art and culture. My research revealed that I had a lot in common with the Native American people: I come from a communal tribal culture, which values the honor and integrity of the clan above that of the individual; we have respect for the land and the products of the land; and Kenya was an oppressed nation under British colonialism, whose residue still hangs in the air after the country's recently-gained (1963) independence. I was really excited to study this group of people whose background was so similar to my own, and expected to share more common ground with them than differences. Although that was the case through the study, one thing I did not expect was the lack of desire for formal education. Unlike Kenya, where formal

education is viewed as the golden key that opens many doors of opportunity, the Pueblo communities saw formal education negatively, as indoctrination to the "White Man's" culture.

This difference led me to be conscious about my bias (lens 1: researcher reflexivity) but it also led me to be open minded about studying this community, as I realized we might not be as commonly linked as I had presumed from my review of the literature. For this reason, I decided to move and live among the community for the entire research period (lens 2: prolonged engagement in the field) and engage participants in the research process (lens 2: member checking). I kept descriptive field notes (lens 3: thick, rich description) of the observations I made and collected data from multiple sources to corroborate my observations with participant data (lens 1: triangulation). From these data, I developed themes that were supported by data from multiple sources (lens 1: disconfirming evidence) and had MSA staff review my results (lens 3: peer debriefing). As discussed in Chapters 5 and 6, multiple forms of reliability and validity testing were employed to ensure that the results properly represented the participant community and that they were true and valid and thus able to inform both research and practice regarding the challenges of technology adoption in rural Pueblo communities in Northern New Mexico.

Procedure

Data were collected during professional development sessions. MSA appropriated time at the end of the trainings for data collection, so as not to take away any extra time from the teachers' daily activities or burden them. The teachers were already being compensated for attending the MSA professional development sessions; therefore, no additional compensation was required for the research. Furthermore, no additional time outside the scheduled events was required from the teachers. All surveys were distributed in hard copy for the teachers to fill out.

Ample time was allocated for completion of the surveys, especially the math assessment survey. The focus group was a one-hour discussion with seven teachers. Interviews and focus group were voice recorded.

Data Analysis

Qualitative data was analyzed using Transana, a general public license (GPL) software tool developed by Dr. David Woods at the University of Wisconsin-Madison Center for Education Research (Woods, n.d.). The software is a qualitative data analysis tool designed to manipulate text and media-based data through providing tools for analyzing transcripts, clips, and snapshots that can then be coded and analyzed. Field notes, interviews, photos, and video data were transcribed, coded, and analyzed in Transana.

Figure 3 shows the five sections of the Transana environment: the database, libraries, collections, keywords, and search. The database is the container that holds the data and organizes it using query-able tags. The libraries are collection of images, media, and documents related to a data set that is used for transcription. The collections are grouping systems for themes that emerge from the data transcripts. Keywords are used to define the source of a clip, or a small portion of the data in the collections, for example, to show whether the clip came from media or a document. The search function is used to search for predefined words in the data.

I created a database called Analysis and imported the interviews, focus group, field notes, and a portion of Survey 1 that dealt with teacher challenges. The interviews and focus group were imported along with their respective recordings and were transcribed verbatim. The field notes and survey were imported as documents for the generation of general thematic codes.
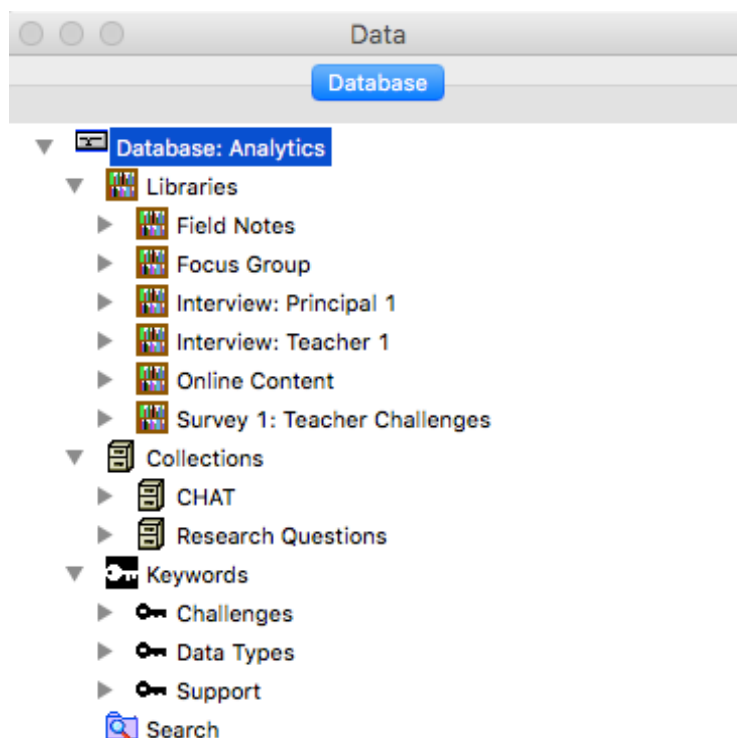
Figure 5: Transana data sections

Quantitative data from CLASET analytics was analyzed using Microsoft Excel and SPSS. SPSS (Statistical Package for Social Sciences) is an IBM developed statistical software package that is widely used in social sciences for analysis of descriptive and bivariate statistics and for prediction of numerical outcomes and identification of groups ("IBM SPSS software," 2016).

Chapter 4: CLASET Design

CLASET was designed and developed to meet two needs: MSA's desire to have an online component of their program, and to investigate as part of this study whether technology could be used capture in an online environment the collaboration that occurred between MSA-participating teachers in face-to-face professional development meetings. It also addressed the desire for a space dedicated to teacher collaboration and professional development outside of scheduled MSA events. Figure 6 below is the CLASET design and development process chart. The activities of each process are described in this chapter.
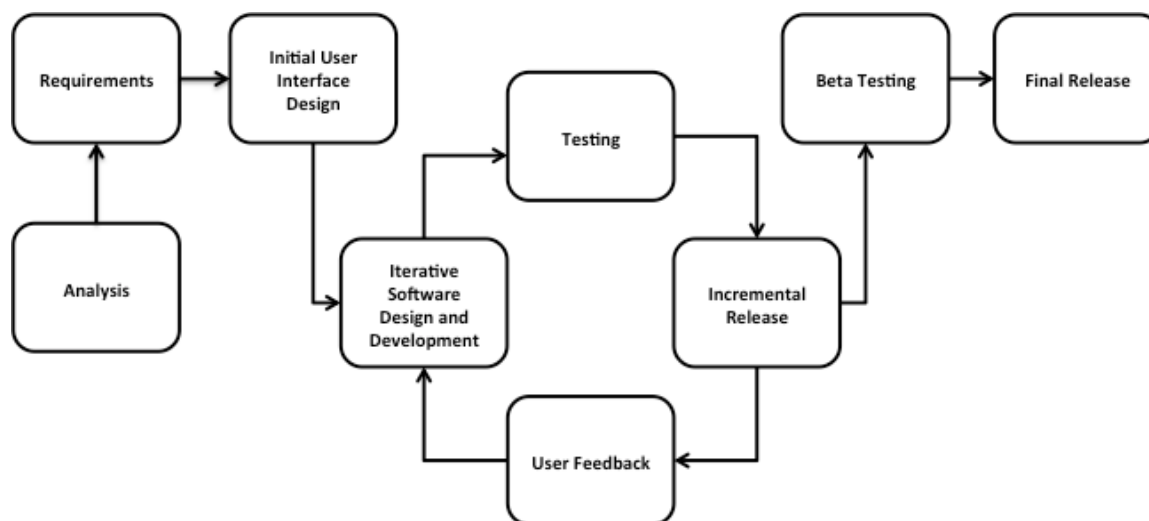
Figure 6: CLASET design and development process.

Phase I: Analysis

As discussed in the Chapter 2, I worked alongside MSA to create a log frame that would guide the project, as well as set the goals and the means by which the goals' achievement could be verified. The log frame contained a matrix including the goals, purpose, outputs, and activities on the y-axis, and project description, indicators of achievement, means of verification, and important assumptions on the x-axis. At the top of the matrix was the expected long-term impact of the project. Our assumptions for the log frame were that the teachers had sufficient computer

literacy and ability to navigate CLASET's features; that the teachers had the ability to learn and

share ideas though CLASET; and that teachers had the desire to increase their mathematics

knowledge, content mastery and proficiency. The term "ability" meant that they had the

infrastructure, time, support, and capacity to utilize CLASET.

Phase II: Requirements

MSA's requirements were broken down into the categories of functionality,

transferability, and cost.

Functionality	Accessible anytime, anyplace, and on any device
	Upload/download and store video, audio, and document files
	Discussion forum and/or blog where teachers can share their ideas.
	Allow teachers to share documents, videos, and audio files
	A resource page where teachers and MSA staff can post useful resources
	A space for sharing collaborative resources
Security	Secure user profiles
Transferability	Not so customized that MSA staff or hired personnel would not be able to manage it after the research phase.
Cost	Minimize cost by using available free and open source tools

Table 1: MSA's CLASET requirements

Phase III: Initial User Interface Design

Equipped with these requirements, I next investigated existing applications that could

deliver the requirements at minimal cost. After extensive research and application trials, I

decided to go with a learning management system (LMS), which is an online application used in

the educational context that allows organization, sharing, collaborative development, grading,

and tracking of content and user interactions (Al-busaidi & Al-shihi, 2010; Watson & Watson,

2007). Watson (2007) defined a LMS as "the infrastructure that delivers and manages instructional content, identifies and assesses individual and organizational learning or training goals, tracks the progress toward meeting those goals, and collects and presents data for supervising the learning process of an organization as a whole." I narrowed down the available LMS systems to two options: Chamilo and Moodle. After testing both applications, I realized that although they had the capabilities to meet most of the requirements, they were not easily customizable, nor did they include additional applications without major changes to their application program interface (API). They also required a central manager to drive and orchestrate user interactions, while MSA wanted a system that would be user-driven and run independently of an orchestrator. These limitations led us to decide that an LMS was not the way to go.

The next option was a content management system (CMS), which is a software system that utilizes templates to organize, create, and facilitate collaborative content creation (Geisert & Railsback, 2008; Powel & Gill, 2003; Wakode & Chaudhari, 2013). The CMS structure is designed such that non-technical users are able to develop, share, and manage content. The CMS that I chose was WordPress, because it was open source, had a large community of developers and support, and was supported by iPage, the organization I used for hosting web content.

After establishing the host and the CMS, I started the development process, which involved establishing the functionalities in order to assemble the correct tools and plugins. A plugin is a piece of software that adds functionality to an application. The table below describes the plugins used for CLASET development.

Plugin	Functionality

BAW Logging/Logout Menu	For user login and logout
Contact Form 7	Contact form used in user registration
Google Analyticator	JavaScript code required to enable and run Google Analytics
Google Analytics	Google tool used to analyze user profile
Google Apps Login	Allows users to use their Gmail account to log into a WordPress site
Google Drive Embedder	Allows embedding of Google apps into a WordPress site
Kimili Flash Embed	Allows use of Flash content.
Lightbox Plus Colorbox	Allows videos to be viewed as a light box
Peter's Login Redirect	Redirects users to a specific page after login
Really Simple CAPTCHA	Used for added security on user registration form
Register Plus Redux	Manages the user registration form
Responsive Lightbox	Makes the video light boxes responsive to various screen sizes and resolutions
Sensei	Learning Management System designed to be integrated with WordPress
Wordfense Security	Security plugin that acts as an anti-virus, firewall, and high-speed cache
WP Maintenance Mode	Puts the site in maintenance mode when being updated so that users are temporarily unable to access content
WP Slimstat Analytics	Web analytics plugin for WordPress that gives the profile details of site users, e.g. username

WP Symposium	Plugin for discussion forum
WP Members	Allows users to create groups
Youtube Channel Gallery	Creates gallery of Youtube videos

Table 2: CLASET plugins

The website was divided into two sections: public and private. The public section was accessible to the public and contained limited information under the Home, About, Wall of Opportunity, and Contact Us menus. The Home page included a brief introduction to MSA and a slideshow of the logos of the seven Pueblos represented at MSA, with a brief description of each and links to the Pueblos' websites. The About page had a detailed description of the history and work of MSA. The Wall of Opportunity page showcased the teachers who had excelled in MSA program. The Contact page contained MSA's contact information. Also in the menu were options for users to register by creating a username, password, and profile; or to log in if the user already had a profile on file. Only users with an invitation code could create a profile. This was done to eliminate spam and unauthorized users from registering on the site. Once a user logged in, the landing page was the Announcements page and the menu was available to allow for navigation. Below is a flowchart of the website.

CLASET DESIGN
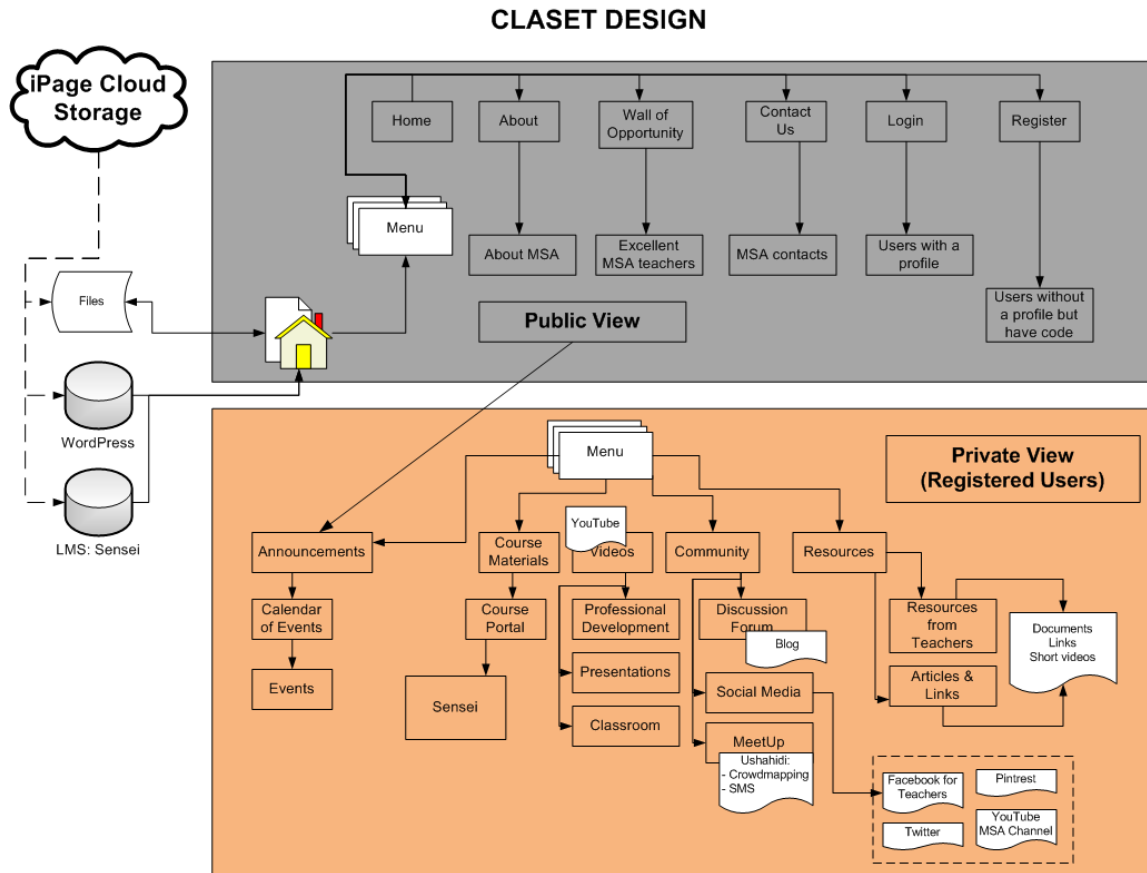
Figure 7: CLASET flow chart

After testing a number of free WordPress themes, I found one that was responsive to various screen sizes and resolutions and that was adaptive to all the plugin functionalities. Equipped with the theme and plugins, the next task was to put the pieces of the puzzle together to come up with the website and functions, as shown in the flowchart above. Below is a snapshot of CLASET's initial design.
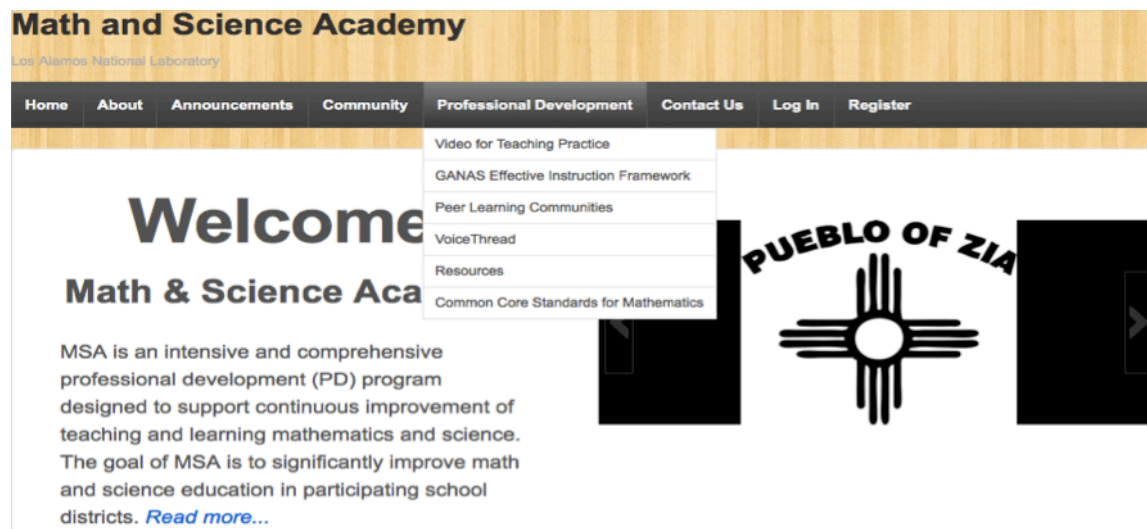
Figure 8: CLASET initial design

Phase IV: Iterative Website Design and Development

CLASET development was planned as an iterative process based on user feedback. The following sections describe the testing, incremental release, and user feedback process.

Testing

The first level of testing was done with a class of graduate students for which I was a teaching assistant. They helped iron out technical blips and missing links that would be confusing to users. The next testing was done with MSA staff to check the content of the site. At first there was limited content available, and some of the functions—LMS and social media—were disabled so as not to overwhelm the users with too many functions during the testing round.

The website was first launched with a user test on the same day that the teachers received their iPads. The plan was to get the teachers to set up their iPads and use them to access the website. The first few trials were a challenge because the users were being presented two new technologies at the same time, and this was overwhelming. The challenge of figuring out the

iPad itself created a tension that affected CLASET reception. After two sessions of trial and frustration, we decided to address one challenge at a time, starting with the iPad. The focus shifted to helping users gain comfort with the iPad—setting up email, downloading apps, and navigating through apps—before re-introducing CLASET. This strategy seemed to work and the users were not as overwhelmed by the need to figure out both systems at once.

During testing of CLASET, several issues surfaced. These will be discussed further in Chapter 5, but briefly, the problems encountered in this phase were as follows: most users had difficulty reading the font because it was too small; there was a glare caused by the white background; and the menu's white text blended in with the gray menu background. The drop down menus did not work well for most users because their closeness in space caused users to select unintended menu options. The pinch and zoom technique for zooming in did not work for some teachers due to latencies in the pinch to zoom motions. The login process required users to verify their accounts using a link sent to their email. Most users did not follow the directions for verifying their accounts and therefore could not log in. Some users used their BIE email addresses that were not accessible on non-BIE devices. Those who could access their BIE email addresses via BIE-issued devices could not verify their CLASET account because the link was blocked. These issues were recorded and used to modify the site for the next release.

Incremental Release

Incremental release involved making small changes and then testing again. Some of the changes included modifying the website home page to using icons, updating the registration process so that account verification was no longer required, enlarging the fonts, and changing the

background to a dark color. User testing was performed as changes to the website were made.

These changes are further discussed in Chapter 6.

Figure 9: Revised website with iconic menus
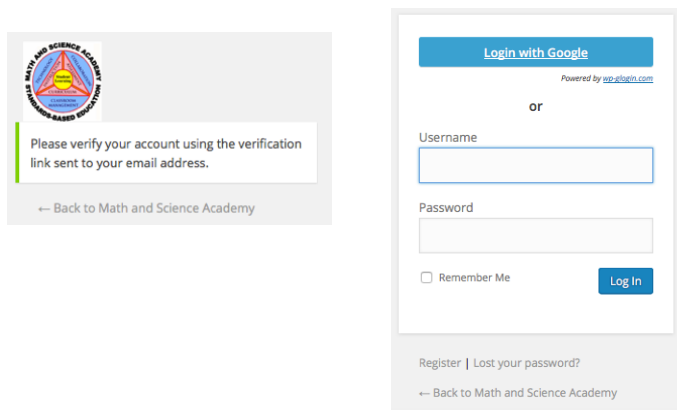
Figure 10a: User registration requirement to verify account. Figure 10b:
User login using their existing gmail accounts.

User Feedback

User feedback was essential in helping us understand the teachers' challenges in using the site. A discussion regarding user feedback is provided in Chapter 6.

Phase V: Beta Testing and Final Release

The beta testing and final release phases were never reached due to challenges that will be discussed in Chapter 6. Issues regarding proper user training, delegation of higher functions for advanced users, and policies regarding CLASET accessibility in all schools need to be addressed before advancing to the final release. Therefore, these phases are included as part of the section on future work Chapter 6.

The table below shows the overall timeline of CLASET development, including the time periods in which versions of the system were available for teachers' use. In the table, CLASET0 refers to the original design and CLASET1 is the version created in response to the experience during the first teacher workshop. After seeing teacher struggles in the first two CLASET versions, MSA and I decided to narrow down CLASET's focus to identifying one problem teachers faced and match it to one technology solution that we could spend some of the three-week Summer Institute time to train teachers. The one problem identified, as described by teachers in the pre-assessment survey discussed in Chapter 5, was lack of time to prepare for lessons. We decided to use Google apps as the solution technology for teachers to create and share lessons plans per grade, as further discussed in Chapter 5. Hence, CLASET 2 was developed.

CLASET Development Timeline		
2013	February	Introduction to New Mexico
	June	Participant observer at MSA event
	September - December	CLASET design
2014	January to May	Moved to New Mexico CLASET 0 development
	June	Teacher recruitment and pre-assessment CLASET 0 pilot test Development of CLASET 1
	September to December	CLASET 1 available to teachers In parallel development of CLASET 2
2015	January to May	CLASET 1 available to teachers Re-focusing of CLASET 2
	June	Pilot test of CLASET 2 Interviews, focus group,
	September to December	CLASET 2 available to teachers

Table 3: CLASET development timeline.

Chapter 5: Results and Discussion

Demographic Survey

Data from the first part of the demographic survey showed that of the 21 participants in attendance, most were female and of Native American descent; all were between 36 and 69 years old; and their teaching experience ranged from 1.5 to 33 years.

CLASET Usage Data

As the study got underway, analytics data showed that teachers were using CLASET during MSA events, and using it minimally outside MSA professional development training. The graphs below show the correlation between CLASET access and MSA meetings. The orange lines indicate MSA meeting dates and the graph is number of logged in users over a period of time.
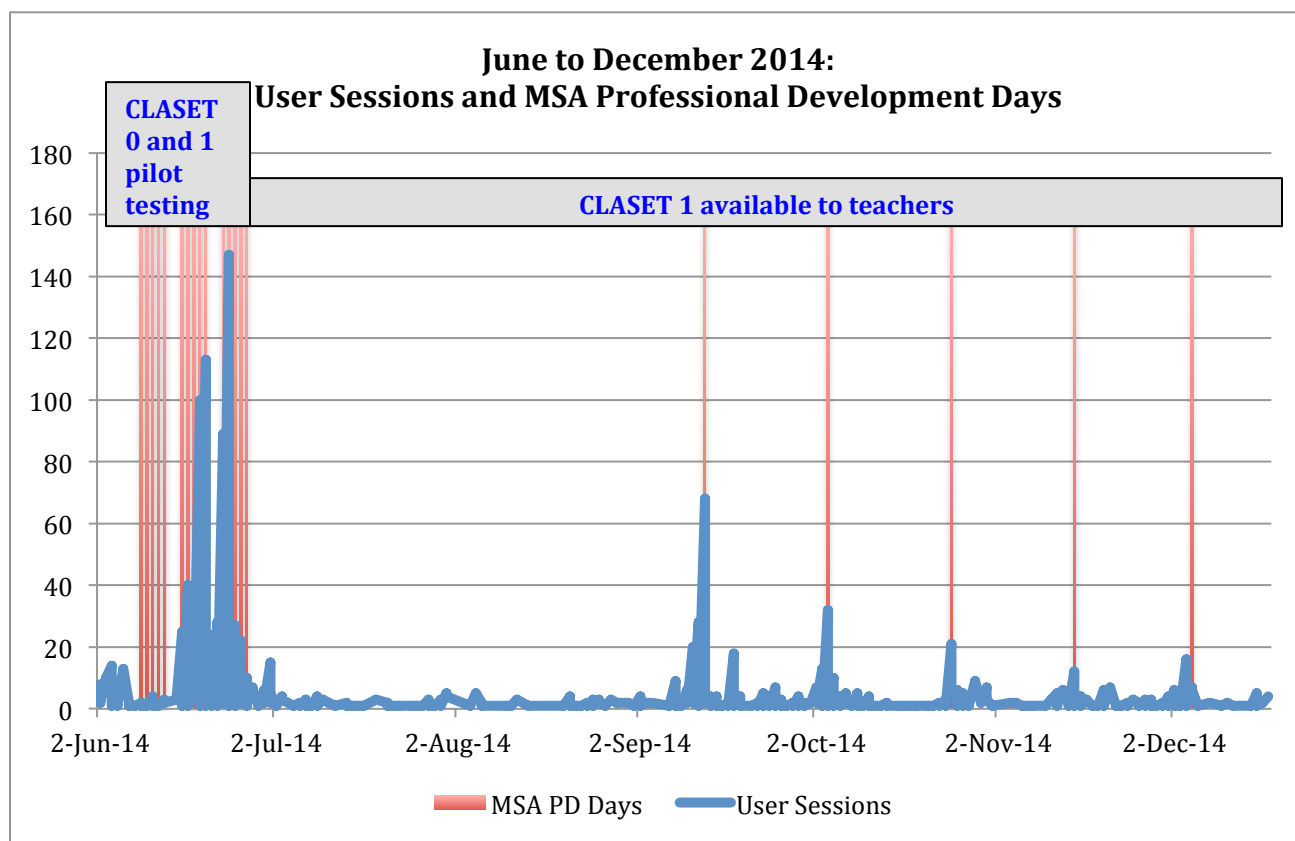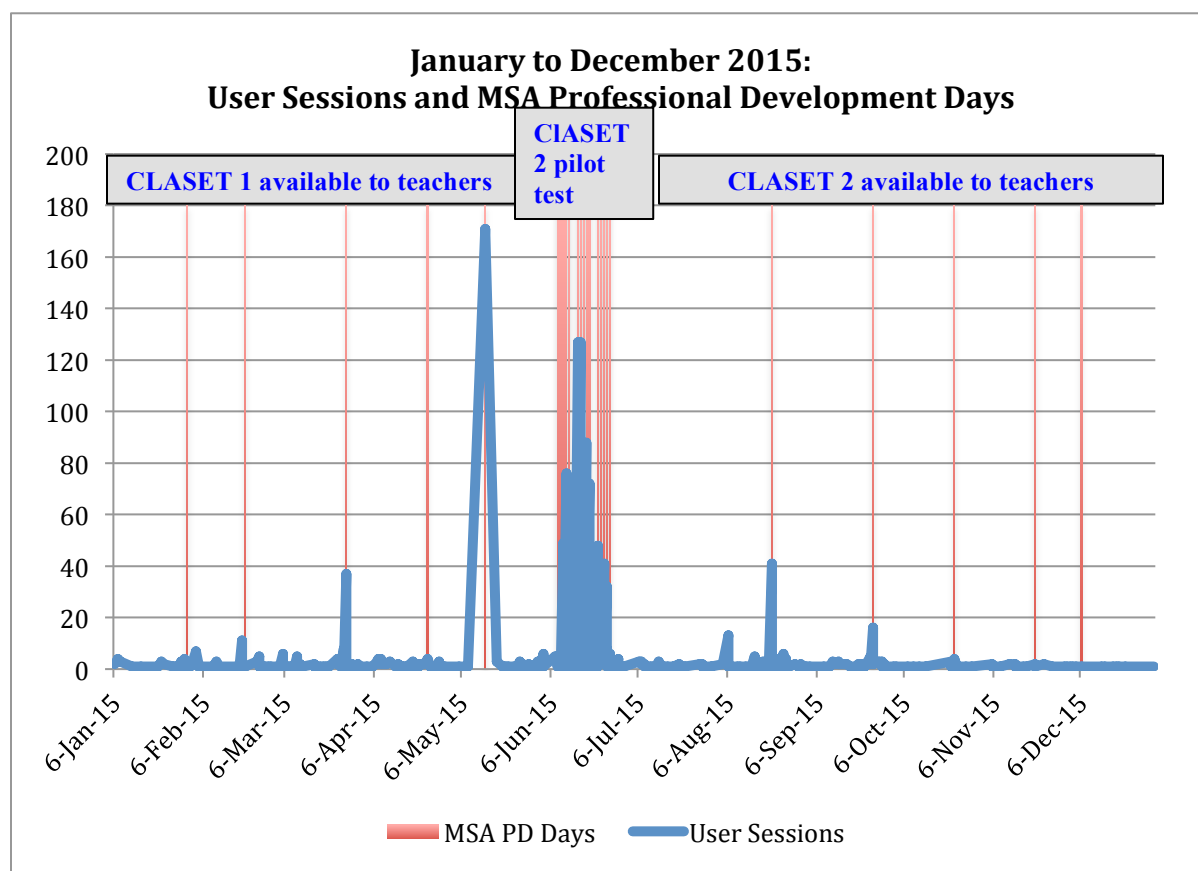
Figure 11a & b: CLASET use coincided with MSA professional development sessions

Since the main purpose of CLASET was to support teachers outside their MSA sessions, these

findings of failure of CLASET to be used outside of MSA sessions led to a shift in research

focus from the original questions, about the value of CLASET, to an emerging question: what

were the factors that led to CLASET not being used by the teachers?

In considering this new question, I identified five assumptions that I formed during

CLASET design and development, based in part on the results from the demographic survey

discussed in the previous chapter, that now had to be questioned. These assumptions were: 1)

teachers had math content mastery that they could feel comfortable sharing with their peers; 2)

CLASET would not require technical knowledge and skill beyond what teachers had acquired; 3) schools had Internet and technology support structures to allow teachers to use CLASET; 4) CLASET's purpose was clear to teachers; and 5) teachers had time to dedicate to CLASET use. I use these assumptions here to present the key findings of the study. A chronological discussion of the overall course of the study is included in Appendix A3, along with the field notes and interview transcripts in Appendices A5 and A7 respectively.

Assumption 1: Teachers had math content mastery that they could feel comfortable sharing

During the first summer I spent with the teachers in 2013 learning alongside them at the Summer Institute, the first week of the Summer Institute was math content immersion training led by a math professor. What was intriguing to me was the diversity of the methods teachers used to solve problems. For example, one of the challenges given was to conceptually solve 4.5 x 4.5. I started solving the only way I knew how to solve multiplication problems: 5 x 5 = 25, 5 carry 2, 4 x 5 = 20 + 2 = 22 so 225, 5 x 4 = 20, 0 carry 2, 4 x 4 = 16 + 2 = 18, so 180. By that time, my working memory was so overwhelmed that I could not remember the previous number. We were then asked to come up with a way of solving the problem without overworking our working memory. I only knew one way of solving multiplication problems, so I could not. Two teachers in my group came up with two different methods that I thought were quite impressive. A fifth grade teacher came up with the distributive property method:

$$(4 + .5)(4 + .5)$$

$$4 \times 4 = 16$$

$$2(4 \times .5) = 4$$

$$.5 \times .5 = .25$$

$$16 + 4 + .25 = 20.25.$$

A kindergarten teacher came up with a matrix:

1	2	3	4	0.5
2				
3				
4			16	2
0.5			2	.25

Table 4: Matrix solution

The green area is a 4 x 4 matrix, the two light blue areas are each .5 x 4, and the dark blue space

is .5 x .5. The professor asked teachers who had solved using different methods to go to the front

and use the projector to project their solutions on the big screen and explain their solutions.

There were five or six different ways of conceptually solving the problem. I looked at the

teachers in the room and saw their "aha!" expressions once they understood the logic and I

realized that CLASET has a place and potential in the community.

Teachers participating in this study were in their first to fourth year in the MSA program

and because the majority of the teachers had extensive experience in the program, we assumed

that they were comfortable with much of the math content they were teaching, and would

therefore feel able to share their pedagogical ideas and questions using CLASET. The pre-

assessment results called this assumption into question, however.

When we asked teachers to rate their proficiency in five math subjects, from arithmetic to

calculus. The results showed that the teachers rated themselves at a group average of 2.75

(rounded to 2 decimal places) on a scale of 1 to 5. This meant that, as a group, they felt they had

an average overall proficiency in the five math topics in question. Individual average ratings for

the five topics ranged between a low of 1.5 and a high of 4. The graph below shows the average

ratings for the individual topics. The average rating for males in all categories was 2.88 and the average rating for females in all categories was 2.69. One-way ANOVA showed no statistically significant difference between male and female ratings in each category ($p > .05$).

Teacher Self-Rating of Math Proficiency
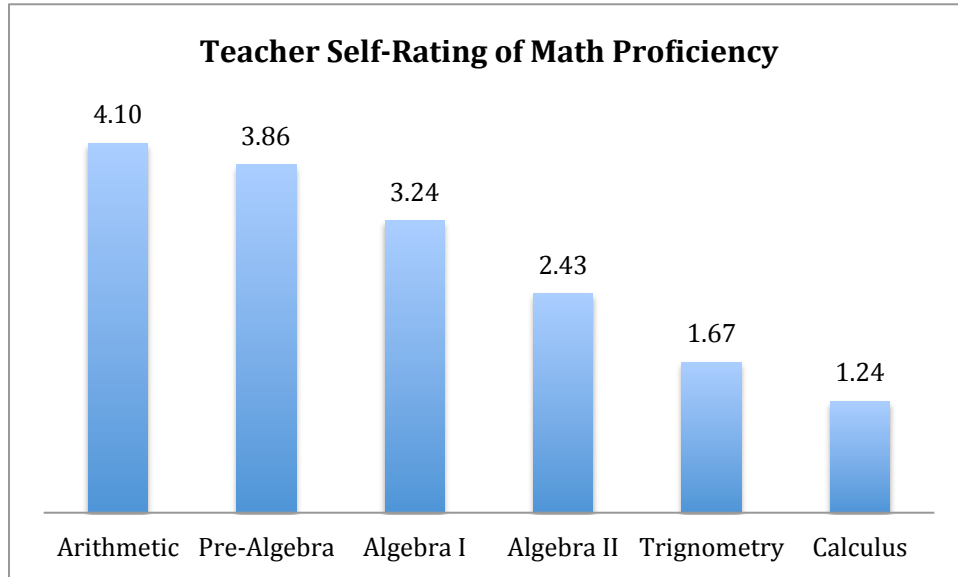
Figure 12: Teacher math proficiency self-rating

However, the Ng and Lee (2005) assessment, discussed in the methods section, gave a different picture. The purpose of the assessment was to measure the ability of the teachers to understand and visualize a math problem and to solve the given problems, ranging from arithmetic to algebra, in multiple ways. The table below shows the number of teachers who got the correct answers out of the twenty teachers that attempted the assessment.

	Q1	Q2	Q3	Q4	Q5	Q6
Correct Answer	13	10	10	8	10	0
Image	6	5	2	9	10	11
Procedure	19	13	13	10	13	6
Language	4	3	1	1	0	0

Table 5: Math assessment results table ($n = 20$).

Most of the teachers (65%) got the first question correct. Fourteen teachers used additive method (280 + (280 + 89) + (280 + 62)) instead of the multiplicative method of grouping like terms (3(280) + (89 + 62)). Three teachers forgot to include Dunearn's population of 280 and 6 teachers had calculation errors. All of the 4 teachers who used language to demonstrate their responses used procedural language, or "I did this, then I did this" instead of using mathematical concepts to describe their solution. Below is an example from MSA of an ideal solution to the problem:

Dunearn Primary School has 280 pupils. Sunshine Primary School has 89 pupils more than Dunearn. Excellent a Primary has 62 pupils more than Dunearn Primary. How many pupils are there all together?

Dun.	280	
Sun.	280	89
Exc.	280	62

991

$$(3\times280)+(89+62)=991$$

The base number of pupils in all three schools is 280, that is, 840 total. Sunshine and Excellent Primary Schools combined have 151 more pupils than Dunearn, so the total number of pupils in all three schools is 991.

Figure 13(a): MSA example solution for Question 1

Below are writing samples from two of the four teachers who used language to demonstrate their solution:

First, I added 89 to 280 to find how many students were at Sunshine since it said Sunshine had 89 more. Second. I added 62 to 280 to find how many students were at Excellent Primary since it said there were 62 more than Dunearn. After I found the number of students at each school, I added them all together to find the total number of pupils of the three schools.

If Dunearn has 280 students, the Sunshine has 369 because they have 89 more students than Dunearn. Excellent has 342 students since they have 62 more than Dunearn. Each school combined results in 991 students.

Figures 13(b) and 13(c): Teacher writing samples for Question 1

Some teachers, like the fourth grade teacher whose solution is given below, drew models that were not representative of the problem. In the model used by the teacher, 280, 280 + 89, and 280 + 89 + 62 are presented as almost equivalent. The solution also shows a lack of understanding of the problem.

Figure 13(d): Teacher solution for Question 1

The rest of the problems presented similar challenges for the teachers, demonstrating their lack of ability to visualize the problem, understand the problem, or know what to do with the information provided, or a combination of these. One of the fifth grade teachers' response to Questions 2 through 5 was "I give up!" and to Question 6, "I have no clue!" written in red pen after a struggle with multiple calculations.

This survey was quite eye opening to me because it gave me a general view of where the teachers in this group were in terms of mathematics mastery and content knowledge. This raised a concern because if teachers were not comfortable with their mathematics abilities, chances were that they would most likely not be willing to share content on CLASET. The results also led me to see the importance of MSA's online component in order to keep the teachers communicating about their challenges and accessing MSA training to enhance their content knowledge.

Assumption 2: CLASET would not require technical knowledge and skill beyond what teachers had acquired

As mentioned in Chapter 3, all teachers had experience with social media (Facebook widely used, Twitter, and Instagram), blogs, and taking online courses. Therefore, my assumption was, if they were familiar with these platforms, then they had adequate technology know how to adopt CLASET. But, as described in Chapter 4 and the beginning of this chapter, teachers demonstrated high level of difficulty in accessing and navigating CLASET. Verifying their CLASET accounts via email, remembering usernames and passwords, and following popup instructions were some of the challenges that teachers encountered that I did not anticipate since the skills required to execute these tasks were similar to skills required to setup and maintain their social media interactions.

Below are some excerpts of teachers' struggles with CLASET technologies:

Teacher 8: We need to make it simpler to somehow get on, like as simple as like when you go check into the hotel. "What room? 206. Password? Apple." Do you know what I'm saying? Something like that. Maybe that would allow us to, "Oh yeah, it's just MSA. Then I'm number blah, blah, [00:56:00] blah," and I can get in versus "Bovi rainbow, bovi at ... "

Teacher reflections on the blog:

Teacher 9 June 16, 2014 at 1:01 PM
Our students would have had this set up and figured out in under 5 minutes...

Teacher 10 June 16, 2014 at 1:07 PM
This was new for me. . . Now I have to learn how to use the ipad

Teacher 11 June 16, 2014 at 2:41 PM
Testing! Wow a lot to remember just getting onto the blog.

Teacher 12 June 16, 2014 at 2:42 PM
More usernames and passwords to remember. Ugh!

Teacher 13 June 16, 2014 at 2:42 PM

This by far has been the hardest session of MSA. Technology and I don't just go hand in hand. I was glad to finally get my pre assessment in as well. Thank goodness the class is almost over. Tomorrow is a new day.

Teacher 14 June 17, 2014 at 4:48 PM
Today was very exciting when we all received a mini I-Pad! Even though we live in a world of technology, setting up gmail and everything needed to blog was very challenging!

Teacher 15 June 17, 2014 at 11:00 PM
Today was great! I did forget to thank you for my new toy! :) I love it but need to learn how to really 'love it'... lol thanks again for the great gift! So excited :)

Principal 1 June 20, 2014 at 2:25 PM
Josephine needs more time each day. A little play with MOOC would be more helpful, slower and steady wins the race.
It appeared a lot of us were fried
Field notes:

June 16, 2014

Today was an interesting, frustrating, exhausting day. The iPads were issued in the morning and in the afternoon we had two sessions of iPad setup, first with 1st years and then with the whole group.

Issues:
Setup - Most teachers knew to turn the iPads on and to swipe to get started. The problems started after that. Even though they could read and understand the instructions that followed, a lot were afraid to do what the instructions asked. They would wait until one of MSA staff would be there to walk through with them. Then there was the setting up iTunes. Most teachers, since they have iPhones, had iTunes accounts but could not remember either usernames or passwords. It took a long time just to get the iPad setup.

Website access - this was the most stressful part of the day. The teachers had much difficulty from the get go. A lot of them had trouble reading the ont. They said that the font was too small and melding into the white background. I showed them how to zoom using pinch and zoom but it was amazing to see the latency between pinch and zoom that would sometimes open a link that was not intended. Quite frustrating for the teachers. The drop down menus were disastrous. Some teachers could not read the menu titles and since most could not zoom to make the menus larger, they would intend to select one thing on the menu but would open something different. Most older teachers gave up at this point. Some were exploring the ipad's features, others are chatting.

Then came the account setup process. Most teachers viewed the verification message as an error. They thought they were doing something wrong despite the fact that they could read and understand the message. Teacher 8 asked me to help her. She was not sure what to enter in the "Invitation Code" text field despite the code being written on the white

board and explained before the account setup process. I told her what to enter and when she had completed entering all required information she asked me what to do next despite a large submit button next line after her final entry. I told her to submit. Then the verification message came up. She told me she got an error. I asked her what the eror was and she read the message out loud: "Please verify your account using the verification link sent to your email address." I gave her a moment to process what she read and she turned to me and asked "What should I do?" I asked her what the message was asking her to do and she said it was asking her to get a link sent to her email. I asked her to do what the message said and she asked me "How do I do that?". We had just gone through setting up email on the ipad and she had managed to setup and download her emails but somehow there was a disconnection between this message and the email setup a few minutes earlier.

I stopped by a group of older teachers who had given up and formed a chat table. I asked them how the mooc was different from Facebook or other social media. One of the teachers (in her late 50s) told me that her son bought her her phone and setup everything on it. All she had to do was push buttons and everything she needed would be right there. Another told me that all she knows what to do with her phone is to call and receive calls. If she needed to get on Facebook or any other site she would have her granddaughter get her there. All she had to do was type and send. I now realize that the fact that the teachers own smartphones and computers and have Internet access and social media interactions doesn't mean they know how to use them. I surely did not see that one coming!

By the end of the day less than half of the teachers had setup accounts. I definitely did not anticipate a fraction of the challenges today! Now off to my daughter's birthday :)

Assumption 3: Schools had Internet and technology support structures to allow teachers to use CLASET

As mentioned earlier, all schools had Internet connectivity and a technology specialist, who was either a trained IT (information technology) technician or a teacher who showed familiarity to technology, and, in one of the schools, the janitor. All schools had both Ethernet and wireless connections Internet connections and access to 3G networks via their phones, though the networks had varying bandwidth. Each school had a computer lab and each classroom had at least one computer. Givens the extensive availability of Internet and computers, I did not anticipate any CLASET access problems as far as connectivity was concerned. However, data below shows that Internet access rules and policies dampened this assumption.

One day at lunchtime I was sitting with a group of teachers from one of the schools in the new cohort. When I asked how they had applied the learning from the previous summer, and whether they had made changes based on MSA training, below is what I wrote in my field notes regarding their comments about why they had not used the iPads.

Field note:
Group at lunch - they could not get the IT person give them the wireless password. They would rather not use tech than have someone not trust them enough to give password.

Users reported that the circumstances surrounding their lack of CLASET use were poor Internet connections, outdated technology, lack of proper support, and network restrictions. Below are comments from focus group regarding these connectivity challenges. The first excerpt is of Teachers 3 and 4 talking about issues with CLASET accessibility due to slow networks and outdated technologies.

Teacher 3:   The other thing too is that the school's networks have to be able to support this. I'm using a computer that runs on XP and every little thing I ever do I have to sit here and wait while that thing spins.

Teacher 4:   You can pray while it spins.

Teacher 3:   If they would buy us laptops that worked well, just think of the efficiency factor. Something that I should be able to do in a few seconds takes minutes so that's times 60 for every little thing.

Teacher 3:   Without the proper equipment, we can't access it. It just takes forever.

The next conversation excerpt is of several teachers describing the rules and policies that affect their Internet connectivity. From their discussion and from my field note above stating that the teachers would rather not use Internet than not be trusted with a password, it seems trust is the

root challenge. This issue goes deeper than the inconvenience of a tech person having to ask the teachers to look away as he or she enters passwords on their devices.

Interviewer:	How many of you have Wi-Fi?
Teacher 3:	At school
Teacher 4:	But they don't give us the password.
Teacher 3:	We don't know the password.
Teacher:	It's not connected yet.
Teacher:	We're not the only ones.
Interviewer:	You have Wi-Fi but you have no passwords?
Teacher 3:	It's always somebody who puts it in for us and then ... With the student iPads, they changed it [password] and then they couldn't use them.
Teacher 4:	"Okay, go ahead and put it in. Turn away." Let them put it in and so that we can access it.
Teacher 3:	Yet. They still hacked all our data. That's the irony of all of that.
Teacher 2:	[crosstalk 01:00:19] Now you know where the frustration about this [CLASET use] comes.
Teacher 2:	To use the MOOC is not always easy when we're at school.

Assumption 4: CLASET's purpose and expectations were clear to the teachers

At the beginning of the research, MSA staff and I had explained the purpose of CLASET and how we anticipated it would capture the camaraderie of MSA events as well as be a platform for teachers to share their unique practices that they had developed over time to facilitate classroom management, differentiated instruction, assessment, and other issues affecting them.

MSA events were highly collaborative where teachers from different schools worked together to share, revise, and develop their pedagogies and epistemologies. However, it appears that CLASET was not viewed as a collaborative tool for teachers to create content but as a repository of MSA resources so when MSA did not post content, CLASET failed to afford teachers their expectation therefore did not use it. Below are examples demonstrating this expectation mismatch.

Focus Group

Teacher 3:   I think that when the teachers are video taping lessons, I would like to see you guys putting some of those on there so that maybe in observing somebody else teaching something, then you can get ideas of things.

Interview

Teacher 1:   The MOOC? When we're in summer, it's a great way for us to all be together. But then when we started going into August, I went back in there and I looked at it and there wasn't anything new. Then I went back in there in September and there wasn't anything new. At that point I'm thinking, "Well, no one is using it anymore," so it's not a place that I would frequently visit. That's just the way that I remember it.

I was looking for some of the lessons we did at the BIE that one summer, when we were first into the MOOC, and I think we were using Penultimate and we had that PowerPoint that we were trying to incorporate into it. Overall, we were trying to get a lesson that was similar to something I think you would find on Khan Academy. But once again, there wasn't any of that. I couldn't find it for whatever reason. The technology aspect of it ... I think if it were more of the portal, then I think that would be more interesting for people to go into.

Interviewer: That means content that is already made and there, not you making the content to go into there.

Teacher 1:   Exactly. If it were our proprietary content, that would be great also. But then to also mirror that with what teachers are doing in Massachusetts, what teachers are doing in Florida, what teachers are doing in Singapore.

Coupled with the expectation of MSA generating content, the teachers also expected an

automated system that would notify them whenever new content was posted.

Teacher 7: I think the biggest struggle with the MOOC is once you get into it and you get onto the MOOC is finding the time to get onto the MOOC. I know when we come here it's like, "Yeah, we do it-"

Teacher 3: It's our focus.

Teacher 7: But when we get back to our classrooms and you've got all these other things you're trying to do and get done in a day, it's not always convenient to get on, go to the MOOC, log ... Remember your password.

Teacher 8: We need to make it simpler.

Teacher 3: Our network is awful.

Teacher 8: We need to make it simpler to somehow get on, like as simple as like when you go check into the hotel. "What room? 206. Password? Apple." Do you know what I'm saying? Something like that. Maybe that would allow us to, "Oh yeah, it's just MSA. Then I'm number blah, blah, [00:56:00] blah," and I can get in versus "Bovi rainbow, bovi at ..."

Teacher 2: Yeah because you don't even know if something has been posted on the MOOC unless you are in it. Let's say if you post a question like that on the MOOC, unless I was at home and I made the time and got into the MOOC and logged on and saw your question, I couldn't respond. Whereas if, I don't know, incoming mail or something [crosstalk 00:56:27]. Then, "Oh, oh, you were asking about ... " It's almost a way to approach it. "This is what I do with my kids," a quick respond to you.

Assumption 5: Teachers had time to dedicate to CLASET use

In designing CLASET, we assumed that teachers would have the time to use it.

Unfortunately the data suggest that we were too optimistic. The third part of the pre-assessment

survey was composed of two questions regarding the challenges teachers faced in their practice

and in the classroom: '*What are some of the greatest challenges in your teaching practice?*' and

'*What other challenges do you face in the classroom?*' As described earlier, I coded the

responses using Transana, created a matrix of emerging topics versus coded statements, and

recorded the frequency of each coded topic. The five emerging topics were students, preparation,

administration, and cultural. Of the emerging topics, the one with highest reference was lack of

time. The figure below shows detailed topics within each category.

Teacher-Identified Challenges
(n = 21)

Challenging Issues	Count
Lack of curiosity	1
Absences	1
Lack of parental support	2
Encouraging new strategies	1
Lack of positive comments	1
Lack of administrative support	5
Disruptions/Staff meetings	5
Lack of collaboration	1
Common Core requirements	2
Prepare for student misconceptions	1
Large class sizes	1
Lack of space	1
Lack of computers	1
Lack of modeling a rigorous math lesson from	1
Teaching with depth of knowledge	1
Limited supplies	1
Classroom management	2
Challenging learning environment	2
Lack of time for lesson planning	11
Perseverance	1
Retention	1
Learning gaps	2
Students not prepared for grade level	2
Social issues	3
Language	3
Low motivation/morale	5
Behavioral issues	6

■ **Students** ■ **Preparation** ■ **Administration** ■ **Cultural**

Figure 14: Teacher-identified challenges.

Below are comments from focus group regarding these challenges.

Teacher 7: I think the biggest struggle with the MOOC … is finding the time to get on to the MOOC. I know when we come here [MSA events] it's like, "Yeah, we do it- But when we get back to our classrooms and you've got all these other things you're trying to do and get done in a day, it's not always convenient to get on...

Teacher 2: That's what I'm saying. I think in the classroom I know we're very trained into we get in - We do what we have to. At some point in the day, we check our mail. We check what is coming in from the principal, what's coming in from the ... It becomes a part of your routine because you make that time to do that. I'm not saying you couldn't do that with the MOOC, but I agree. By the time you get it, you log in, you have to go here and then you have to go here. It is time consuming.

Interview

Teacher 1: At some point probably no [using CLASET], because I have so much going on. Does that take me away from my classroom? Probably

The violation of these five assumptions contributed to the failure of CLASET adoption.

Though there were good, data-supported reasons for making the assumptions, apart perhaps from the last, through the research process we realized that there were underlying challenges; rules, policies, and lack of support, that barred teachers from using CLASET.

Chapter 6: General Discussion

Although the outcome of this study is not what was anticipated, and did not provide a wealth of information to answer the initial research questions, the study did provide information regarding why CLASET was not successful as a medium for creating an community for Pueblo teachers. As discussed earlier, and connecting back to our guiding theory (CHAT), the bottom part of the CHAT triangle (rules, community, and division of labor) was more challenging than supportive, as discussed in Chapter 5 and as described in the interviews, focus group, and field notes, that led to negative interference in the interactions between CLASET and the teachers.

Connecting the findings to the literature

CHAT theory helped us identify underlying issues that contributed to the teachers' CLASET's failure. Because the assumptions made during CLASET development did not hold, the theories of adult learning, communities of practice, and connectivism were not manifest, since CLASET did not facilitate formation of online communities. The interviews and focus group revealed that teachers saw CLASET as affording them something different from what CLASET was intended to afford. They saw CLASET as: a repository of mathematics resources deposited by MSA staff for their consumption, a platform that could open up new worlds of learning to the students through the exploration of other cultures, as a platform to help close the cultural and language gap. When these perceived affordances were not realized, there was no motivation for the teachers to use CLASET.

During CLASET's development phase, I focused on fail safe mechanisms that would ensure CLASET functionality in the case of multiple users accessing it simultaneously, down times due to parallel developments, failure resulting from updates and upgrades, and, using data from analytics showing user flow within the website, ensuring drop off points were not due to

design failure. What I did not anticipate was the challenges discussed in Chapters 4 and 5 with regard to colors and glares obscuring content, problems with the drop down menus and pinch the zoom mechanism, login popups being viewed as error messages, the BIE network blocking CLASET access, and difficulty with iPad use due to lack of conventional keyboard.

Finally, lessons learned in ICTD prepared me through the findings that trust between the researcher and participants is one of the key deciding factors between success and failure. My coming in as part of MSA played a major role in the study's success, since the teachers trusted and thought highly of MSA program and staff, and were therefore open and responsive to the study. The teachers were quite open about their challenges and reasons for not using CLASET, as I believe they genuinely wanted the CLASET to work, but in a way that served their practical needs and not as an additional burden.

Lessons for Future Work

CLASET has the potential to be successful among this group of teachers. The main lesson learned is that in order for CLASET to succeed, the basic assumptions underlying its design need to be met. CLASET would need to meet teachers at their level of need for it to be successful requiring technologies that are easily accessible to teachers without requiring extraneous training, and incorporate options for teachers to share with other teachers of choice without exposing themselves to the whole group. It would also need to have some pull mechanisms, for example, current MSA resources that teachers need in their daily practice, and once teachers feel comfortable using those resources they may be more inclined to extend their use to sharing their own resources. Finally, negotiations with schools and the BIE would need to be held to allow CLASET to be accessible in schools through revising Internet access protocols that are restrictive without security risks,

In summary, the introduction of CLASET demonstrated that many facets come into play in learning. As explained by CHAT theory, social environments influence how we learn and how we interact with the mediating artifacts that facilitate our learning. In this study, many factors influenced how the teachers interacted with CLASET, including technology rules and policies, Internet and technology accessibility, social, cultural and political issues, and chaotic administration that siphoned and splintered teachers' responsiveness to learning. Combined with these issues was lack of proper technology training at the commencement of the study that was needed to increase the teachers' technology know-how. Although I was not ignorant of the cultural, technological, social, and math mastery issues at the beginning of the study, I did not predict their magnitude, nor how heavily they would influence the project's development and outcome. However, the lessons learned were valuable in understanding how many faucets contribute to the success of a technology like CLASET in a rural, resource poor environment, and how assumptions play a major role in laying foundations for research development.

References

Ahl, H. (2006). Motivation in adult education: a problem solver or a euphemism for direction and control? *International Journal of Lifelong Education*, *25*(January 2015), 385–405. http://doi.org/10.1080/02601370600772384

Akins, C. (1980). ETHNOGRAPHY : A Research Tool for Policymakers in the Drug & Alcohol Fields. *National Institute on Drug Abuse*, 15–20.

Al-busaidi, K. A., & Al-shihi, H. (2010). Instructors ' Acceptance of Learning Management Systems : A Theoretical Framework. *Communications*, *2010*, 1–10. http://doi.org/10.5171/2010.862128

Asher, A., & Miller, S. (2013). *A Practical Guide to Ethnographic Research in Academic Libraries*.

Atkinson, P., & Hammersley, M. (1994). Ethnography and Participant Observation. *Handbook of Qualitative Research*. http://doi.org/10.4135/9781848608191

Avalos, B. (2011). Teacher professional development in Teaching and Teacher Education over ten years. *Teaching and Teacher Education*, *27*(1), 10–20. http://doi.org/10.1016/j.tate.2010.08.007

Bakewell, O., & Garbutt, A. (2005). The use and abuse of the logical framework approach. *Stockholm: Swedish International …*, (November), 34. Retrieved from http://www.mande.co.uk/docs/LFA Review final.doc

Beck, C., D'elia, P., & Lamond, M. (2015). *Easy and Effective Professional Development: The Power of Peer Observation to Improve Teaching. Routledge* (Vol. 25). New York, New York, USA.

Blanton, E., Warner, M., & Simmons, E. (2001). The Fifth Dimension: Application of Cultural-

Historical Activity Theory, Inquiry-Based Learning, Computers, and Telecommunications to Change Prospective Teachers Preconceptions. *Journal of Educational Computing Research*, *24*, 435–463. http://doi.org/10.2190/YGJ0-WXUW-D0TR-9BGU

Bond. (2003). Logical Framework Analysis. *Guidance Notes*, *No. 4*, 1–8. Retrieved from papers2://publication/uuid/9EBB279B-B1EB-4475-B2A3-2DD33B012C08

Burbank, M. D., & Kauchak, D. (2003). An alternative model for professional development: Investigations into effective collaboration. *Teaching and Teacher Education*, *19*, 499–514. http://doi.org/10.1016/S0742-051X(03)00048-9

Burrell, J., & Toyama, K. (2009). What Constitutes Good ICT4D Research? *Information Technologies and International Development*, *5*(3), 82–94.

Chemero, A. (2003). An Outline of a Theory of Affordances. *Ecological Psychology*, (March 2014), 37–41. http://doi.org/10.1207/S15326969ECO1502

Chemero, A., & Turvey, M. T. (2007). Adaptive Behavior. http://doi.org/10.1177/1059712307085098

Croft, A., Coggshall, J., Dolan, M., & Powers, E. (2010). Job-embedded professional development: What it is, who is responsible, and how to get it done well. Iss. *National Comprehensive Center for Teacher Quality*, (April), 24. Retrieved from http://eric.ed.gov/?id=ED520830\nhttp://files.eric.ed.gov/fulltext/ED520830.pdf

Cross, K. P. (1998). Why Learning Communities? Why Now? *Conference on Transforming Campuses into Learning Communities*, (August), 4–11. http://doi.org/10.1007/s13187-011-0281-4

Daniels, H. (2004). Cultural Historical Activity Theory and Professional Learning, (January 2015), 37–41. http://doi.org/10.1080/10349120410001687391

Downes, S. (2012). *Connectivism and Connective Knowledge: essays on meaning and learning networks*. *National Research Council Canada*. Retrieved from http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:Connectivism+and+Connective+Knowledge+Essays+on+meaning+and+learning+networks#0

Dunaway, M. K. (2011). Connectivism: Learning theory and pedagogical practice for networked information landscapes. *Reference Services Review*, *39*(4), 675–685. http://doi.org/10.1108/00907321111186686

Eckert, P. (2006). Communities of Practice. *ELL*, 1–4. Retrieved from http://www.stanford.edu/~eckert/PDF/eckert2006.pdf

Engeström, Y. (1999). Expansive Visibilization of Work: An Activity-Theoretical Perspective. *Computer Supported Cooperative Work (CSCW)*, *8*(1-2), 63–93. http://doi.org/10.1023/A:1008648532192

Engeström, Y. (2001a). Expansive Learning at Work: Toward an activity theoretical reconceptualization. *Journal of Education and Work*, *14*(1), 133–156. http://doi.org/10.1080/13639080020028747

Engeström, Y. (2001b). Expansive Learning at Work: toward an activity theoretical reconceptualization. *Journal of Education and Work*, *14*(1), 133–156. http://doi.org/10.1080/13639080020028747

Engeström, Y. (2008). Expanding Learning at Work: Toward an Activity Theoretical Reconceptualization. *Journal of Education and Work*, *14*(1), 37–41. http://doi.org/10.1080/13639080020028747

Fong, N. S., & Lee, K. (2005). How Primary Five Pupils Use the Model Method to Solve Word Problems, *9*(1), 60–83.

Foot, K. a. (2001). Cultural-historical activity theory as practice theory: illuminating the

    development of conflict-monitoring network. *Communication Theory*, *11*(1995), 56–83.

    http://doi.org/10.1111/j.1468-2885.2001.tb00233.x

Fusco, J. J., & Sharshon, W. S. (1962). Using the fail-safe concept. *Industrial and Engineering*

    Chemistry, *54*(3), 40–42.

Geisert, S., & Railsback, S. (2008). Content Management System User Guide, *DIVI*.

Gibson, J. (1977). The concept of affordances. *Perceiving, Acting, and Knowing*, (December

    2007), 1–28. Retrieved from http://www.macs-eu.org/slides/02_MACS_Affordances s-o-

    a_METU.pdf

Golafshani, Nahid. (2003). Understanding reliability and validity in qualitative research. *The*

    Qualitative Report, *8*(4), 597–607.

Heeks, R. (2002). Information Systems and Developing Countries: Failure, Success, and Local

    Improvisations. *The Information Society*, *18*(2), 101–112.

    http://doi.org/10.1080/01972240290075039

Herena, P. (2011). The Principle of Fail-Safe. Retrieved April 12, 2015, from

    http://www.aiche.org/chenected/2011/02/principle-fail-safe

Hord, S. M. (2009). Professional Learning Communities. *National Staff Development Council*,

    30(1), 40–43. Retrieved from

    https://webserver.colegiobolivar.edu.co/Forum2014/Documents/Magnusson/Shirley_Profes

    sional_learning_communities[1].pdf

Hoyen, J., & Garelick, B. (2007). Singapore Math: Simple or complex. *Educational Leadership*,

    65(3), 28–31.

IBM SPSS software. (2016, February 9). IBM Corporation. Retrieved from http://www-

01.ibm.com/software/analytics/spss/

Knowles, M. S. (1970). The Modern Practice of Adult Education: Andragogy versus pedagogy. *Cambridge Adult Education*, 384.

Lane, C., & Bachmann, R. (Eds.). (1998). *Trust Within and Between Organizations: Conceptual Issues and Empirical Applications*. Oxford University Press. Retrieved from http://books.google.com/books?hl=en&lr=&id=eb4n-P2rw6EC&pgis=1

Lee, K., Ng, E. L., & Ng, S. F. (2009). The contributions of working memory and executive functioning to problem representation and solution generation in algebraic word problems. *Journal of Educational Psychology*, *101*(2), 373–387. http://doi.org/10.1037/a0013843

Lim, D. H. (2004). Cross Cultural Differences in Online Learning Motivation. *Educational Media International*, *41*(January 2015), 163–175. http://doi.org/10.1080/09523980410001685784

Merriam, S. B. (2001). Andragogy and Self-Directed Learning: Pillars of Adult Learning Theory. *New Directions for Adult and Continuing Education*, *2001*(89), 3. http://doi.org/10.1002/ace.3

Merriam, S. B. (2008). Adult Learning Theory for the Twenty-First Century. *Embroidery*, *56*(119), 93–98. http://doi.org/10.1002/ace

Mezirow, J. (1997). Transformative Learning: Theory to Practice. *New Directions for Adult and Continuing Education*, *1997*(74), 5–12. http://doi.org/10.1002/ace.7401

Morgan, H. (2006). What Every Teacher Needs To Know To Teach Native American Students. *Multicultural Education*, 10–12.

Native Arts and Cultures. (2010). Retrieved from http://www.fordfoundation.org/pdfs/library/Native-Arts-and-Cultures.pdf

Native Nations | FCC.gov. (n.d.). Retrieved February 21, 2015, from http://www.fcc.gov/native

Powel, W., & Gill, C. (2003). Web Content Management Systems in Higher Education, (2), 43–50.

Provasnik, S., KewalRamani, A., Coleman, M. M., Gilbertson, L., Herring, W., & Xie, Q. (2007). *Status of Education in Rural America*.

Quarry, W., & Ramirez, R. (n.d.). Communication for another development : listening before telling. Retrieved from http://ir.nmu.org.ua/handle/123456789/144126

Sansone, C., & Harackiewicz, J. M. (2000). *Intrinsic and Extrinsic Motivation: The Search for Optimal Motivation and Performance*. Academic Press. Retrieved from http://books.google.com/books?hl=en&lr=&id=DyeOd0Vb5lQC&pgis=1

Sarche, M., & Spicer, P. (2008). Poverty and health disparities for American Indian and Alaska Native children: current knowledge and future prospects. *Annals of the New York Academy of Sciences*, *1136*, 126–36. http://doi.org/10.1196/annals.1425.017

Schlager, M. S., & Fusco, J. (2003). Teacher Professional Development, Technology, and Communities of Practice: Are We Putting the Cart Before the Horse? *The Information Society*, *19*(January 2015), 203–220. http://doi.org/10.1080/01972240309464

Siemens, G. (2004). Connectivism: A Learning Theory for the Digital Age. *Theory of Instructional Technology and Distance Learning*. Retrieved from http://www.ingedewaard.net/papers/connectivism/2005_siemens_ALearningTheoryForThe DigitalAge.pdf

Silverstone, R., & Haddon, L. (1996). Design and the Domestication of ICTs: Technical Change and Everyday Life. *Communication by Design. The Politics of Information and Communication Technologies*, *44*, 74. Retrieved from

http://www2.lse.ac.uk/media@lse/whosWho/AcademicStaff/LeslieHaddon/DesignandDom
estication.pdf

Smith, M. (2003). Communities of practice. *Encyclopedia of Informal Eduation*, (2003).
Retrieved from http://infed.org/mobi/jean-lave-etienne-wenger-and-communities-of-
practice/

Stoffregen, T. (2003). Affordances as properties of the animal-environment system. *Ecological
Psychology*, (May 2014), 37–41. http://doi.org/10.1207/S15326969ECO1502

United Nations Office on Drugs and Crime. (2002). Logical Framework. In *Toolkit to Combat
Trafficking in Persons* (pp. 548–550).

Vygotsky, L. S., & Cole, M. (1978). *MIND IN SOCIETY*. Harvard University Press. Retrieved
from https://books.google.com/books?id=RxjjUefze_oC&pgis=1

Wakode, B. V, & Chaudhari, D. N. (2013). Study of Content Management Systems Joomla and,
569–573.

Walton, R. (2012). How Trust and Credibility Affect Technology-Based Development Projects.
Technical Communication Quarterly, (March 2015), 120910083657000.
http://doi.org/10.1080/10572252.2013.726484

Watson, W. R., & Watson, S. L. (2007). An argument for clarity: what are learning management
systems, what are they not, and what should they become? *ResearchGate*, *51*(2), 28–34.

Weinstein, N., & Dehaan, C. R. (2014). Human Motivation and Interpersonal Relationships. In
Human Motivation and Interpersonal Relationships: Theory, Research, and Applications
(pp. 3–25). http://doi.org/10.1007/978-94-017-8542-6

Wenger, E. (1998). *Communities of Practice: Learning, Meaning, and Identity*. Cambridge
University Press.

Wenger, E. (1999). *Communities of Practice: Learning, Meaning, and Identity*. Cambridge

University Press. Retrieved from

http://books.google.com/books?hl=en&lr=&id=heBZpgYUKdAC&pgis=1

Wenger, E. (2000). *Communities of Practice: Learning, Meaning, and Identity*. Cambridge

University Press; 1 edition. Retrieved from http://www.amazon.com/Communities-Practice-

Cognitive-Computational-Perspectives/dp/0521663636

Whitehead, T. L. (2004). What is Ethnography? Methodological, Ontological and

Epistemological Attributes. *Ethnographically Informed Community and Cultural*

Assessment Research Systems (EICCARS) Working Paper Series, 1–29.

Williams, M. (2014). A Universe of 10 Dimensions. Retrieved February 1, 2016, from

http://www.universetoday.com/48619/a-universe-of-10-dimensions/

Woods, D. (n.d.). Transana. Retrieved February 18, 2016, from

http://www.transana.org/about/index.htm

Yamagata-Lynch, L. (2010). *Activity systems analysis methods: Understanding complex learning*

environments. Retrieved from http://books.google.com/books?hl=en&lr=&id=4nAFT-

zyrtEC&oi=fnd&pg=PR7&dq=Activity+Systems+Analysis+Methods:+Understanding+Co

mplex+Learning+Environments&ots=VBz1Tdo3Y9&sig=Imn51649Mocex9aZkQM71slw_

5Y

Yuan, L., & Powell, S. (2013). MOOCs and open education: Implications for higher education.

Cetis White Paper. Retrieved from http://pdf.thepdfportal.com/PDFFiles/101588.pdf

Appendices

University of Colorado Boulder

A1: Institutional Review Board (IRB)

TITLE: *Massive Open Online Course (MOOC) for Science, Technology, Engineering, and Mathematics (STEM) Education for K-12 Teachers in New Mexico Pueblo Schools*

PROTOCOL VERSION DATE: February 3, 2014
VERSION*:* 1
PRINCIPAL INVESTIGATOR (PI):

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I   OBJECTIVES

INTRODUCTION

Storytelling, imagery, art, dancing, and chanting are key learning elements used to preserve culture and educate Native-American children as they move from one developmental stage to the next ("Native Arts and Cultures," 2010). Currently practiced K-16 curricular methods employ a procedural learning style, which does not readily accommodate Native-American collaborative learning styles. This discontinuity between the way Pueblo teachers typically teach and the way Pueblo students are culturally trained to learn misses the opportunity to employ communication methods and pedagogies that are culturally relevant (Morgan, 2006). The percentage of Native-Americans pursuing STEM majors is very low and decreasing. We contend that this trend can at least in part be attributed to the absence of Native cultural learning elements in existing STEM education curricula.

There are 566 federally recognized tribes and Alaska Native villages in the United States serving about 42,000 Native-American students under the Bureau of Indian Education (BIE) schools across 23 states ("Bureau of Indian Education," n.d.). BIE's mission statement is to "… provide quality education opportunities from early childhood through life in accordance with the tribes' needs for cultural and economic well-being in keeping with the wide diversity of Indian tribes and Alaska Native villages as distinct cultural and governmental entities. Further, the BIE considers the whole person by taking into account the spiritual, mental, physical, and tribal or village context" ("Indian Affairs," n.d.). While studying Native-American learning styles and implications in classroom practice, St. Charles and Constatino (2000) advocated for the development of responsive educators who can create a culturally-aware classroom that allows for the most effective learning by Native-American students (Bergeson, 2009). Their research demonstrated that Native-American students generally value and develop visual skills in the use of imagery, and they value cooperative behavior. As a result, Native students tend to excel in cooperative environments, perceive globally, and are generally reflective learners, in contrast to White students who generally value and develop refined verbal skills, value competition, excel as independent learners, perceive analytically, and are impulsive learners (Price, Kallam, & Love, 2009). As Felder (2002) stated, the ability of student to learn in class is governed in part by that student's native ability and prior preparation but also by the compatibility of the student's learning style to the teacher's teaching style (Felder & Silverman, 2002).

In response to low New Mexico Standard-Based Assessment (NMSBA) proficiency scores and this seemingly discontinuity between culture and formal learning, specifically in math and science, Los Alamos National Laboratory (LANL) established a Math and Science Academy (MSA), a K-8 teacher professional development program for Northern and Southern New Mexico Bureau of Indian Education (BIE) Pueblo schools and public schools. MSA has entered into a partnership with one Northern BIE Tribal Grant school and three Southern New Mexico BIE Pueblo schools to train teachers to be responsive to the Native-American math and science content needs for their students (Osmundson & Herman, 2007). Over the past 13 years, MSA has successfully trained teachers in 26 schools in Northern New Mexico (22 of which are predominantly Hispanic, and 4 of which are predominantly Native Pueblo). In all, over 300 teachers were trained, positively impacting over 3,000 students. In Summer 2013, we began collaboration with MSA to investigate the use of MOOC technology to sustain and scale MSA efforts, particularly in regional K-12 schools with similar demographics.

MATH AND SCIENCE ACADEMY (MSA)

MSA offers professional development training through Summer Institutes, the Ir-Rational Number Institute, and coaching by master teachers. The Summer Institute is a three-week summer training where teachers receive intensive mathematics or science training and develops new teaching strategies to use in their classrooms. The Ir-Rational Number Institute is a four-Saturday sequence that builds upon the Summer Institute training and addresses areas of specific teacher need. Additionally, MSA has four "coaches" (master teachers) who visit MSA teacher classrooms to evaluate teaching practices and to support teachers in content areas self-identified by teachers.

There is currently no on-going effort to connect the Summer Institutes, Ir-Rational Number Institutes, and coaching visits. In addition, there is a need for a bridging structure that will supply an ongoing professional development reference library and teaching exercises that are continuous, embedded, and asynchronous for MSA teachers. MSA has offered teachers reading articles and teaching materials as a bridge, but teachers report they are so overwhelmed with classroom and administrative requirements that they do not have time to take on extra work. Also, with the implementation of Common Core State Standards for Mathematics (CCSSM), the bar for student content learning and achievement has been raised, and correspondently the level of teacher content knowledge for teaching mathematics has also been raised; therefore, MSA proposes a bridging structure, the MOOC, that will fill the teacher/training/coaching gaps between MSA's multi-component professional development program.

MSA is not involved in the efforts of this research. MSA provides opportunity for the researcher to observe, interview, and interact with the Pueblo teachers and provides Learning Mathematics for Teaching (LMT) proficiency scores from assessments given to teachers.

Project Objectives

The proposed MOOC is intended to serve two purposes: as a tool for teachers that complements and supplements MSA training, and as a professional development tool for both MSA Pueblo teachers and teachers who are not MSA-trained.

II   BACKGROUND AND SIGNIFICANCE

There are four main components that this research will address:

1. K-12 Teacher Professional Development (PD)
2. Native-American teaching and learning
3. Science, Technology, Engineering, and Mathematics (STEM) education
4. Massive Open Online Courses (MOOCs)

K-12 Teacher Professional Development

Our present scientific deterministic paradigm is based on the assumption that if a teacher has preset goals, appropriate teaching methods, and evaluation processes, then everything should work fine (Iannone, 1995). Iannone continues to say: "The scientific deterministic paradigm seems to be creating passive, unresponsive, non-thinking, dependent students and robot-like domesticated, deprofessionalized teachers. Moreover, trivialization, moral callousness and preordained conversation is also part of this script (pg 1)." 72% percent of teachers receive PD

training each year, with a total of about eight hours of training per year (Jacob & Lefgren, 2004). Unfortunately, PD trainings are geared towards teacher characteristics, demanding increased test-based performance from their classrooms, without showing them "how" to help their students understand content (Cole, 2006). Teachers can only deliver what they know and if they do not have a strong understanding of the content, they will overlook some areas or spend more time trying to achieve standards imposed on them rather than focus on student understanding (Cole, 2006).

Many studies have been conducted to investigate the relationship between professional teacher training and student learning. Quality PD is defined as one that fosters opportunities for teachers to have "a) ongoing collaboration of teachers for purposes of planning with b) the explicit goal of improving students' achievement of clear learning goals, c) anchored by attention to students' thinking, the curriculum, and pedagogy, with d) access to alternative ideas and methods and opportunities to observe these in action and to reflect on the reasons for their effectiveness." (Hiebert, 1999). Borko (2004) found that teacher knowledge and practices can change through intensive professional development and strong professional communities can foster teacher learning. Borko also found that teachers must understand how their students' ideas about a subject develop and the connection between their ideas, in our case, their cultural-constructed ideas, and important ideas in the discipline (Borko, 2004). Fisherman et al. (2013) investigated the difference between PD delivered online and face-to-face. The results demonstrated no significant difference between the two media but both had significant gains as the affordances of each environment provide multiple learning avenues that teachers can benefit and learn from (Fishman et al., 2013; Moon et al., 2013).

Native-American Teaching and Learning

Education in Native-American nations has raised concerns due to low numbers of students graduating at college level. The average number of Native-American students graduating with bachelor degrees between 1990 and 2012 is 8% (Aud, Hussar, & Kena, 2012) and unfortunately this percentage is decreasing. Native-American teachers view formal education not as a pipeline to move students from one academic channel to the next for better employment, but as serving Native-American students through influencing habit and change to give back to the Native-American communities through maintenance of tradition and invention (Exton, 2011). About 40% of MSA teachers teaching in Bureau of Indian Education (BIE) and Native-American community schools are White. Vygotsky (1978) contended that all learning is socially mediated and to explain developmental and cultural-historical approach to learning, he developed three concepts: higher mental functions, cultural development, and mastering one's own behavioral concepts (Vytgosky 1986), therefore an assimilation of teaching styles to learning styles are necessary to enhance education in Native-American schools (L.S. Vygotsky, 1978; Lev S. Vygotsky, 2012).

Another part of Native-American history that repels students from formal education is the assimilation, also called ethnocide, that happened in 1870s where Native-American children were forced to leave their homes and taken to boarding schools in the Midwest to assimilate them into western culture and language (Daniels, 1980; Deyhle & Swisher, 1997). This dark history is passed from generation to generation and some of the Native-American leaders believe that formal education is an attempt to sabotage their culture by assimilating the younger generation into the "white man's" way of life. Integrating Native-American cultural elements in STEM teaching and learning attempts to create a convergence of these two cultures where

teachers would learn how to integrate culturally relevant examples and artifacts into their teaching.

STEM Education

The number of Native American students that graduated with STEM degrees in United States in 2000 were 2,782 (0.7%) at undergraduate level, 340 (0.4%) at masters level, and 88 (0.3%) at doctoral level (0.3%) (Babco, 2003). These numbers are very low and getting lower partly because of cultural mismatch between western curricula and culture (Deyhle & Swisher, 1997) and little connection between math and science and Native American communities (Carroll et al., 2010). Vygotsky (1978) discovered that all learning is socially mediated meaning relative isolation in reservations create uniqueness of Native American students who adapt to a unique and common pattern of leaning compared to members of other cultures (Pewewardy, 2002). Bang (2013) investigated repatriating indigenous technologies in teaching science and found that when modern technologies were applied in the light of indigenous technologies, there was an open reception in understanding the new technologies while diffusing the "white indoctrination" mentality (Bang et al., 2013). In a survey done asking teachers the effective strategies of engaging their Native American students, teachers identified that Native American students struggled with cultural differences between their reservation culture and school culture, maintaining cultural traditions and pride while caught between assimilation, and pattern of language and they found what was effective was finding a common ground between the two worlds (Sorkness & Kelting-Gibson, 2006). Teachers find themselves isolated in reservation and Pueblo schools as the schools are miles apart, especially in rural communities. In teacher training, there are three cornerstones of Native American education: rigor, relationships, and relevance (Exton, 2011). These cornerstones are lost when teachers are isolated and when teachers are not Native American, building relevance in math and science may be challenging. The proposed MOOC seeks to build relationship between math and science with daily Native American interaction with the universe, creating relevance rather than assimilation, with the end goal of building rigor in teaching and learning.

MOOCs

MOOCs are on-line classes with typically very large numbers of students (at least initially) and minimal direct involvement of faculty. Enrollment is usually open, costs to the student are negligible, and degree course credit is rarely given upon course completion. Although still very much in their infancy, and there are valid reasons to be skeptical, MOOCs raise important questions about the effect technology will have on how our educational institutions should operate. The first MOOC was established at University of Manitoba, Canada, in 2008, where an online course designed for 25 students turned into a class of 2,300 (Daniel, 2012). This success was emblematic of the desire for education worldwide by many who could not otherwise access college-level subject matter. Since 2008, colleges, universities and companies have used MOOC technology to offer generally free training to anyone who registers.

MOOCs offer several potential advantages: they are easily accessible to anyone with a computer and Internet connection; they offer both substantial interaction and relative anonymity; and they are accessible from a wide range of devices, from PCs to cell phones. Connectivist MOOCs (cMOOCs) build upon the tenets of social networking, communal learning, assessment based on proficiency rather than memorization, and user creation of content. In contrast, xMOOCS generally offer a more traditional teacher-focused model in which instructors post content and

students participate both offline and online (Daniel, 2012). For our purposes, cMOOCs appear best-suited technology for teacher collaborative learning while trying to emulate Native learning methodologies.

There is a lot of research conducted of collaborative learning for students but little has been done on collaborative learning for teachers. A good teacher is a continuous learner but unfortunately teachers are rarely given adequate, convenient, or accessible resources to afford them to be continuous learners. The MOOC seeks to create a collaborative learning environment, collaborative learning being defined as an environment of sharing intellectual resources between two or more people who are mutually searching for solutions, meanings, or develop a product (Smith & Macgregor, 1992), where teachers can build learning communities and asynchronous learning networks (ALN) in use of asynchronous functions, for example, social media and forums, and synchronous learning networks (SLN) in professional development sessions (Hiltz, 1998). Research conducted by several scholars have demonstrated that collaborative learning enhances critical thinking, encourages performance at higher intellectual levels, and improves problem solving strategies (Bruner & Cpa, 2003; Garet et al., 2001; Jacob & Lefgren, 2004; L.S. Vygotsky, 1978).

Gaps

This study seeks to contribute two components of teacher education that has been overlooked in literature and research:

- The effect of consistent interactive or communal learning for K-12 teachers on teacher content mastery and student learning. As mentioned earlier, a teacher is a continuous learner and their mastery and comfort in content is important for building pedagogies that support effective teaching and learning in the classroom.
- Teacher professional development that creates a cross-cultural learning environment where non-Native American teachers can learn how to integrate Native American cultural elements in their classroom.

Human Significance

The significance of human research, in this case teachers teaching in Native American schools, is crucial in understand what teachers struggle with in order to design according to their needs. Being that neither of the current developers is of Native-American origin, it is essential to understand the cultural way of teaching and learning how to integrate them in the classroom especially in teaching mathematics and science. We will have a user-defined product that teachers will be part of the design and development process. This creates ownership, acceptance, honoring the Native American culture in general and tribal culture specifically, as well as teachers have an opportunity to learn computer and online technologies. Tracking teacher behavior as they use the MOOC will be essential in the redesign process to track ease of use, peer communications, and respond to any concerns that the teachers may have.

III   PRELIMINARY STUDIES

MSA has been conducting PD sessions since 2004 through Summer Institutes, Ir-Rational Number Institutes, and Cognitive Coaching. Summer Institute is a 3-week intensive training in math and science over summer where teachers are immersed in learning content, creating

effective pedagogies, lesson plans, and learning goals, and teachers collaborate in creating seamless content flow from one grade to the next. Ir-Rational Number Institutes are 8 Saturdays of each academic year where teachers regroup to get more training as well as bring questions and concerns they are experiencing in the classroom. Cognitive Coaching is when math and science coaches from MSA, also known as master teachers, visit classrooms to observe whether the teachers are applying MSA training strategies and pedagogies and to have one-on-one discussions of struggles and support the teacher needs to be successful.

Over the thirteen years of MSA training, there has been a consistent significant gain in student NMSBA proficiency scores. Below is a chart showing the increase in proficiency scores for Native-American students in 3rd through 5th grade from 20014 to 2012.
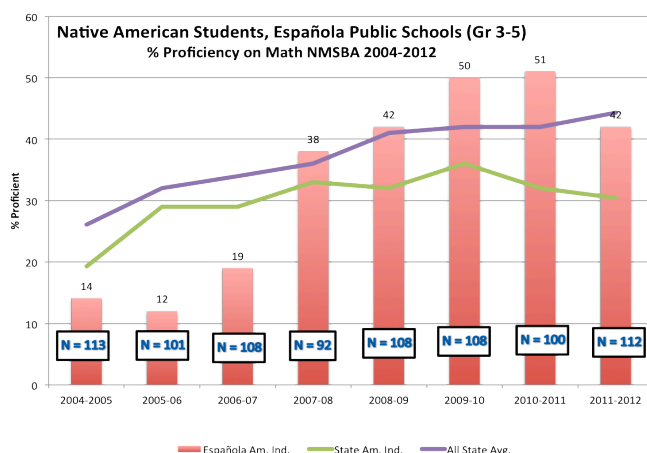
From the preliminary studies it is evident that the more the teachers are exposed to PD training the more effective they are in increasing student proficiency. Unfortunately, due to restrictions in time and resources, the teachers only have access to training in the preset times and locations. Most teachers have reported that though MSA send materials via mail and email, they do not have time to read due to the high demands of teaching and managing their classrooms or the materials do not address issues that they are personally struggling with. These preliminary results have led to a desire to use technology to make materials available to teachers all the time as well tailored to their needs so they can the support that addresses their personal needs.

IV   RESEARCH STUDY DESIGN

Goals

The goal of conducting this study is three fold:

1. Personal goal – I come from a tribal background where during my parents' generation, there was a conflict between acquiring formal education and maintaining cultural practices, which is no longer a dispute in my generation and later due to reduced resources that have forced rural-urban migration that has diminished the need to culture preservation in exchange for survival. While visiting tribal communities, I saw this conflict in the older generation that is not held as dearly by the young. My personal goal is to investigate how formal education is playing in cultural shift and why.

2. Practical goal – The practical goal of the study is to investigate the low proficiency scores in math and science in Pueblo schools from the perspective of the teacher. This goal is to give teachers the support and training they need to increase their content knowledge, proficiency, and confidence in order to build effective pedagogies that encourage student learning.

3. Intellectual goal – The intellectual goal is to understand what is going on in the classroom and why the teachers and students score poorly in math and science proficiency tests. The insight gained in this research may shed light to other tribal communities around the world that may be experiencing similar struggles.

Research design model
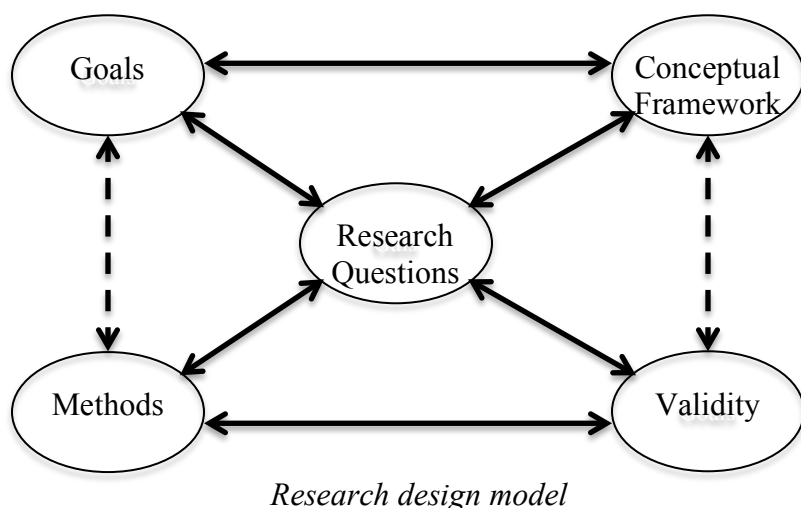
Conceptual Framework

The conceptual framework is designed to investigate teacher understanding of math and science content, pedagogies applied in a classroom, and how Native-American culture influences teaching and learning in this environment. The framework embeds three components that will be investigated from the Native-American community: teachers, BIE officials, etc, will help advise the study:

- Ontology – Native-American cultural assumptions about the world.
- Epistemology – Native-American cultural interpretations of the world.
- Pedagogy – Ontology and epistemology embedded in teaching and learning math and science.

Vygotsky's Cultural-Historical Activity Theory (CHAT) discovered that: 1) human behavior is social, 2) human activity is mediated through tools, 3) thoughts is completed in language through response to others, 4) literacies are activities mediated through multimedia, and 5) human activity is collective. Vygotsky argued that no man is an island; our learning environments are mediated by others (people or tools) and are influenced by other factors (rules, communities of practice, and division of labor) (Roth & Lee, 2007). The model below shows the conceptual framework that will guide this study.

The purpose of the MOOC is to create an online professional development tool (mediating instrument) that will assist teachers teaching in Native American schools (subject) to build Native American culturally relevant pedagogies (object) that will increase student engagement and learning in math and science, which will consequently increase student NMSBA math and science proficiency scores (outcome).

MEDIATING INSTRUMENT
MOOC: Lessons, proficiency
assignments, professional development

Math and
science

OUTCOME
Student high
NMSBA math
and science

SUBJECT
Teacher

OBJECT
Pedagogy

RULES
BIE, school
districts
policies,

COMMUNITY
Communities of
practice within the
school, teachers,
students, parents,

DIVISION OF LABOR
Teacher as a teacher,
parent, role model,
parent, spouse,
community
representative, caregiver

Research Questions

1. Will Pueblo teachers be willing to use the MOOC, and under what circumstances and expectations?
2. Will the teachers connect with the MOOC's integration of Native-American learning styles, and will this impact motivation to use the MOOC? Will the MOOC influence classroom pedagogies that teachers are accustomed to?
3. Will the MOOC be used primarily as a professional development tool by MSA trained teachers, or will teachers who have not been previously been engaged with MSA be motivated to participate?
4. Will teacher LMT (Learning Mathematics for Teaching) Item Response Theory (IRT) scores, IRT being a model that corresponds responses with abilities, concept logic understanding, and attitude, increase with MOOC adoption, and can this rise be attributed in part to MOOC features and functionality? What are the attributable "spillover" effects in the classroom regarding STEM teaching, student learning and test performance?

Methods

1. Sampling

The pilot and secondary research group is pre-selected by MSA. The pilot group is the current MSA schools, which are all BIE schools therefore targeting the goal of this study which is to investigate effective teaching and learning pedagogies for teachers teaching Native American students. There are four BIE schools, which include 42 teachers and 4 principals.

2. Data Collection

Data will be collected through ethnographies, q-sorts, surveys, interviews, focus groups, observations, and participation.

Quantitative data will be provided by MSA from teacher Learning Mathematics for Teaching (LMT) proficiency scores, student New Mexico Standard Based Assessment (NMSBA) proficiency scores, student pre and post assessments, and MSA professional development session assessments. NMSBA scores are publically available and do not contain student identifiable information. MSA uses teacher generated IDs that are not traceable to individual teachers therefore all data from MSA will be anonymous.

Data will also be collected from the MOOC using tracking tools put in place to track user behavior and navigation. Since users will login using self-generated IDs and passwords, none of the data collected is identifiable or be tracked to a particular user.

3. Data Analysis

Data will be analyzed through mixed methods: quantitatively and qualitatively. Quantitative data from pre and post assessments, proficiency scores, PD assessment scores, and coded qualitative data will be analyzed through SPSS. ATLAS.ti will be used to transcribe and code qualitative data. Data will also be analyzed through analytic memos and descriptive representations.

Validity

Four methods will be used for data validity:

1. Intensive, Long-Term Involvement – MSA has built a 13-year relationship in teacher professional development in New Mexico, of which half of MSA staff that begun 13 years ago is still in operation. This long service has built a relationship of trust that enables interaction with teachers outside the school environment. This relationship will provide additional data that will best advice data collected through other media.
2. "Rich" Data – Use of multiple media to collect data: video, audio, online survey forms, q-sorts, focus group notes, etc, will give us multiple angles to understand teacher position and needs as described in multiple formats.
3. Triangulation – Collecting data from multiple teachers concerning certain events and using multiple media to triangulate and identify key issues to reduce chances of bias and encourage inductive assessments.
4. Respondent Validation – All conclusions and publications will be shared with the participants to ensure accuracy and for validation.

Duration of the Study

Search Period	Description	Output
Spring 2014	Create a requirements document for MOOC Math and science proficiency pre-test Collect and analyze data Acquire data from previous teacher and student proficiency scores Build the MOOC	Requirements document Analyzed data MOOC prototype
Summer 2014	Test MOOC with the pilot group Collect and analyze test data Redesign	Primary test report Redesigned prototype

V ABOUT THE SUBJECTS

Subject Population(s)	Number to be enrolled in each group
Pilot study (3 BIE schools and 1 community school)	48 teachers
MSA stuff	3 master teachers
Secondary study (22 schools that have participated in MSA, though they are not all MSA graduates)	300 teachers

The current and previous MSA teachers and schools have expressed great interest in having an online curriculum that they could access anytime they needed to. I anticipate about 80% of the pilot participants and 70% of the secondary participants will complete the study. The current MSA cohort is comprised of 46 teachers of which 74% are female, 60% Native American, 23% Hispanic, 19% Caucasian, and 2% Asian.

The secondary study teachers are comprised of 82% female and are 84% Hispanic. Once the MOOC prototype development is complete, it will be released in two stages: first to the current 46 MSA teachers and secondly to previous MSA teachers totaling about 300 teachers. The main data collection in both releases is through tracking user behavior as they interact with the MOOC through tracking tools and through assessments and quizzes setup in the MOOC. I will issue a login code for each group to identify each group of teachers but not specific teacher in order to compare the two groups. All users will login using self-generated IDs and passwords therefore the IDs cannot be traced back to an individual user.

The inclusion criteria for the pilot group are that teachers must be currently teaching in one of the four pilot schools: San Felipe, Jemez, T'siya, or Ohkay Owingeh and must be current participant of MSA PD trainings. There is no exclusion criterion for the pilot study group. The secondary study group inclusion criterion is teachers currently teaching in former MSA schools regardless of whether they have been MSA trained. There is no exclusion criterion for the secondary group.

VI   RECRUITMENT METHODS

The subjects for the pilot study will be recruited at the beginning of the study during professional development sessions at the Bureau of Indian Education facility in Albuquerque. Consent forms will be provided to those who wish to participate in the pilot study.

Similarly, consent forms will be issues to teachers in previous MSA schools and those who wish to participate will be recruited. Recruitment for the secondary studies will be conducted at the participants' schools during their professional development sessions.

List recruitment methods/materials and attach a copy of each in eRA
   1.   *Consent Form*

VII   COMPENSATION

Los Alamos National Laboratory, MSA, and the Bureau of Indian Education compensate the teachers to attend the PD training sessions. Since this project is part of MSA training, one hour for each pre-scheduled PD sessions and 30 minutes of coaching sessions will be set aside for MOOC design and development.

VIII   CONSENT PROCESS

During the first session with the teachers, I will read and discuss the contents on the consent form, which include: the research, why the study is important, the duration of the study, why it is important for them to participate in the study design and development, how the study helps them, implications to participating in the study emphasizing there are no consequences to choosing not to participate or deciding to withdraw during the study, and management of information collected.

After the review, discussion, and responding to teacher questions, the consent forms will be distributed to those who wish to participate and for those who do not wish to participate they will continue engaging in MSA activities.

IX   PROCESS TO DOCUMENT CONSENT IN WRITING

There will be a consent form for study participation that will incorporate permission to record audio and video during focus groups, PD, classroom sessions, and interviews, to take photographs, to collect focus group notes and artifacts, to publish, and request to be contacted for future studies. A copy of the consent form will be given to the participants.

X   PROCEDURES

Recruitment:

Recruitment will be conducted on the first meeting where teachers will be issued with the consent form and I will go through the contents of the form answering questions while clarifying

the goal and purpose of the study and expected outcomes as well as potential outcomes. Once the review session is done, the teachers willing to sign the consent form will be the recruited group.

Survey:

The next meeting there will be a one-hour survey provided to the teachers. The survey is for investigating what teachers struggle with, their current attitudes and perceptions of teaching and learning mathematics, their current use of technology: personally and in the classroom, and their intent to use the MOOC once developed. A copy of the survey is in the appendix.

Q-Sort Session:

Meeting 3 I will have the teachers write 5 to 10 struggles they are currently suffering on sticky notes and have them individually prioritize the sticky notes in the order of importance from most important to least important. Then as a group we will sort through all the sticky notes and come up with a collaborative priority importance list. The assignment after this session is for teachers to bring a link of a website they find useful and intuitive to use.

Interface Design:

The teachers will bring their intuitive websites and we will discuss what features they like and what features they do not like. Using sticky notes we will prototype an interface design where teachers can pick features they find helpful to them. We will collaboratively narrow down to features that are deliverable now, later, much later, and not possible/not applicable.

Interview Sessions:

All interviews will be audio recorded and maybe video recorded. Interviews will be conducted individually during coaching sessions at respective schools or during PD sessions. Interviews during PD sessions will most likely be video recorded. The interviews will be focused on your teaching experiences, technology use, and your vision of how the MOOC might meet some of your needs. Audio and video recorded interviews will be transcribed using ATLAS.ti software. A copy of starting questions is in the appendix.

Prototype Testing:

Once a MOC prototype is complete, there will be a testing session where the teachers get to interact with the prototype and record what they liked, what they did not like, and what they hope to see. These notes will guide the redesign process.

Survey 2 and Focus Group:

This survey is a reflection of the teachers after going through the planning and development process and after test-driving the MOOC how they envision using it. A discussion with the teachers in a focus group setting will be conducted where teachers will verbalize their opinions of the process and the MOC. A copy of this questionnaire is in the appendix section.

Name of instrument/tool/procedure	Purpose (i.e. what data is being collected?	Time to Complete
Survey-1	To collect data on what	1 hour

	teachers are currently struggling with in the classroom: content, pedagogy, or cultural differences. Also what is helpful in current PD and what they think is lacking.	
Q-Sort Session	*Teachers will write on sticky notes what they would wish to have included in the MOOC and then organize their sticky notes in the order of importance.*	*1 hour*
Interface Design Sessions	*Once the teachers have identified what is important they will move to a user-defined interface design where they will design web content flow and organization.*	*1 hour*
Interviews (at least 10)	*Oral (voice recorded) interviews of teachers describing their victories and challenges teaching Native-American students and what might be helpful in supporting them in creating an effective teaching and learning environment.*	*30-40 minutes per session.*
Prototype Testing Session	*Teachers will test the MOOC prototype and record the features that worked, what did not work, and what was missing. These notes will help in the redesign process.*	*1 hour*
Survey-2 and Focus Group	*Once the teachers have had a chance to engage with the MOOC, another survey will be administered to record how they plan to use the MOOC: purpose, frequency, and goals as well as reflect on development process.*	*1 hour*

XI   DATA MANAGEMENT

LANL has a secure server and backup system for MSA data. All data collected for the project will be uploaded to the server on a partition setup for this project that only the MSA staff, comprising of four master teachers, and I have access. Teachers use self-generated ID numbers that MSA use for their purposes and I will continue to use for the project so no data can be traced to any school or teacher. MSA require teachers not to use real names or locations so that no data is identifiable.

Video: All professional development videos will be provided by MSA from professional development sessions. A contracted third party professional does video recordings. All video files are delivered on the day of recording and erased from the professional's devices. The raw videos are transported from the site to MSA facility via encrypted flash drives, uploaded to the secure server, and erased from the flash drives.

Audio: Audio data will be captured using password protected Livescribe Smart Pens. Data recorded on the field will be uploaded to the file server and removed from the smart pens.

For editing purposes, video and audio files will be stored temporarily on password secured files on an encrypted flash drive. Once the edits are done, the edited files will be uploaded to the file server and the files removed from the flash drive. In case of loss or theft, the flash drives will be setup to self-destruct after 5 unsuccessful login attempts.

Hard Copies: Data collected from interviews and field notes will be stored systematically in a locked cabinet where the MSA staff and I will have access. Hard copies will be anonymized and coded for safety. Photocopies made will contain no identifiable information and will be used only at MSA facility and then stored in the locked cabinet. Hard copy data will be typed in a word processor and uploaded onto the server.

Web data: The MOOC will be hosted on a CU Boulder server where content will be uploaded and accessed. The MOOC database will contain personalized information gathered through sign up forms and assessments. This data will be stored in encrypted bins that can only be accessed by authorized personnel. Reports generated may or may not contain identifiable data based on the access level of the person generating the reports.

All data will be stored indefinitely for future developments. MSA continues to research best methods and practices for effective math and science teaching and learning and so all data collected is stored for potential use in future research and development efforts.

XII   WITHDRAWAL OF PARTICIPANTS

Participants may be withdrawn from the study if they are physically incapable of completing the study, if they are no longer teaching in the participating schools, or if they do not participate or partially participate in the study. LANL, BIE, and MSA are compensating the participants so if they do not meet the requirements of the study they will be removed from the study.

XIII   RISKS TO PARTICIPANTS

Risk to participants is minimal to none. The few risk may be:
- If participant has unrealistic expectations of, or is dissatisfied by, the study outcome
- If participants feel the study did not represent them accurately.

XIV   MANAGEMENT OF RISKS

To minimize the risks mentioned above:
- There will be consistent review and thorough explanations throughout the study of the expected participation of the participants.
- There will be a great discussion on the potential success and failures of the study to minimize unrealistic expectations.
- Ideas generated during focus groups will be well flashed out to select realistic deliverables with explanations of why some requests may be considered in future studies and why some requests may not be considered at all.

XV   POTENTIAL BENEFITS

The participants will benefit from the study by:
- Continuous access to professional development content and training
- Access to a community of educators for support instead of waiting for coaching and PD sessions
- Development of content knowledge and strategies for building effective classroom practices and pedagogies
- Customized content for progressive development and continued education

XVI   COST TO PARTICIPANTS

There will be no additional cost to the teachers are the research is embedded in their current professional development sessions, which caters for their costs.

XVII MULTI-SITE STUDIES

The study will be performed at the BIE facilities where PD sessions are conducted and at the respective schools of the teachers during coaching and interview sessions. I will be following teachers at BIE during their PD training and in their classroom during coaching sessions to collect data. Non of the MSA or BIE staff are engaged in data collection.

There are no additional setup requirements as the study uses the material already being used in PD sessions: pen and paper for doodles and q-sorts and computers and ipads for surveys and prototype testing.

XVIII SHARING OF RESULTS WITH PARTICIPANTS

Since the study is user defined and designed, the participants will be engaged through the design, development, and testing processes. All publications made during the process will be shared with the participants and those who wish to review their suggestions will be considered. The

prototype is dependent on teachers creating content so the plan is to get the participants as engaged as possible to create ownership of the final product.

XIX   REFERENCES

Aud, S., Hussar, W., & Kena, G. (2012). *The condition of education 2012*. Retrieved from http://0-nces.ed.gov.opac.acc.msmc.edu/pubs2012/2012045_1.pdf

Babco, E. (2003). Trends in African American and Native American participation in STEM higher education. *Commission on Professionals in Science and …*, (202). Retrieved from http://www.inpathways.net/STEM.pdf

Bang, M., Marin, A., Faber, L., & Suzukovich, E. S. (2013). Repatriating Indigenous Technologies in an Urban Indian Community. *Urban Education*, *48*(5), 705–733. doi:10.1177/0042085913490555

Bergeson, T. (2009). Reading and the Native American Learner. *Rep. Evergreen State College*. Retrieved from https://www.evergreen.edu/k12outreach/docs/RdgNAlrner.doc

Borko, H. (2004). Professional Development and Teacher Learning: Mapping the Terrain. *Educational Researcher*, *33*(8), 3–15. doi:10.3102/0013189X033008003

Bruner, J., & Cpa, T. (2003). The Concrete-Pictorial-Abstract Approach.

Bureau of Indian Education. (n.d.). Retrieved July 23, 2013, from http://www.bie.edu/Schools/index.htm

Carroll, B., Mitchell, H., Tambe, P., & John, M. S. (2010). Supporting Native American Students along STEM Education Pathways, (January).

Cole, C. (2006). Education Policy Brief, *4552*. Retrieved from http://brokersofexpertise.com/cognoti/content/file/resources/documents/cd/cdc00517/cdc00517ede191d7b363b0a1e6931c1259257c7d/Impact_NCLB_Disabilities.pdf

Common Core State Standards Initiative | Home. (n.d.). Retrieved July 12, 2013, from http://www.corestandards.org/

Daniel, J. (2012). Making sense of MOOCs: Musings in a maze of myth, paradox and possibility. *Journal of Interactive Media in Education*, (September), 1–32. Retrieved from http://www-jime.open.ac.uk/jime/article/viewArticle/2012-18/html

Daniels, J. (1980). The North American Boarding School Experience, 1–10.

Deyhle, D., & Swisher, K. (1997). Research in American Indian and Alaska Native education: From assimilation to self-determination. *Review of research in education*, *22*(1997), 113–194. Retrieved from http://www.jstor.org/stable/10.2307/1167375

Exton, V. (2011). Creating an Education Pipeline: Training American Indian Teachers. *Journal of Indigenous Research*, *1*(1), 1–4. Retrieved from http://digitalcommons.usu.edu/kicjir/vol1/iss1/2/?utm_source=digitalcommons.usu.edu%2Fkicjir %2Fvol1%2Fiss1%2F2&utm_medium=PDF&utm_campaign=PDFCoverPages

Felder, R. M., & Silverman, L. K. (2002). LEARNING AND TEACHING STYLES, *78*(June), 674–681.

Fishman, B., Konstantopoulos, S., Kubitskey, B. W., Vath, R., Park, G., Johnson, H., & Edelson, D. C. (2013). Comparing the Impact of Online and Face-to-Face Professional Development in the Context of Curriculum Implementation. *Journal of Teacher Education*, *64*(5), 426–438. doi:10.1177/0022487113494413

Garet, M. S., Porter, A. C., Desimone, L., Birman, B. F., & Yoon, K. S. (2001). What Makes Professional Development Effective? Results From a National Sample of Teachers. *American Educational Research Journal*, *38*(4), 915–945. doi:10.3102/00028312038004915

Harvey, R. J., & Hammer, A. L. (2000). *Item Response Theory*. *Vasa* (pp. 1–46). Retrieved from http://medcontent.metapress.com/index/A65RM03P4874243N.pdf

Hiebert, J. (1999). Relationships between research and the NCTM standards. *Journal for research in mathematics education*, *30*(1), 3–19. Retrieved from http://www.jstor.org/stable/10.2307/749627

Hiltz, S. R. (1998). Collaborative Learning in Asynchronous Learning Networks: Building Learning Communities. Retrieved from http://eric.ed.gov/?id=ED427705

Iannone, R. (1995). Chaos theory and its implications for curriculum and teaching. *Education. Summer95*, *115*(4), 541. 7p. 2 Diagrams.

Indian Affairs. (n.d.). Retrieved July 24, 2013, from http://www.bia.gov/

Jacob, B., & Lefgren, L. (2004). The Impact of Teacher Training on Student Achievement Quasi-Experimental Evidence from School Reform Efforts in Chicago. *Journal of Human Resources*, (617). Retrieved from http://jhr.uwpress.org/content/XXXIX/1/50.short

Moon, J., Passmore, C., Reiser, B. J., & Michaels, S. (2013). Beyond Comparisons of Online Versus Face-to-Face PD: Commentary in Response to Fishman et al., "Comparing the Impact of Online and Face-to-Face Professional Development in the Context of Curriculum Implementation." *Journal of Teacher Education*, 0022487113511497–. doi:10.1177/0022487113511497

Morgan, H. (2006). What Every Teacher Needs To Know To Teach Native American Students, 10–12.

Native Arts and Cultures. (2010). Retrieved from http://www.fordfoundation.org/pdfs/library/Native-Arts-and-Cultures.pdf

Osmundson, E., & Herman, J. (2007). Mathematics and Science Academy Year 6 Evaluation Report, *1522*(January). Retrieved from https://www.lanlfoundation.org/Docs/Year Six MSA Evaluation.pdf

Pewewardy, C. (2002). Learning Styles of American Indian/Alaska Native Students: A Review of the Literature and Implications for Practice, *41*(3).

Price, M., Kallam, M., & Love, J. (2009). The Learning Styles of Native American Students and Implications for Classroom Practice, (2008).

Roth, W.-M., & Lee, Y.-J. (2007). "Vygotsky's Neglected Legacy": Cultural-Historical Activity Theory. *Review of Educational Research*, *77*(2), 186–232. doi:10.3102/0034654306298273

Schmidt, W., Houang, R., & Cogan, L. (2011). Preparing future math teachers. *Science*. Retrieved from http://www.ts-si.org/files/doi101126science1193855.pdf

Smith, L., & Macgregor, J. T. (1992). What is Collaborative Learning ? *.

Sorkness, H., & Kelting-Gibson, L. (2006). Effective teaching strategies for engaging Native American students. *… American …*. Retrieved from http://0-www2.ed.gov.opac.acc.msmc.edu/rschstat/research/pubs/oieresearch/conference/sorkness_200602.pdf

Vygotsky, L.S. (1978). *MIND IN SOCIETY* (p. 159). Harvard University Press. Retrieved from http://books.google.com/books?hl=en&lr=&id=RxjjUefze_oC&pgis=1

Vygotsky, Lev S. (2012). *Thought and Language* (p. 307). MIT Press. Retrieved from http://books.google.com/books?hl=en&lr=&id=B9HClB0P6d4C&pgis=1

A2: Consent Form

University of Colorado Boulder

<div align="center">

Permission to Take Part in a Human Research Study

</div>

Title of research study: *Connective Massive Open Online Course (cMOOC) for Science, Technology, Engineering, and Mathematics (STEM) Teachers in New Mexico Pueblo Schools*

Investigator: *Josephine Kilde*

Why am I being invited to take part in a research study?
We invite you to take part in a research study because you teach in one of the four schools involved in the study: Jemez, San Felipe, T'siya, or Ohaky Owingeh. The study is for developing a user-defined online professional development for teachers teaching Native-American students to provide continuous support and create community of teachers.

What should I know about a research study?
- Someone will explain this research study to you.
- Whether or not you take part is up to you.
- You can choose not to take part.
- You can agree to take part and later change your mind.
- Your decision will not be held against you.
- You can ask all the questions you want before you decide.

Who can I talk to?
If you have questions, concerns, or complaints, or think the research has hurt you, talk to the research team at (715) 309-3121 or Josephine.kilde@colorado.edu.

This research has been reviewed and approved by an Institutional Review Board ("IRB"). You may talk to them at (303) 735-3702 or irbadmin@colorado.edu if:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You have questions about your rights as a research subject.
- You want to get information or provide input about this research.

Why is this research being done?
Research Problem:
Teachers are struggling in isolation because of lack of professional development that is adequate to support their needs. Current professional development programs offer a maximum of 20 hours a year. Math and Science Academy (MSA) has invested in creating ongoing professional development sessions throughout the year for New Mexico teachers and this has yielded positive results. However, there is currently no tool that MSA teachers can access MSA resources other than during the sessions. The MOOC will be a tool that will create a seamless flow of support for

MSA teachers and teachers across the country throughout the year by providing resources that teachers can access anytime they need.

Research Purpose:
The purpose of this research is to develop an online professional development resource tool that will help teachers teaching in Native-American schools create a community to share resources, experiences, as well as learn from each other. Our participation as a teacher teaching Native-American student gives us insight to develop a tool that is customized for you and that will help address relevant issues that you are faced with each day.

Potential Benefits to You and Others:
- Continuous access to professional development content and training
- Access to a community of educators for support instead of waiting for coaching and PD sessions
- Development of content knowledge and strategies for building effective classroom practices and pedagogies
- Customized content for progressive development and continued education

How long will the research last?
We expect that you will be in this research study for eight months for MOOC design, development, and testing with potential follow up on the study after the testing phase.

How many people will be studied?
We expect about forty two (42) people will be in this research study.

What happens if I say yes, I want to be in this research?
When you decide you want to be part of this research, you will be required to participate in the following:
Meeting 1: Recruitment (~1 hour)

Recruitment will be conducted on the first meeting where you will be issued with a consent form. I will go through the contents of the form answering questions while clarifying the goal and purpose of the study and expected outcomes as well as potential outcomes. Once the review session is done, you will be asked to sign the consent form. You will be issued a copy of the consent form. You are free to withdraw from the study at any time without any consequences.

Meeting 2: Survey (~1 hour)

A one-hour survey provided on the following meeting. The survey is for investigating what you struggle with in the process of teaching and learning mathematics, your current use of technology: personally and in the classroom, and your intent to use the MOOC once developed.

Meeting 3: Q-Sort Session (~1 hour)

In this session you will asked to write 5 to 10 struggles you are currently suffering on sticky notes and then prioritize the sticky notes in the order of importance from most important to least important. Then as a group we will sort through all the sticky notes and come up with a collaborative priority list. The assignment after this session is for you to bring a link of a website they find useful and intuitive to use to the next meeting.

Meeting 4: Interface Design (~1 hour)

Once you bring you intuitive website(s) we will discuss what features you like and what features you do not like. Using sticky notes we will prototype an interface design where you can pick features you find helpful. We will collaboratively narrow down to features that are deliverable now, later, much later, and not possible/not applicable.

Meeting 5: Interview Sessions (~45 minutes)

Interviews will be conducted individually during coaching sessions at respective schools. The interviews are focused on your teaching experiences, technology use, and your vision of how the MOOC might meet some of your needs. The interviews will be audio recorded.

Meeting 6: Prototype Testing (~1 hour)

Once a MOC prototype is complete, there will be a testing session where you get to interact with the prototype and record what you liked, what you did not like, and what you hope to see. These notes will guide the redesign process.

Meeting 7: Survey 2 and Focus Group (~1 hour)

This survey is your reflection after going through the planning and development process and after test-driving the MOOC how you envision using it. We will hold a discussion where you verbalize your opinion of the process and the MOOC prototype.

What happens if I do not want to be in this research?
You can leave the research at any time and it will not be held against you.

What happens if I say yes, but I change my mind later?
You can leave the research at any time it will not be held against you. Data collected during your participation period will be used in the progression of the research.

Is there any way being in this study could be bad for me?
There is no risk in participating in this study. You will not be required to incur any additional time outside the already allocated MSA time.

Will being in this study help me any way?
Yes. The study is conducted to build tools that will create a community of teachers and shared resources for your professional development and classroom support.

What happens to the information collected for the research?
Efforts will be made to limit the use and disclosure of your personal information, including research study and medical records, to people who have a need to review this information. We cannot promise complete secrecy. Organizations that may inspect and copy your information include the IRB and other representatives of this organization.

Can I be removed from the research without my OK?
You can be removed from the research study without your approval. Possible reasons for removal include:

• You are physically incapable of completing the study

- You are no longer teaching in the participating schools
- You do not participate or partially participate in the study

Signature Block for Capable Adult
Your signature documents your permission to take part in this research.

_____   _____
Signature of subject   Date

_____
Printed name of subject

_____   _____
Signature of person obtaining consent   Date

_____   _____
Printed name of person obtaining consent   IRB Approval Date

A3: Chronological Documentation of the Study

Summer 2013

During the first summer of the study, there were four schools participating in the MSA professional development program. These schools had been in the MSA program for at least two years and had formed a cohort that was collaborative and was anxious to learn. The summer institute was held at one of the schools so teachers from the other three schools had to commute each day for three weeks, traveling between 32 and 66 miles one way.

I spent the summer learning alongside the teachers at the summer institute. I would come in early in the morning with MSA staff and help setup coffee and snacks then during the day sit in different teacher groups to learn what they were learning and try to understand their challenges. The first week was math content immersion training led by a math professor who was training teachers how to solve math problems conceptually and using images, concepts, facts, language, and procedure (ICFLP). What was intriguing to me was the diversity of methods teachers used to solve math problems presented to them, as described in the 4.5 x 4.5 example in Chapter 5, which led me to believe that a collaborative platform for the teachers to share their creativity would be a necessary tool.

Following the content week were two weeks of classroom management, assessments, lesson planning, and other topics applicable to teachers' daily practices. I was quite impressed by the camaraderie of the cohort and how they worked together as teams. The teachers really valued MSA's training, and MSA staff had built a great relationship with the teachers, which really helped leverage CLASET acceptance.

In collaboration with MSA to develop the log frame that would guide CLASET design and development, I consulted with teachers about CLASET ideas and there were no major issues

discussed that surfaced as would overwhelm teachers from using CLASET. Teachers did discuss lack of classroom planning time and some technology hiccups during testing, which had a potential of hindering CLASET use, but given the enthusiasm I saw in training sessions I believed that the teachers were willing to overcome these issues to collaborate and learn from each other.

Summer 2014

After engaging with the teachers in summer 2013 and developing requirements and the log frame, I spent the fall and spring semesters developing CLASET0. Also, during that period, I moved to New Mexico to participate in MSA activities in order to have a better understanding of the teachers, their community, and their needs. By summer 2014 I had a prototype that was ready to be tested at the summer institute.

This summer was not like the previous summer. Three BIE schools were added to MSA program via a mandate from BIE requiring all teachers from the three schools plus teachers who had opted out in the current four schools attend MSA program. This mandate created much tension from the moment it was declared, months before the summer institute, and throughout the summer program. Four main factors contributed to a summer that was filled with tension and anxiety: 1) The new cohort was really upset about being forced to leave their homes for three weeks to stay in a Holiday Inn Express to be close to BIE offices where MSA training was held. Some of the teachers were in tears the first week, not knowing how to handle leaving their young children for that duration. Others brought their families with them. This was setup because the participating Pueblos were between 33 and 137 miles, one way, from the training location. Some teachers were able to carpool and commute but majority stayed at the hotel for the three weeks. 2) Mixing the two cohorts created a challenge for MSA staff. They had to integrate the cohort

that had been in the program for at least three years, by choice, with a group that was new to MSA training, most of whom did not want to be there. 3) This mixed cohort system left most teachers feeling MSA did not meet their needs: the new cohort felt MSA was talking over their heads and that they did not understand the lingo that the previous cohort had developed as a result of being in MSA for 3+ years and the old cohort felt neglected due to MSA's focus on the new cohort. As one teacher from the old cohort stated in an interview:

> That direct support was nice to have. I kind of feel like the support, to answer your question, from MSA has kind of diminished into the fourth year. It's maybe something where they think, "Well, we don't really have to work with them all that closely because we've already had three years with them." If that's the case, then we shouldn't be in the program. But that's my opinion that we shouldn't be into a fourth year if we're already good to go. I've heard that there's some other reasons why we're in our fourth year - because the whole school is not participating. But that shouldn't be our fault.

4) BIE announced its plan to discontinue being the central administration for the schools but have each school be administered by its own Pueblo government. Most of the teachers were not happy about the change because they feared some of the local governments did not care about formal education therefore they were not going to be vested in the welfare of education leaving the teachers either jobless or paid meager salaries. Because of this change, by the time the summer program was running, teachers and principals had not received contracts for teaching the following year therefore did not know whether they would have a job come September. This created a lot of tension as speculations flew throughout the air causing fear of losing jobs, resentment toward BIE, and anger toward MSA.

The environment got better as the summer institute progressed. The complaints seemed to subside daily as the new cohort began to appreciate MSA's training. I ran into a teacher from the new cohort in the bathroom during one of the sessions and she was in tears. This is what I wrote in my field notes:

I ran into [Teacher] in the bathroom this afternoon and she was in tears. I asked if there was anything I could do to help. She said she overwhelmed by leaving her children with relatives. She seemed consoled when I told her I understood because I had to leave my children to go to school. She then told me that she was embarrassed that she was against MSA because she was learning so much and realized that MSA was there to make her a better teacher and a better influence for her students. I wonder what brought about this realization.

This is the summer we introduced iPad minis and CLASET. The teachers were really excited to receive the iPads. The same afternoon the iPads were issued we had a technology session to get the teachers to setup the iPads and then access CLASET. The iPad setup and CLASET navigation were a challenge as described in Chapter 5. The first day was quite frustrating. When I had a chance to step away from the crowd surrounding me I was able to look around to see the activities occurring around the room. There was an iPad projected on the big screen that MSA staff was helping walk through groups of teachers that had similar questions. Those who got it would help their neighbors or walk around helping others. And there were others who had given up and had formed a social gathering.

The day ended with a demonstration of CLASET features and potential that the website held. Though majority were able to login after I circumvented the account verification process and verified that all email addresses were spelt correctly and reset forgotten passwords. The first activity was posting on the blog. From the blog screenshot below, the first person posted at 12:45pm, almost 3.5 hours after the technology session started. The few postings capture the mood in the environment: joy of receiving an iPad, relief of finally logging in and posting, and gratitude to helpful peers.
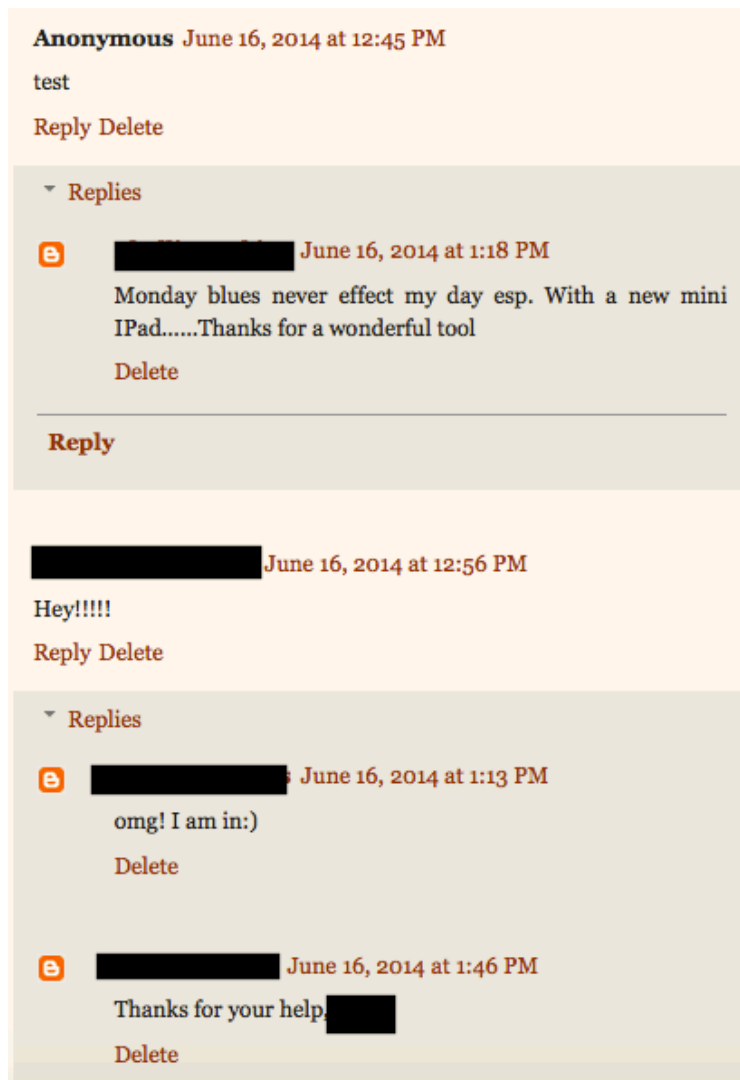
Figure 10: Screenshot of first postings on the blog.

The following day there was more enthusiasm about CLASET. Teachers got into groups as soon

as they walked in with their iPads helping each other troubleshoot. Below is a note from my field

notes.

14 users still not verified.
Teachers walked in this morning with stories of how they had their kids and grandkids
help with setup.

They talked to their peers about setup problems and successes when they walked in.

Peers helping each other in setup and answering questions.

Teachers not going out for break - navigating iPad and helping each other out - asking me and MSA staff questions.

[Teacher] - No Internet at home, has to drive 8 miles to go up the hill with granddaughter to help with yesterday's assignment. She's doing much better today than yesterday - granddaughter must have helped her figure out how to login and navigate.

Based on the challenges experienced, I made CLASET adjustments to try and resolve some of the issues. Besides removing account verification, I changed the website home page to an icon-based site to negate the menu and glare issues and the login process, as discussed in Chapter 4. The teachers that had problems with the previous site, who were over 50 years of age, were very happy to see the icons and dark background. The younger teachers said that the website had a kindergarten look.

After the summer institute one of the teachers was so impressed by the iPads' functionality and capabilities that she wrote a successful grant to purchase iPads for her Gifted and Talented (GATE) students. Below is snapshot of what the teacher during a focus group discussion.

Teacher 3: I would like to talk about the technology piece because if we hadn't been given these ... I see my children using them. I know almost all the students have a phone in their pocket and I see in Albuquerque that my own personal children have been taught to use their phones as tools in the classroom, whereas we are punishing our students for even having a phone. We're taking them away. We're assuming that they're using them for negative purposes, but I would love to see them all pull out their phone and look up a word or pull out their phone for whatever. I'm the gifted and talented teacher now and I didn't have any computers in my classroom so when I saw these and how cool they were ... Somebody sent us an email at the beginning of the year saying, "Hey Leonard Foundation has grant money. All you have to do is write a grant."

I was thinking, "I want my students to have some of these because they know they're not allowed to use the phones." If I could get the phones out, we could have used those. I wrote the grant and I got it and purchased the

iPads. Then from there, I was able to then do individualized research projects. It was handy because it came right at testing time when the kids sometimes come, sometimes don't come, depending on their testing schedule and what not and how much interruption we have. It was really cool because instead of looking up whales in the encyclopedia and seeing a picture of whales and facts, they were clicking on images and finding the videos. They were saying, "Look, watch the whales. Look at this one," so that the animals became real to them. They're asked questions on a test about oceans that they've never seen, but now it became real to them.

Then we went on in the hallway because the blue whale is the largest animal that has ever lived on the planet Earth, even bigger than dinosaurs. It said that they were 100 feet. The kids were going, "Yeah, 100 feet," but it wasn't until we out our rules and yard sticks and they were measuring on floor and then one of the kids noticed, "Hey, these tiles are all a foot. We don't have to crawl on the floor with the rulers. We can count the tiles." When they counted the tiles going down that hallway, 100 feet is pretty long. Then we were thinking, "Now, do you think a whale could fit in the hallway?" "No because if the animal is that long, it's going to be way bigger than the hall. There's no ... " It just led into all this. How many kids would it take to equal the length of a whale? Of course, with gifted, I don't have that many at a time, but they were laying on the floor.

The technology may be just one part of it, but it led to so many other things that I never envisioned because I'm the same. It's like, "Now me, come help me. Make this thing work" because they do come to it naturally because they're playing with it. I remember the first time I saw somebody's 2 year old playing with their mother's phone. I was like, "Ah," but then it turns out a 2 year old can't hurt your phone and the 2 year old knew how to use the phone better than I did. I learned click twice and you can exit off all the programs that you had so your battery doesn't die. I'm hoping to see at our school where phones stop becoming bad things and start being understood as devices that the children can use as tools because then everybody has an encyclopedia right here in their hand. Any question that you ever had- Let me look it up. Yeah, there's a calculator in here. There's books in here. They're more comfortable with this than sometimes the paper and pencil. Do you have kids who hate ... ? Not that they can't write because they don't have the ideas. They have the ideas, but they absolutely just hate holding a pencil in their hand, bouncing on their chair and writing, the physical act of writing, but that gets eliminated because you should see how fast ... They can really type faster than I do. They're just so comfortable because this is the future and we're not using up all this paper any more, killing all these trees and making all this trash.

On and for the reasons why, but I just found it expanded my teaching in ways that I never dreamed of until last summer when somebody actually

> put one of these in my hand. I like it better than a laptop too because it can take pictures. It can do videos. A computer is great, but these are so versatile and the kids are so comfortable with them that ... I was just blown away, an old school phrase. It blew my mind.

Another teacher saw us connect an iPad to the projection system. She bought adapters that would allow her to connect her iPhone to the projection system in her classroom, since the iPad was not allowed on the school network and most videos she wanted to use to supplement her lessons were blocked. She was able to use her phone to project videos for her classroom using her phone's 3G network.

Two principals approached me after the summer institute and asked if I could work with their tech personnel to improve technology in their schools. One of the principals had bought a projector that had a panorama video recording capability to be installed in the computer lab with the plan of having each teacher hold a lesson at the computer lab that would be recorded and shared on CLASET. She asked if I could work with the tech person to setup the projector and train her on how to download, edit, and upload the videos on CLASET. I was willing to do this so she said she was going to spend the school year looking for funding to support the initiative and we would spend summer 2015 planning how to execute the project.

The other principal asked if I could train his tech person, who doubled as a janitor and did not know much about technology. He told me that I would not come in as a trainer, because it would be insulting to the technician to be trained by a woman, but I would come in as an assistant to help him clean and inventory the computers in the computer lab. In the process, I was to figure out why the school has a modem and router and yet there was no wireless internet and also show the technician how to do these tasks without him knowing he was being trained. This process was to happen sometime during the school year as the principal wanted to use the

inventory report to write a grant for new computers. The lab had 27 computers and only 19 were functional sometimes. The plan was to reconvene in summer 2015 after the "training" sessions to plan how to install and setup a new lab if the principal was awarded the grants. His plan was to have teachers spend time in the computer lab, which they never did other than when students were testing, so that they could get well acquainted with computers and CLASET with the end goal of creating collaborative content with teachers from other schools. The principal never contacted me over the school year and when I spoke to him during MSA events he was evasive about the project.

CLASET introduction was filled with twists and turns that I could never have predicted or imagined. Though teachers were able to overcome most of the challenges through their determination and peer support, some were able to transfer the technology knowledge into the classroom, and I was able to technologically navigate some of the challenges, I could see that there were many challenges that lay between CLASET and success ranging from technology, access, policies, and will. I was really impressed by how hard teachers were willing to make the technology work despite the other issues discussed earlier that weighed heavily on them.

Summer 2015

Third summer was fairly calm. The three additional schools were beginning to appreciate MSA's work and enjoy the learning. One of the schools had graduated from the program so there were six schools in the summer program. The two cohorts were norming and working together collaboratively. MSA staff and I spent the academic year narrowing down CLASET training goals to come up with one problem as described by teachers and find one technology that would provide a solution to the problem. This was based on the concern that there was minimal to no engagement on the website outside MSA scheduled events. We narrowed down the problem to

teachers' lack of time to create effective lesson plans and the solution was using Google apps (docs, sheets, and slides) that have collaborative capabilities to have teachers create and share lesson plans in preparation for the following school year.. To make this process happen, I used a WordPress Google login plugin that used one process to login to CLASET and Google simultaneously so teachers did not have to login twice to access CLASET and Google apps.

When summer institute started in June, the spirit and the environment were very different compared to the previous summer. Teachers were happy to see each other and the new cohort seemed to enjoy being at the institute. It might be because BIE had decided to move the summer institute to Santa Fe, which was a commute distance for all teachers attending and none of them had to leave their families. The commute was between 32 and 81 miles one way. All teachers brought their iPads, some commenting that they had to dust them off, as they never used them since the pervious summer. Others said they gave them to their children or grandchildren since they did not find use for them, while others said they had been using them personally and in the classroom.

On the first day I noticed the two principals that had asked for my help the previous year were not present. When I inquired I was informed that they were both terminated and no one seemed to know why. I thought that was an interesting coincidence and a missed opportunity for teachers and students in the two schools. I spoke to technology teacher in one of the schools and she told me the principal was planning to execute the project but the plan died with her termination.

The goal of the first technology session was to have all teachers create Gmail email addresses that they would use to login to both CLASET and access Google apps. The login process had changed to incorporate the login with Google option, as described in Chapter 4.

I did not remove the previous login process of using the username and password because the plugin required a purchase of the pro version for $50 to remove the fields. I thought the process was straightforward enough that I did not deem worth spending $50 to remove the two fields.

The creation of Gmail addresses was a complicated process. As with the previous summer, some teachers could not verify their accounts and others forgot their passwords right after creating accounts. Throughout the summer, usernames and passwords were the biggest challenge with at least 10 teachers resetting their passwords daily. Once we had the Gmail accounts created, I projected my iPad to show teachers the changes that had happened on CLASET since the previous summer. I demonstrated the login process and reminded teachers to use the *Login with Google* option.

The goal of the following tech session was to ensure teachers could access the shared Google drive folder embedded in CLASET. The first challenge came when most of the teachers could not access the shared drive and some could. After a period of troubleshooting I realized the teachers who could not access the shared drive did not use the *Login with Google* option but used the username and password fields. About 70% of the teachers missed this step. Once that was corrected, the next challenge was teachers received a request access message where the drive was supposed to appear similar to the one below.
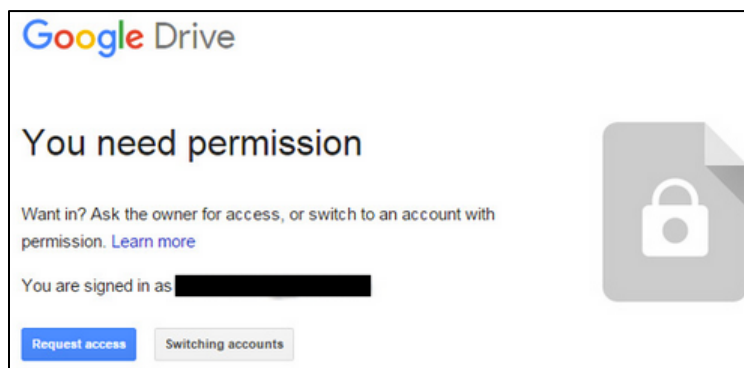
Figure 13: Request access message.

This message did not appear when I tested with MSA staff so it caught me off guard. As I tried to troubleshoot, teachers would click on the request access button, close the window and try again, repeating the same process over and over. I checked MSA email account, which is where emails generated by the request access command were sent, to find there were over 300 emails. I started the approval process and, to my relief and to their joy, teachers who were granted access were able to access the drive. MSA staff had already setup grade level folders with lesson plan templates and teachers who were able to access the drive grouped themselves by grade level and started creating lesson plans.

One of the teachers had not overcome the resentment of being forced to attend MSA. She was disengaged and did not wish to participate in most activities. She was one of the first teachers to access the drive but, instead of sitting with grade level teachers, she sat at the back of the class by herself going through her phone. I walked over to her and asked if she was willing help me with the grant access process while I helped other teachers with other questions. She gladly accepted the role and her demeanor changed significantly. She not only did what I asked but she went around helping other teachers who were still struggling.

The rest of technology sessions, characterized by password resets and username recoveries, were getting less challenging as teachers got more comfortable with using the Google apps and the discussion forum. Teachers were totally absorbed in creating collaborative lesson plans and engaged in deep discussions regarding lesson goals, differentiated instruction, assessment, and how to write meaningful reflections. I thought the shared drive would be one technology that would be successful given they were getting comfortable using the apps, they

had pre-planned their lessons therefore freeing time they had mentioned they lacked for lesson

planning, and teachers from schools with single grade teachers had a platform for collaborating

with other grade teachers in other schools. Below is an analytic graph of the Google apps

showing teachers did not download the lesson plans they created at the summer institute.

Figure 14: Google apps activity

I was sitting with a group of teachers from one of the new cohort schools during lunch. I

asked how they had used CLASET since the previous summer and their response was they could

not use the iPads at school. Below is what I wrote in my field notes.

> Group at lunch - they could not get the IT person give them the wireless password. They
> would rather not use tech than have someone not trust them enough to give them the
> password.

Below are quotes from an interview and focus group regarding CLASET.

Teacher 1:   The MOOC? When we're in summer, it's a great way for us to all be
              together. But then when we started going into August, I went back in there
              and I looked at it and there wasn't anything new. Then I went back in there
              in September and there wasn't anything new. At that point I'm thinking,
              "Well, no one is using it anymore," so it's not a place that I would
              frequently visit. That's just the way that I remember it.

              I think it could definitely be improved by having more videos about
              education. One thing I like to do is go onto YouTube and just look at the
              different ways that teachers are doing their lessons. The way that they're
              working with kids, different techniques. If we had more videos on there, I
              think that would definitely be a place where that would be an education

portal. But also, the other thing is Khan Academy. I think we tried to do something like that where the teachers were posting their lessons and, this is how you do a lesson on fractions. I wanted to see more of that stuff, but then nothing ever happened with that.

I was looking for some of the lessons we did at the BIE that one summer, when we were first into the MOOC, and I think we were using Penultimate and we had that PowerPoint that we were trying to incorporate into it. Overall, we were trying to get a lesson that was similar to something I think you would find on Khan Academy. But once again, there wasn't any of that. I couldn't find it for whatever reason. The technology aspect of it ... I think if it were more of the portal, then I think that would be more interesting for people to go into.

Interviewer: That means content that is already made and there, not you guys making the content to go into there.

Teacher 1: Exactly. If it were our proprietary content, that would be great also. But then to also mirror that with what teachers are doing in Massachusetts. What teachers are doing in Florida. What teachers are doing in Singapore. Because it's not just about our little section of the world here. We're seventy-some teachers, I don't know. But we're a small, little niche in that community of teachers. For us to say, "We're the best. We don't want to see what anybody else is doing." That's pretty ignorant right there.

That's pretty vain also, because we want to see - maybe somebody over in Australia did this awesome lesson on fractions. Why can't we see that? Why can't I do it like that? I think if it were that portal, where it had other content that was linked to the MOOC, I think that would make it a place where you could basically setup as your homepage and you could say, "Oh look, there's a new video that was posted. I'm going to click on that." Instead of having the Google search engine, that's your homepage. Maybe that's something that the BIE could actually put onto our homepage. That's my idea of the MOOC.

This teacher had a different expectation of CLASET's function.

The teacher expected someone to post content and the teachers would go into CLASET and consume whatever was posted. He did not see himself generating content despite the message sent since CLASET's introduction that it was a space for teachers to share best practices outside MSA's physical meetings. Different teachers had different challenges as described below.

Teacher 5: I think MSA has caused me to go into depth of what a child is thinking and learning more about that student and all the math that we're doing. I'm

old school where I used to do all this. Now we're breaking it up into connections, what the kids can connect to. The technology has just been really exciting. I feel like I can really do something with technology now.

Teacher 5: With my job right now, I think it's [technology] helping me with my students because they're so into devices now. They refer to these as devices. At 2:30 every day, I have them work on their devices. We work on things like math and reading. They're forever looking for new things, a new way of learning. I think I'm motivated that way. I'm motivated myself because I see them get excited when I get excited. That's really helped me. Just a different way of thinking better than what I've done in the past. I'm a curriculum person so it's got to be this way, this way, but now it's opened doors for me so I appreciate that.

Teacher 7: I think the biggest struggle with the MOOC is once you get into it and you get onto the MOOC is finding the time to get on to the MOOC. I know when we come here it's like, "Yeah, we do it-

Teacher 3: It's our focus.

Teacher 7: But when we get back to our classrooms and you've got all these other things you're trying to do and get done in a day, it's not always convenient to get on, go to the MOOC, log ... Remember your password.

Teacher 8: We need to make it simpler.

Teacher 3: Our network is awful.

Teacher 8: We need to make it simpler to somehow get on, like as simple as like when you go check into the hotel. "What room? 206. Password? Apple." Do you know what I'm saying? Something like that. Maybe that would allow us to, "Oh yeah, it's just MSA. Then I'm number blah, blah, [00:56:00] blah," and I can get in versus "Bovi rainbow, bovi at ... "

Teacher 2: Yeah because you don't even know if something has been posted on the MOOC unless you are in it. Let's say if you post a question like that on the MOOC, unless I was at home and I made the time and got into the MOOC and logged on and saw your question, I couldn't respond. Whereas if, I don't know, incoming mail or something [crosstalk 00:56:27]. Then, "Oh, oh, you were asking about ... " It's almost a way to approach it. "This is what I do with my kids," a quick respond to you.

Interviewer: You mentioned something about you don't have the time to go into the MOOC. How can it be made to be part of your daily routine so it's not this other thing you have to do?

Teacher 2: That's what I'm saying. I think in the classroom I know we're very trained into we get in- We do what we have to. At some point in the day, we check our mail. We check what is coming in from the principal, what's coming in from the ... It becomes a part of your routine because you make that time to do that. I'm not saying you couldn't do that with the MOOC, but I agree. By the time you get it, you log in, you have to go here and then you have to go here. It is time consuming.

Teacher 3: The other thing too is that the school's networks have to be able to support this. I'm using a computer that runs on XP and every little thing I ever do I have to sit here and wait while that thing spins.

Teacher 4:   You can pray while it spins.

Teacher 3:   If they would buy us laptops that worked well, just think of the efficiency factor. Something that I should be able to do in a few seconds takes minutes so that's time 60 for every little thing.

While some of the teachers saw CLASET as a challenge to incorporate technology in the classroom and to find creative ways to engage students, most could not go past the road blocks of usernames and passwords, internet accessibility, and lack of time. Teacher expectations of CLASET were a complete mismatch with MSA's intention of extending the camaraderie and collaboration shared in MSA physical meetings into cyber space. They expected a content repository offered to them and not them using the space for generating collaborative material.

A4: Surveys

Survey 1: Demographic

ID:
The purpose of this research project is to design and develop a massive open online course (MOOC) to support Los Alamos National Laboratory's Math and Science Academy (MSA) teacher professional development sessions as well as provide resources and community for teachers teaching in Native American schools. This is a research project being conducted by MSA and University of Colorado Boulder. You are invited to participate in this research project because you are part of the MSA program and you are currently teaching in a Native American school.

Your participation in this research study is voluntary. You may choose not to participate. If you decide to participate in this research survey, you may withdraw at any time without penalty.

The procedure involves filling out the questions of the survey that will take approximately 30 minutes.

We will do our best to keep your information confidential. All data is stored in a password protected electronic format. The results of this study will be used for scholarly purposes only and may be shared with MSA and University of Colorado representatives.

If you have any questions about the research study, please contact Josephine Kilde (University of Colorado Boulder) at josephine.kilde@colorado.edu.

1) ID   _____

2) Gender   _____

3) Age   _____

4) Ethnicity   _____

5) How many years of teaching experience do you have?

_____

6) How long have you taught in your current school?

_____

7) What grade(s) do you teach?

_____

_____

_____

8) What subject(s) do you teach?

_____

_____

_____

9) Have you taught in other schools? If yes, please list the schools

_____

_____

_____

_____

10) On a scale of 1 to 5, how would you rate your current Arithmetic proficiency?

(1 being not proficient and 5 being proficient)

   Not proficient   1   2   3   4   5 Proficient

11) On a scale of 1 to 5, how would you rate your current Pre-Algebra proficiency?

   Not proficient   1   2   3   4   5 Proficient

12) On a scale of 1 to 5, how would you rate your current Algebra I proficiency?

   Not proficient   1   2   3   4   5 Proficient

13) On a scale of 1 to 5, how would you rate your current Algebra II proficiency?

   Not proficient   1   2   3   4   5 Proficient

14) On a scale of 1 to 5, how would you rate your current Trigonometry proficiency?

   Not proficient   1   2   3   4   5 Proficient

15) On a scale of 1 to 5, how would you rate your current Calculus proficiency?

   Not proficient   1   2   3   4   5 Proficient

16) What are some of the greatest challenges in your teaching practice?

_____

_____

_____

_____

_____

17) What other challenges do you face in the classroom?

_____

_____

_____

_____

_____

18) Do you have a community of teachers with whom you collaborate?

        Yes

        No

19) If yes, how often do you meet?

_____

_____

_____

Technology Access and Use

20) Which of the following electronics do you own?

(Check all that apply)

        Desktop (Mac)

        Desktop (Windows)

        Laptop (Mac)

        Laptop (Windows)

        iPad

        iPod

        Smart Phone

        Cell phone (Has text but no internet)

        Cell phone (Does not have text or internet)

        None

        Other:

21) Which of the following technologies have you used?

(Check all that apply. Use additional space to list other technologies)

        Social Media (Facebook, Twitter, Pinterest, other)

        Forums

        Video (Youtube, Vimeo, etc)

Online games

Own website

Teaching Management Systems (Moodle, Edmodo, Facebook for Teachers, etc)

Email

Blogs

Other _____

22) Do you have access to technology in your classroom?

Yes

No

23) Do you use technology in your classroom?

Yes

No

24) If yes, list the technologies you use.

_____

_____

_____

_____

_____

25) How much time a week do you spend using a computer for teaching or related work?

_____

26) Does your school have technology support staff?

Yes

No

27) If yes, how would you rate the level of that support?

(On a scale of 1 to 5, 1 being Poor and 5 being Excellent)

Poor   1   2   3   4   5 Excellent

28) What technologies do you like to use in your classroom (if they were available)?

_____

_____

_____

_____

_____

Math Attitude and Efficacy [1,2]

Please indicate the degree to which you agree or disagree with each statement below by circling the appropriate letters to the right of each statement.

SA = Strongly Agree

A = Agree

UN = Uncertain

D = Disagree

SD = Strongly Disagree

1)	When a student does better than usual in math, it is often because the teacher exerted extra effort.	SA	A	UN	D	SD
2)	I am continually finding better ways to teach math.	SA	A	UN	D	SD
3)	Even when I try very hard, I don't teach math as well as I do most other subjects.	SA	A	UN	D	SD
4)	When the math grades of students improve, it is most often due to their teacher having found a more effective teaching approach.	SA	A	UN	D	SD
5)	I know how to teach math concepts effectively.	SA	A	UN	D	SD
6)	I am not very effective in monitoring math exercises.	SA	A	UN	D	SD
7)	If students are underachieving in math, it is most likely due to ineffective math teaching.	SA	A	UN	D	SD
8)	I am generally effective in teaching math.	SA	A	UN	D	SD
9)	The inadequacy of a student's math background can be overcome by good teaching.	SA	A	UN	D	SD
10)	The low math achievement of some students should not be blamed on their teachers.	SA	A	UN	D	SD
11)	When a low achieving child progresses in math, it is usually due to extra attention given by the teacher.	SA	A	UN	D	SD
12)	I understand math concepts well enough to be effective in	SA	A	UN	D	SD

	teaching these concepts.					
13)	Increased effort in math teaching does not produce change in students' math achievement.	SA	A	UN	D	SD
14)	The teacher is generally responsible for the achievement of students in math.	SA	A	UN	D	SD
15)	Students' achievement in math is directly related teaching effectiveness.	SA	A	UN	D	SD
16)	If parents comment that their child is showing more interest in math at school, it is probably due to the performance of the child's teacher.	SA	A	UN	D	SD
17)	I find it difficult to explain to students' math concepts.	SA	A	UN	D	SD
18)	I am usually able to answer students' math related questions.	SA	A	UN	D	SD
19)	I sometimes wonder if I have the necessary skills to teach math.	SA	A	UN	D	SD
20)	Increased effort in math teaching has little influence on the achievement of students with low motivation.	SA	A	UN	D	SD
21)	I would not invite my principal to observe my math teaching.	SA	A	UN	D	SD
22)	When a student has difficulty understanding a math concept, I am often at a loss as to how to help the student understand it better.	SA	A	UN	D	SD
23)	When teaching math, I welcome student questions.	SA	A	UN	D	SD
24)	I don't know how to excite students about math learning.	SA	A	UN	D	SD
25)	Even teachers with good math teaching abilities cannot help some kids learn math.	SA	A	UN	D	SD
26)	I have difficulty memorizing all the information I need to know to teach math well.	SA	A	UN	D	SD
27)	When I am solving a math problem I try to decide what would be a reasonable value for the answer.	SA	A	UN	D	SD
28)	I think about the math I experience in everyday life.	SA	A	UN	D	SD
29)	I find it useful to work many problems when I am learning math.	SA	A	UN	D	SD
30)	After I study a topic in math and feel that I understand it, I have difficulty solving problems on the same topic.	SA	A	UN	D	SD
31)	Math knowledge consists of many disconnected topics.	SA	A	UN	D	SD
32)	When I solve a math problem, I find an equation that fits the problem and plug in the values given.	SA	A	UN	D	SD
33)	I find that reading detailed textbooks is a good way for me to learn math.	SA	A	UN	D	SD

34)	There is only one correct way to learn math.	SA	A	UN	D	SD
35)	I am not satisfied until I understand why something works the way it does.	SA	A	UN	D	SD
36)	I cannot learn math if I don't have someone to explain it to me.	SA	A	UN	D	SD
37)	If I get stuck on a math problem, I usually try to figure out a different way that works.	SA	A	UN	D	SD
38)	Nearly everyone is capable of understanding math if they work at it hard enough.	SA	A	UN	D	SD
39)	Understanding math requires being able to recall something I have read or been shown.	SA	A	UN	D	SD
40)	To help understand math concepts I discuss them with my colleagues or others.	SA	A	UN	D	SD
41)	If I don't remember a particular equation needed to solve a problem in class, there's nothing much I can do.	SA	A	UN	D	SD
42)	In doing a math problem, if my calculation gives a result very different from what I would expect, I trust that the calculation is correct.	SA	A	UN	D	SD
43)	It is important for me to make sense of formulas before I use them.	SA	A	UN	D	SD
44)	I enjoy solving math problems.	SA	A	UN	D	SD
45)	Learning math changes my ideas about how the world works.	SA	A	UN	D	SD
46)	Reasoning skills used to understand math concepts are helpful to me in my everyday life.	SA	A	UN	D	SD
47)	Spending time deriving formulas is a waste of time.	SA	A	UN	D	SD
48)	Sometimes I solve a math problem more than one way to help my understanding.	SA	A	UN	D	SD
49)	It is possible to explain mathematics without mathematical formulas.	SA	A	UN	D	SD
50)	My life experiences help me understand and teach math more effectively.	SA	A	UN	D	SD

[1]Science Teaching Efficacy Belief Instrument. (n.d.). Retrieved February 04, 2014, from
http://people.ehe.osu.edu/ahoy/files/2009/02/science-te.pdf

[2]CLASS (Colorado Learning Attitudes about Science Survey). (n.d.). Retrieved February 04, 2014, from
http://www.colorado.edu/sei/surveys/Faculty/CLASS-PHYS-faculty.html

Survey 2: Math Assessment

1. Your favorite radio station, WCPM, is having a contest. The DJ poses a question to listeners. If the caller answers correctly, he or she wins the prize money. If the caller answers incorrectly, $20 is added to the prize money and the next caller is eligible to win. The current question is difficult, and no one has won for two days.

   a. Lucky you! Fourteen people already called in today with incorrect answers, so when you called (with the right answer, of course) you won $715! How much was the prize worth at the beginning of the day today?

   b. Suppose the contest always starts with $100. How many people would have to guess incorrectly for the winner to get $1,360?

2. Federal standards require the angle ramp for wheel chairs to be less than 5^0. If the length of a ramp is 20 feet and the vertical rise is 15 inches, does it meet federal standards?

Use Images, Concepts, Facts, Language, and Procedures to demonstrate your solutions.

A5: Field Notes

CENAC Rally

February 18, 2014

Today we went to CENAC (Coalition of Educators for Native American Children) Rally at Santa Fe Indian School, a boarding high school for Indian kids, as MSA was invited to present in Mathematical Writing Session. There were over 300 BIE teachers.

Session 1: 22 teachers
Session 2: 3 principals and 1 teacher
Session 3: 2 teachers and 1 principal

There were 22 teachers, some of who were MSA teachers. MSA went through the importance of teaching various ways to solve math problems and explaining how the working memory works. He demonstrated his point by asking the teachers to solve 4.5 x 4.5 without any calculations. None of the teachers could do it. The most popular answer was 16.5. He asked the teachers to use pen and paper and they came back with 20.25.

MSA demonstrated various ways:

4 x 4 = 16
.5 x 4 = 2
.5 x 4 = 2
.5 x .5 = .25
Total 20.25

4.5 = 9 halves

4.5 x 4.5 = 9/2 x 9/2 = 81/4 = 20.25

Distributive (4 + .5)(4 + .5) use FOIL

Image - 4.5 x 4.5 matrix

The one teacher that did a demonstration was confused between lowest common factor and lowest common multiple. Lorenzo asked 3x4=12, whether 12 was a multiple of product. There was a discussion where about half the teachers though multiple and the other product. One teacher said both, and a teacher said that Lorenzo asked 3 times 4 so 12 cannot be a multiple it has to be a product.

One teacher commented that the above schema is difficult for the students to understand (Wondering whether is difficult for students or teacher?)

MSA said that teachers should be teaching students how to think in the context of mathematics. Teachers should teach multiple ways of representation, ICFLP, without using OR (image, procedure, or language) but requiring AND. Example, a basketball coach does not coach dribble or shoot or pass. He teaches everything so that the players are comfortable in using all methods so when they are on the court they can use any of the methods automatically. Students need to have automaticity so that when taking assessments they are comfortable, to a point of using non-conscious memory, to respond to questions.

Demo - learning how to ride a bike or dance. First there is a lot of thinking and calculation until one can balance or is fluent with steps then don't have to actively think about the activity - moving from robotic (procedural) to natural, conscious to non-conscious.

Bloom taxonomy - a process unlike ICFLP

Teacher commented that in going to school, no one asked him "What do you think?" Math classes were procedural and memorization of formulas and not about thinking so for him it is difficult to think about mathematical writing because he was not taught that way, does not know it, therefore does not know how to teach it.

Frank hotdog and bun questions
One teacher responded that she would get one of each because he has 7 kids in her classroom - total disconnection with the problem at hand.

Principal- Runs concession stands at his school. To solve the problem he multiplied 10 by 8 then figured 80 is too much food for a small party so divided by 2 and thought 40 sounded reasonable. He then worked to fit the answer 40 into a formula or method. All information pulled from real life experience.

Current education non proficient cycle

Elementary -> Middle school -> High school -> College of Education -> Pre-Service -> In-Service -> Teacher -> Elementary

CSA - Concrete -> Semi-Concrete -> Abstract
        - Singapore Math

Common core and NMSBA set standards with the expectation that teachers can raise to the occasion to achieve the set standards, but they can't, they don't know how or don't have the knowledge to do so.

They evaluate teachers things the teachers don't know.

You interpret your world with what you know.

Intuition/cognitive/common sense - derived from regular, predictable, practice

Common core #6 - communicate with precision
Math writing of 5th grade student - 8x5 is wrong because in context, it's not 8 groups of 5 but 5 groups of 8.

Principal confession - in college I did well in reading and writing but I never understood math. I never understood what they were talking about. My goal was to get through the class so I got a C and I was happy to move on.

Teachers ask students to write but both teachers and students struggle because they don't know how and teachers don't know what to look for.

Teacher on the Plane

May 11, 2014

On the plane from Denver to Albuquerque I sat next to a Navajo kindergarten teacher teaching at Mescalero Apache Elementary School, an Apache reservation school. In his class he has 16 students out of which 2 are disabled: one from car accident and one born with disabilities. Both these students have aides.

I asked him what's the biggest challenge as a teacher and without hesitation said parent involvement. He said he goes for a whole academic year without meeting the parents of majority of his students because they never come to school for any reason. He appreciates parents who stop by to chat or report. Students of non-participating parents miss the connection between home and school therefore do not see the importance of school.

On professional development he said that teachers have in-service days (once a month for 2 hours) where they spend the time in their classrooms doing whatever. They have collaboration days where teachers meet per grade with math and reading coaches and go through assessments and performance reports. His collaboration days are every Wednesday and said these two PD times have nothing to do with the classrooms and what teachers go through.

He said before they used to have a professional come in and teach them certain topics though out the year and have teachers make things to bring back to the classroom. At the end of each year they would receive 3 credits that helped them meet their PD requirements. He said this was very helpful because most teachers don't have time to go out someplace to get these credits. He said this year they had a professor from University of Arizona who came in and spoke at them for 45 minutes. After the session the teachers were exhausted and none could remember what she was talking about.

I asked him how he would envision an online PD working with him and with his school. He said it would need to have the following:
1. Offer credit or certification at the end of each module
2. Have training modules for non-Native America teachers who do not understand the Native American culture
3. Be customizable so teachers can take the content and customize to their particular students

4. Have a blog or a way teachers can share how they have solved social issues in their schools, e.g. absenteeism when students are participating in mandatory cultural traditions, discipline, etc
5. Have a way that teachers could create for teachers (teacher buy teacher website)

Students struggle with the school and home identities because school teaches them to be "disrespectful": children don't look at adults in the eye, they are not to speak in the presence of adults, they learn by observation and never interrupt an adult, and are never in an interactive environment with adults. Smith said that he saw a teacher (non-native) angry that a student won't look her in the eye. I asked how he deals with the dichotomy of identities and he said he encourages all students to participate but lets those who want to engage have the right as long as they demonstrate understanding, of which most do.

Many non-native teachers make the situation even more complex for students, e.g., owl and snake are a bad omen in Apache. Owl symbolize death but if an owl has something like a graduation cap it symbolizes wisdom. An owl symbolizes death therefore one cannot look at an owl's eyes (live or picture). Someone brought a snake as a class pet.

Death is a very sensitive topic that is not discussed openly. Teachers discuss with community elders on how to bring up the topic and teach the students what death is since no one talks about it. One teacher used the term "he can drop dead" which is a major taboo. There was a death from car accident in the pueblo and his person it seems was connected to the whole community somehow. The school was mourning but no one would talk about it.

Use case studies to facilitate discussions from online PD users, e.g., how other teachers deal with absenteeism or how they feel about it. He feels these festivals take a lot from the kids and make it very difficult for teachers especially with the students who are already behind.

Vocabulary is a big problem because most homes do not have children's books. Literature found in most homes is newspaper and magazines not appropriate for children. Him growing up he only had access to a Bible and newspaper. He wishes there could be a drive from religious organizations to buy children books for schools so kids can have access to books at home. Children don't grow around educated people so vocabulary is a big deficiency and it is not something that can be learned easily as the kids grow up.

To illustrate vocal words for his class he made hot chocolate for the kids to demo "aroma" and "savor". He used lunch time to demo "??" meaning tummy growling hunger. He could not find an easy way to demo "melancholy".

To raise money for classroom supplies Smith makes jewelry and sets up a showcase at his classroom where teachers come in to buy. He sells beautiful necklace/earring set for $35-$45 and earrings from $3 to $12 depending on the material, throw away price! I asked if he had a website where he could sell and he said he couldn't because its his hobby. He raises money for treasure chest (awards) and for pizza parties - a party for kids performing well at SBA test.

Him being Navajo has had to learn Apache to connect better with the kids. Though most kids can barely speak Apache (though taught in school as a mandatory class) they understand better when

Apache is used. He used zen diagram and ask students to write in English and Apache. Most non-Native American teachers don't learn the language.

Children asked to play with shapes - boy and girl holding hands with feathers on their head, fireworks, teepee, gate.

Schools are in short of teachers therefore offer high bonuses to attract teachers learning to high turnover of non-NA who cannot handle the remoteness.

The surprising thing to me was how comfortable he was talking to me. He showed me a lot of classroom pictures and gave me his name and the name of his school because he wanted to use the online PD once it was launched. He has taken online classes and referenced research a few times. He said he taught in Denver and liked it there better than the current school. He was considering moving closer to Albuquerque to have city access.

Teacher in the Bathroom

Thursday, June 11, 2015.

I ran into [Teacher] in the bathroom this afternoon and she was in tears. I asked if there was anything I could do to help. She said she overwhelmed by leaving her children with relatives. She seemed consoled when I told her I understood because I had to leave my children to go to school. She then told me that she was embarrassed that she was against MSA because she was learning so much and realized that MSA was there to make her a better teacher and a better influence for her students. I wonder what brought about this realization.

Summer Institute 2015

June 12, 2015

2 principals fired - no tech development
Teacher organizing tech development in Taos
Group at lunch - they could not get the IT person give them the wireless password. They would rather not use tech than have someone not trust them enough to give password
Cannot use external devices at school
 - clarification from teacher: can use external devices as long as they do not contain personal info
 - gets reported to BIA and schools get penalized

June 9 - Gmail
About 1/3 could login to gmail
Those who finished were very helpful to others
Teacher very proud of tech responsibility

June 11 - Videotaping
Teachers totally absorbed in developing exemplars

June 12 - Videotaping
Teachers - you give us options
MSa staff took over camera control when showing teachers how to use it
Anxiety over videotaping but excitement to see videos on MOOC
Pushing play instead of record on videotaping

iPads Issued

June 16, 2014

Today was an interesting, frustrating, exhausting day. The iPads were issued in the morning and in the afternoon we had two sessions of iPad setup, first with 1st years and then with the whole group.

Issues:
Setup - Most teachers knew to turn the iPads on and to swipe to get started. The problems started after that. Even though they could read and understand the instructions that followed, a lot were afraid to do what the instructions asked. They would wait until one of MSA staff would be there to walk through with them. Then there was the setting up iTunes. Most teachers, since they have iPhones, had iTunes accounts but could not remember either usernames or passwords. It took a long time just to get the iPad setup.

Website access - this was the most stressful part of the day. The teachers had much difficulty from the get go. A lot of them had trouble reading the ont. They said that the font was too small and melding into the white background. I showed them how to zoom using pinch and zoom but it was amazing to see the latency between pinch and zoom that would sometimes open a link that was not intended. Quite frustrating for the teachers. The drop down menus were disastrous. Some teachers could not read the menu titles and since most could not zoom to make the menus larger, they would intend to select one thing on the menu but would open something different. Most older teachers gave up at this point. Some were exploring the ipad's features, others are chatting.

Then came the account setup process. Most teachers viewed the verification message as an error. They thought they were doing something wrong despite the fact that they could read and understand the message. Teacher 8 asked me to help her. She was not sure what to enter in the "Invitation Code" text field despite the code being written on the white board and explained before the account setup process. I told her what to enter and when she had completed entering all required information she asked me what to do next despite a large submit button next line after her final entry. I told her to submit. Then the verification message came up. She told me she got an error. I asked her what the eror was and she read the message out loud: "Please verify your account using the verification link sent to your email address." I gave her a moment to process what she read and she turned to me and asked "What should I do?" I asked her what the message was asking her to do and she said it was asking her to get a link sent to her email. I asked her to do what the message said and she asked me "How do I do that?". We had just gone through setting up email on the ipad and she had managed to setup and download her emails but

somehow there was a disconnection between this message and the email setup a few minutes earlier.

I stopped by a group of older teachers who had given up and formed a chat table. I asked them how the mooc was different from Facebook or other social media. One of the teachers (in her late 50s) told me that her son bought her her phone and setup everything on it. All she had to do was push buttons and everything she needed would be right there. Another told me that all she knows what to do with her phone is to call and receive calls. If she needed to get on Facebook or any other site she would have her granddaughter get her there. All she had to do was type and send. I now realize that the fact that the teachers own smartphones and computers and have Internet access and social media interactions doesn't mean they know how to use them. I surely did not see that one coming!

By the end of the day less than half of the teachers had setup accounts. I definitely did not anticipate a fraction of the challenges today! Now off to [my daughter's] birthday :)

iPad Observations

June 17, 2014

14 users still not verified
Teachers walked in this morning with stories of how they had their kids help with setup. They talked to their peers about setup problems and successes when they walked in.
Peers helping each other in setup and answering question. Teachers not going out for break - navigating iPad and helping each other out - asking me and MSA staff questions.
Teacher - No internet at home, has to drive 8 miles to go up the hill with granddaughter to help with yesterday's assignment. She's doing much better today than yesterday - granddaughter must have helped her figure out how to login and navigate MOOC.

Classroom Challenges

Friday, June 20, 2014

At lunch time I sat with [Teacher - 5th grade] and [Teacher - 3rd grade] (Native American). I was concerned that the blog postings do not contain anything cultural and yet I'm hearing a lot of culture-related issues in the discussions. When I asked them about a discussion held in one of the classes about the challenges of developing differentiated instruction when a class may have 5 or more groups of students in different levels of learning this what they said:

[Teacher - 3rd grade] said that her students come in with their emotions all over the place. Some were abused the night before, some had not seen their parents, some had no one to feed them breakfast or ensure they were dressed appropriately for the weather, and others were already caretakers of their younger siblings. She said that students arrive at school with such a low emotional quotient that there is no way they can learn. Her strategy to get the students learning ready is, before she starts her lessons, she sits down on the floor with her students and talk about issues the students wanted to share, some good news, mostly bad news. After the sharing she and her students would get up and walk around the classroom singing "We are the champions". She said that since she started applying this strategy students have been more receptive because she given them time to release their social issues to create room for learning.

[Teacher - 5th grade] said her biggest challenge was creating an effective differentiated lesson plan because of student absences. She said that some students are heavily involved in cultural activities that require them to miss school a lot. She said one week half of the girls in her classroom would be gone, the next week half of the boys would be gone, and the next week and group of 5 - 10 kids would be gone. By the end of the month she would have kids who are advanced, those who missed a few days, those who missed up to 3 weeks, and SPED (special education). She wondered how she could give a lesson in 40 minutes that would ensure each child in their various stages learned something meaningful.

I asked them if they could post our discussion on the blog. They said they would try but so far they haven't.

Day at School

September 12, 2014

Today I was talking to MSA as we were going through survey (post-SI 2014) results from 4 teachers who had responded to the survey. The answers were inconsistent, written with tons of grammatical errors, and did not really respond to the questions. Lorenzo said that he planned to be a doctor and he knew he had to go to college. His idea of college was it was a place where people went to get smart. He said he quickly realized he was not prepared to take the hard science classes. He dropped out of physics and chemistry, studied on his own, took the classes again and he still could not qualify to be a doctor. He liked psychology and wished to be a psychologist but he wondered where he would get clients in small town Cuba. Next resolution? He became a teacher.

He said that when he went to school in the 50s his teachers were all White but 4 Hispanic. To be a Hispanic teacher was quite an achievement. He hypothesizes that in the 60s, when the job market opened up to women and minorities, these great teachers moved on to be engineers and the like and a vacuum was created in education where women who were at home found an avenue to get into the job market. This brought in teachers who were not trained or qualified to be in the classroom and it seems the trend still continues.

Yesterday Teacher called me and asked if I could come to her school to help her and other teachers "get into the mooc". We scheduled for 1:30. I went to the school and was met by huge traffic of kids, teachers, and parents purchasing frito pies, over-frosted muffins, cookies, and Indian tacos. I enquired what the sale was for and was told the basketball team had a bake sale to raise money for their team. I went to buy some and the kids (maybe 4th or 5th graders) at first stared at me and then scrambled to package my order. It was funny to watch. Teacher was hosting the sale and was busy through the sale and cleaning afterwards. She finally got all things put away and cleaned then we headed to her classroom.

We went to her computer and she told me she could not login to the mooc. She said when she called me the day before she was not sure what email she had used but she figured she used her yahoo because it was the only email that would work when she tried to reset her password. I asked her to go to her email to see the reset email sent to her. There were about 8 reset emails. We reset the password and when she could finally log in she asked "okay, what now?". We went

through the INI requirements on the announcements page but she could not find the discussion forum and when I guided her to it she still could not remember how to do it on her own.

Teacher across the hall asked me to stop by her room. She was able to login and access the assignment but could not figure out how to download it. I showed her and she was able to download and printed 10 copies. She distributed the copies to the 3 teachers that were at the school. Interesting… maybe teachers are not accessing the mooc because the few who can are printing out materials for those who can't?

A6: Focus Group

July 23, 2015

Interviewer: Feel free to jump in. If you feel somebody left out something that you wanted to say, add to it. My question is what is your professional goal?

Teacher 2: Professional goal? Let's see. I've been teaching for 18 years, so a professional goal of mine would be to complete my national board certification in science and continue my focus ... I won't say for another 18 years, but as long as I can with that focus, which would be the certification goal. Learning technology is something I enjoy and like if it works well. That's my big thing, if it works well, it's great, but when there's issues, technological issues, it's very frustrating.

Interviewer: Why are you pursuing this national board? What do you want to do or to be?

Teacher 2: I think my original intention ... When it was offered to me last year, I didn't take it, and so I had some time to think about it. I felt like, for me, I was at a point in my career where I needed something else to push me and motivate me and keep me going. It was, for me, the opportunity to do that.

Interviewer: You're doing it for your motivation, for something ...

Teacher 2: Yeah, just because I think as a teacher, in any profession, you get to a comfort zone, a comfort level. MSA has definitely pushed me out of that comfort level, and so this was just another push to get me out of that comfort level, to learn more.

Interviewer: Cool. One thing ... [Teacher 3], I will come to you. You should just mention your names so that I remember who was here. We can start with [Teacher 3] and go around.

Teacher 2: Do you want me to do it first since I talked first?

Interviewer: Okay, sure.

Teacher 2: [Teacher 2].

Teacher 3: I was thinking about-

Interviewer: Do you want to say your name first?

Teacher 3: Hi, I'm [Teacher 3]. I did the opposite. I was seriously thinking of doing my national boards, but back in the 90s I was working on my doctorate in early childhood multicultural special ed ... I think is what it was ... And due to the health of my daughter, just couldn't complete it, so I have an EDS in that. For me, I thought, if I'm going to do all of that work, I would like my doctorate out of it because it's this unfinished dream, goal. I published articles. I just wanted to ... I guess I still ... You're standing there and they're saying, "Do you want to keep going?" and my daughter's in the hospital and I know that I can't be with her in the hospital and be doing all of this stuff because it starts to get intense after you're done with your coursework, so I just said, "I guess I have to stop."

Now I do realize I have to start all over. That's why I'm thinking that even after I retire, I might still want to go after my doctorate because I tend to see things ... As a parent of kids with disabilities, I can sit on both sides of the table. I still hate being at an NIEP for my own child, yet I can routinely have them for other people's children. I really think that not only the teachers, but the doctors can really learn a lot from the parents of the kids, once we start putting ourselves out there and publishing articles about what it's like. There's a lot of things that parents have to offer educators. It's just that sometimes it's more of a confrontational thing. I'll be in a teacher's lounge hearing the teachers [00:04:00] going on about the parents, but then you'll be sitting at Parents Reaching Out or somewhere and you can hear the parents going on about the teachers. I always wanted to be that bridge I guess. That's what it is for me anyway.

I've toyed with it, but that's a lot of writing. All of that could be a thesis, right? I wish that they went together. I don't know why they ... If you earn your national boards, that should correlate to some something, even an ed specialist or something, but it doesn't. To me, I guess it felt like I would be doing it 3 times because I've already sort of done it once. The second time, I would like to have my EdD out of it. Maybe MS ... In fact, that's part of why I signed up for MSA because in the beginning they did say, "We're going to have a master's program and then we're going to offer a doctorate."

That's why I signed up in the first place, but now you guys hooked me in, so I'm on year 4, my fourth summer.

Interviewer: We're glad you're still here.

Teacher 4: My name is [Teacher 4], and I'm from [School G]. Right now, after joining MSA as an ed tech and will all the support from all the teachers that I've met through MSA and just at the school levels, they've encouraged me to go back for my teaching degree, which I am doing now. I'm almost finished with my master's. I guess now I feel like the doors have opened. I'm looking at a doctorate and I'm also looking a couple of years later maybe going for a national board certification.

That's still down the road, but I want to get at least a few years under my best before I start deciding what I want to do. After working with all the teachers with MSA, that's really encouraged me and opened my eyes to the teaching profession and just showed me what my passion is. Before, I didn't know what it was. That's why I never went [00:06:00] back for a master's degree in any field, but now I see that I really, really like teaching. That's what I really want to go into and later on hopefully go for my doctorate so that way I can teach at the college level.

Teacher 5: My name is [Teacher 5]. I've been in the teaching profession for 44 years. I've taught elementary, middle school, high school and college. My aspiration is to start my own business in high technology and have my own school. While I'm doing that, my other aspiration is to continue and work on a doctorate program. I'm mainly focusing on my tribal people is what I plan to do. I appreciate everyone's help here and everything. I'm enjoying MSA so far.

Teacher 6: I'm called [Teacher 6]. I have taught from K to 5 for over 45 years. I look at myself and what my goal is to go back in my tribe and do what I can do with them, with our children, whether it's technology, whether it's reading, whether anything that comes with our children's learning. Looking at this new tech, it's going fast for me, but I see lots of pros and cons. I see that in our tribal information from the tribal people, we're losing our language. I'm looking at technology if we can record, [00:08:00] if we can do some lessons in our language, where the children can hear just a language part. That's what I want to do. I just want to continue my professional goal as a Keres language teacher, but using the technology.

The reason I'm saying pros and cons is because I see that in our community too many parents ... I look at it that too many parents are doing this. They're not paying attention to the children. I have observed that at the clinic. No one is paying attention to children and we're not communicating any more like we should. That's why we're losing our Keres language. We're losing our home language, so I want to bring that back by using our new technology. That will be my professional goal for my community is what I'm looking at. Yes, I'm at school. I don't have time to do all these things. Yes, I'm on the computer, but I just don't have time. I'm too much into Ready2Teach, too much into that. I want to give as much as I can to the children. That's the way I am.

Interviewer: That's very important.

Teacher 7: My name is [Teacher 7]. I teach at [School E]. I started right out of college. You know how placement programs are at the universities? I was hired in Morton, Texas. They were just so fascinated that I belonged to one of the tribes. They go, "Hey, [Teacher 7], can you highlight on your tribe?" We did the simple thing as a play. [00:10:00] They were saying, "Oh my gosh, [Teacher 7], you're the best." Not knowing that these children out in Morton, Texas ... Of course, it was an hour drive. As you're driving into Texas, it's an hour change. Then we had to get up and leave by 4:30 so that we would be there by 7:00 or after 7:00. When a new school year was beginning, I felt that loneliness because I had to work one hour away from my family, but then coming back it was like, "Hey, this is exciting. I'm gaining another hour."

Finally, there was an opening here at [School E] so I interviewed. Here again, they hired me that day. They called. We had to pack up everything there in Clovis, New Mexico, and move over night. That was the beginning and then all these learning ... I have been with [Cordy 00:11:20] in the program before, so we took advantage of whatever was out there. We took ... It was a master's program that emphasized math and science. Then we took the 4 directions learned in that avenue. What I'm learning here, you're just looking at all of the elements in depth, to dig deeper into the children's minds. How can you really make them independent thinkers? I'm learning a lot about the iPad. My son could just go click, click, click, and he's done. I'm like, "Okay, can I write the steps down?"

I am the intervention teacher at [School E]. This past year, I had 3 6th grade students, and even though that I had the 3 different students, they were all intensive, but yet their ability levels were still amazing because you had the high, medium, low again. I really made sure that I rotated and pretty soon they weren't afraid to talk to me. Whatever concerns that they had with their teacher, they would come through me for me to communicate to the regular classroom teacher. That was nice. We really ended up making sure that we were gaining. Whatever I had learned at the MSA last year, I took them back to the classroom. You still had to follow that everyday math or the Envision curriculum, but making sure in back of my mind, "Don't forget what you have learned over here at MSA."

I have 2 more years before I retire so I'm going to keep trying my best. I'm helping those students with special needs. Then I am the SET person there at the day school. I'm just here to enhance my learning. Of course, I take a lot of notes and everybody is like, "Are you sure you're going to use those notes [00:14:00] again?" Then here again learning about recording, I didn't know how to do that. Then downloading, like today the ebook, I was like, "Oh my gosh, that was so nice." Then when it comes to downloading a lot of the different programs and I'm like, "Okay, do I have enough memory to do that?" My son and my daughter, they're always helping me along the way. That's all I have to share.

Teacher 8: My name is [Teacher 8]. I teach at [School F]. I have been in teaching and education for 34 years. I've been looking at toying with the idea about going back and getting my doctor's. At the same time, I think, "What am I going to do with a doctor's? Where do I want to go? What do I want to do?" I've been toying with that idea, but I really haven't taken the steps to continue that, but this MSA has been a challenge. It really has been a challenge. The little iPads, I've had to go to my grandson, who is in the 2nd grade, to say, "How do you do ... ?" He looks at me, like, "You just push this button twice and it gets you out of that program." I'm like, "Wow, how come nobody told me that?" Downloading the 5 practices a while ago, I was like, "Nobody told me I just had to push that little button that says download to the iBook." I'm like, "Wow."

It's because we don't find the time to just play. We just don't. The kids are just not afraid, and we tend to be afraid because probably how many of us have pushed a button and it's like, "Oh man, I lost it all"? We've gotten to that position. The other thing, like you were saying, being very comfortable, I have taught 5th grade now for going on 7 years. This coming year, I'm thinking, "Oh gosh, I

can teach 5th grade with my hands tied behind my back and my eyes blindfolded. I can dance and sing and know what I need to teach," and boom, all of a sudden, I get blasted with ... A hammer gets thrown in there because our school is going through so much, I don't know, energy that's just been misplaced or just a whole area where we as a team need to look at ourselves and say, "What do we need to do? Do we hire somebody else because we had so many people retire? Do we continue to let somebody go and hire other people? What do we do?"

In order to save ourselves, I think we need to just be team players. I took on the lead and said, "I will go to 1st grade. I will go ahead and go to 1st grade and see what happens, but here's the thing. Let me come into 1st grade. Bring me in a couple of weeks early so I can see what is there, what do I need to do in order to teach 1st grade." The thing is I've taught 1st grade. I taught 1st grade for 10 years. When I got to 1st grade that first time it was because the principal and I were at odds. It's like, "Boom, you're no longer going to teach 6th, 7th and 8th because we didn't have [inaudible]. You're going to 1st grade."

Interviewer: Was that a demotion or a punishment?

Teacher 8: I don't know what it was, but I did tell the principal at that time, "Either you shouldn't be here or I shouldn't be here." I'm still here. I guess it was a good thing. I stayed there for 10 years and I had a ball. I looked at it and I'm thinking, "Hey, I can go back to 1st grade and have a ball." I teach at UNM. I have a ball there too. I'm teaching students who are going to go into early childhood and elementary education and showing them things that I've learned here in MSA last year, MSA this year. I've been taking some of those ideas and bringing it to people who are going to be teachers and showing some of those strategies and showing some of the joy factors and the 3 ... What is that called? 3 minute ... What is that?

Interviewer: Motivators.

Teacher 8: The motivators. Using a lot of that stuff and thinking, "Gosh, my job is still not done." 34 years and my job ... I mean 40 years, 45 years. You guys, my goodness, and we're thinking, "What is that we still need to do?" I hear you talking about language. I go into the classroom and I start talking to my kids in Tewa instead of Tiwa and they all sit there and look at me like, "What did you just say?" The kids are just losing that language. I'm so afraid that once we lose that language, we're going to lose our culture because

that's what I've been looking at. When I first started [00:20:00] teaching, I walked into a classroom and those kids were talking in Tiwa.

Now I walk into my classroom, 5th grade, and I say "Hiyuoho" to them in Tiwa and they all say, "Good morning." It's like, "Say Hiyuoho in Taos. Say those words." I go home and I visit with my in-laws because they are older. They're getting older, and I tell them, "Talk to my grandkids in Tiwa. Talk to them because they're starting to talk nothing but English." That's scary. Even grandparents who talk nothing but Tiwa are answering in English. Those are some of the things that I'm looking at. I have so many doors that I can open, but which ones I choose ... MSA has helped me to determine what I need to do. I'm looking at another principalship, something. Where do I go?

I've got so many doors that I can open, yet I'm at that place where, "Okay, if I can't even just open my iPad and say how do I get to the 5 practices and get it download on my iBook." Even those things. It's amazing what we can do, what we're capable of doing, what we choose to do because that is what I'm finding out. Like this morning when somebody said how some of us can just become chicken helpers ... That's what I call that. "Let's be chicken helpers. Those of us who know how to download the iBook, let's just go and help." Some of us, who were ready, just chose to sit there and read our books. Some of us stood up and said, "Let's go help out each other."

Interviewer: It is frustrating.

Teacher 8: It is. There's frustration in the technology and, like you said, when it works it's great, and when it doesn't work, it's frustrating.

Interviewer: Tell me about it.

Teacher 5: On the language. There's a legislation Washington DC. People are looking at our language as Native American people. That's how we get our funding and so they're trying to do language preservation now. Our language has gone through different phases so that's what distinguishes us from other groups, our language. That's why it's such a crucial time to address that.

Teacher 6: I need to add something too. The reason that I keep bringing up language part is that for several years, we were not allowed to use

our language in our classrooms, but me I cheat and I tweak it because I want the kids to learn what it is. Maybe one example is combine, where you compliment mathematic, academic vocabulary. I have to use my language so I have to make that concept clear to them what it is. This year, I have permission ... I teach language for an hour every day Monday through Thursday, but I only use it for math academic language. That's the only one that I use.

Sometimes I throw in our own language, how you read people and just do little things. This is the first year that I tried something. I've been told before my reading coach that I cannot tweak anything, that I have to go with what is in the book Fidelity. I [00:24:00] use my songs [inaudible 00:24:02], I use my spelling. How else are they going to read if I don't do that? I've taught 4th grade and I've had non reader. If I can bring that 4th grade up to 2nd grade level reading, it can happen. It's an eye opener for me. I use it. I hide it. I was told I can't do that, but I cheated and I came back and I said, "Just because I'm using these ... If you're going to fire me for that, go ahead. Go ahead. Fire me for not following the book." I follow book, yes, but I use that on the side also because I want these kids to learn how to read. This is the first year that I really targeted my language connection to the academic method.

Interviewer: Did you say you needed permission to do that?

Teacher 6: I did. I did ask my new principal because after talking to her, now she wants the language put back into kindergarten and 1st grade. The reason is the results in mathematic term came up good because I use it. After documenting [varniwah 00:25:15], everybody moved. I never did this. I never had done this before. In kinder, I did maybe with 7 children and it was a result academic language in mathematics. They all 7, 8 moved up. This part turn me on. If I can do with our children from my home, I can do it again. I still have to show this to [someone 00:25:46]. I'm not going to back down. I'm going to say we need to bring that back in, our language. We need clarification.

Teacher 8: You know what we need to do is we need to find those people who are doing that [00:26:00] because I've been in [School F] ... For as long as I've been up there, I have been doing that. I have been fighting with math coaches and reading coaches and all of those people, including principals, which I why I got 1st grade. That info, that data, those important facts need to somehow come out of there. The worst part about it, like I just said, when I first started

teaching, those kids were speaking Tiwa. Those kids are sitting right there. She was one my students. I go back and I'm thinking, "I've got their kids. I've had their kids and now these kids that are coming in, they're not speaking Tiwa much. [crosstalk 00:26:55]. Somewhere somehow, it's got to come back. If technology is there to help us to do that, then let's find out how to use it to help us to get there.

Teacher 6: You're going to throw something out because when I did that, I was bumping heads.

Teacher 8: Oh yeah. I bumped heads.

Teacher 6: [crosstalk 00:27:18] teacher, but then I said, "Hey, they don't know me. I'm from [Pueblo C]. I don't' speak their language. These are my kids, and I'm going to stand up for my kids as much as I can even though you did throw arrows at me or what. I don't care." That's the way I feel. Here I am. Then I will want to retire and then I'll take these kids ... Oh my gosh.

Teacher 3: I see it as part of accessing prior knowledge, like good teaching. Even though I don't speak Keres, my husband's family does. I remember being reprimanded for explaining what a word was while they were doing the observation and they wanted me to be with Fidelity. I was told, "You've just ruined the fidelity of that program. All those experts worked really hard on that, designing those exact questions. Who are you to just throw all that research out the door?" If they didn't know the meaning of the word, you have to clarify meaning for them. You have to access what they know, whether it's in English or your own language. I'm really all for that because I'm an Italian American and my grandparents and parents were so ... Back in World War II, they wanted to be American so badly that part of being American meant you didn't speak your own language any more. Plus they were punished at school. It's not just Native communities. A lot of immigrant communities have the same issues.

Now as an adult, I'm learning Italian and I can picture when they're talking about [wida 00:28:59] and I picture, "What if I had to take a test in Italian and not in English? Even though I know the stuff, communicating the stuff ... " I think it's vital that the communities hold onto your language because you'll lose it in a generation. When I started at Laguna in 1981 ... I'm at 34 years also ... They were already at that point where grandmas were talking Keres, kids would answer in English, the young adults. Now I think, "What

happens when you lose your language? You lose your songs. How can you sing the songs? How can you do the things that people have done for thousands of years to keep the universe in ... ?" You know what I'm saying? if you lose your language, you will lose it very quickly because, like you're saying, the kids used to speak. Now they're the parents and if they're not talking to their children, that's it.

Interviewer: I am really enjoying this. I wish we had a whole day or a whole week. That would be fun.

Teacher 6: We only did [00:30:00] one question.

Teacher 3: All we did was introduce ourselves.

Interviewer: But it is so fascinating because I would not have seen a lot of doctorates here. That is one thing I guess is we get stuck into so much of teaching and referring to you as teachers. When we miss that point that teaching is not your end goal, you have all these other dreams ahead of you. That is very informative to me. I'll ask a question so we can get through the questions. You can self ... I'll ask the question and 2 people can answer it. We go through and then if we have time at the end, if you had something burning, if you can note it down, then we can go through the burning points that you wanted to say. The next one is now that you have all these big dreams, how is MSA helping you get them? Some of you mentioned it, but how is MSA fitting with your professional goals? Who wants to go first?

Teacher 5: I think MSA has caused me to go into depth of what a child is thinking and learning more about that student and all the math that we're doing. I'm old school where I used to do all this. Now we're breaking it up into connections, what the kids can connect to. The technology has just been really exciting. I feel like I can really do something with technology now.

Interviewer: How does that connect with you wanting to start your own school, to go to a doctorate and all that? How is MSA helping you with that? With your professional goal?

Teacher 5: With my job right now, I think it's helping me with my students because they're so into devices now. They refer to these as devices. At 2:30 every day, I have them work on their devices. We work on things like math and reading. They're forever looking for new

things, a new way of learning. I think I'm motivated that way. I'm motivated myself because I see them get excited when I get excited. That's really helped me. Just a different way of thinking better than what I've done in the past. I'm a curriculum person so it's got to be this way, this way, but now it's opened doors for me so I appreciate that.

Interviewer: One other person?

Teacher 3: I would like to talk about the technology piece because if we hadn't been given these ... I see my children using them. I know almost all the students have a phone in their pocket and I see in Albuquerque that my own personal children have been taught to use their phones as tools in the classroom, whereas we are punishing our students for even having a phone. We're taking them away. We're assuming that they're using them for negative purposes, but I would love to see them all pull out their phone and look up a word or pull out their phone for whatever. I'm the gifted and talented teacher now and I didn't have any computers in my classroom so when I saw these and how cool they were ... Somebody sent us an email at the beginning of the year saying, "Hey Leonard Foundation has grant money. All you have to do is write a grant."

I was thinking, "I want my students to have some of these because they know they're not allowed to use the phones." If I could get the phones out, we could have used those. I wrote the grant and I got it and purchased the iPads. Then from there, I was able to then do individualized research projects. It was handy because it came right at testing time when the kids sometimes come, sometimes don't come, depending on their testing schedule and what not and how much interruption we have. It was really cool because instead of looking up whales in the encyclopedia and seeing a picture of whales and facts, they were clicking on images and finding the videos. They were saying, "Look, watch the whales. Look at this one," so that the animals became real to them. They're asked questions on a test about oceans that they've never seen, but now it became real to them.

Then we went on in the hallway because the blue whale is the largest animal that has ever lived on the planet Earth, even bigger than dinosaurs. It said that they were 100 feet. The kids were going, "Yeah, 100 feet," but it wasn't until we out our rules and yard sticks and they were measuring on floor and then one of the kids noticed, "Hey, these tiles are all a foot. We don't have to crawl on the floor with the rulers. We can count the tiles." When they

counted the tiles going down that hallway, 100 feet is pretty long. Then we were thinking, "Now, do you think a whale could fit in the hallway?" "No because if the animal is that long, it's going to be way bigger than the hall. There's no ... " It just led into all this. How many kids would it take to equal the length of a whale? Of course, with gifted, I don't have that many at a time, but they were laying on the floor.

The technology may be just one part of it, but it led to so many other things that I never envisioned because I'm the same. It's like, "Now me, come help me. Make this thing work" because they do come to it naturally because they're playing with it. I remember the first time I saw somebody's 2 year old playing with their mother's phone. I was like, "Ah," but then it turns out a 2 year old can't hurt your phone and the 2 year old knew how to use the phone better than I did. I learned click twice and you can exit off all the programs that you had so your battery doesn't die. I'm hoping to see at our school where phones stop becoming bad things and start being understood as devices that the children can use as tools because then everybody has an encyclopedia right here in their hand. Any question that you ever had- Let me look it up. Yeah, there's a calculator in here. There's books in here. [00:36:00] They're more comfortable with this than sometimes the paper and pencil. Do you have kids who hate ... ? Not that they can't write because they don't have the ideas. They have the ideas, but they absolutely just hate holding a pencil in their hand, bouncing on their chair and writing, the physical act of writing, but that gets eliminated because you should see how fast ... They can really type faster than I do. They're just so comfortable because this is the future and we're not using up all this paper any more, killing all these trees and making all this trash.

On and for the reasons why, but I just found it expanded my teaching in ways that I never dreamed of until last summer when somebody actually put one of these in my hand. I like it better than a laptop too because it can take pictures. It can do videos. A computer is great, but these are so versatile and the kids are so comfortable with them that ... I was just blown away, an old school phrase. It blew my mind.

Interviewer: That's very interesting. That's really amazing. At least we have something really positive to report back about the iPads.

Teacher 3: That was just the one unit that I got to do in April and May because I was asked to do the coordinating of the testing, which

totally threw all my teaching out the door, but it was something that was flexible, that I could do as the kids came or didn't come or as I was able to see them. That was just one unit so I'm really excited to see what either the kids come up with or I can come up with for next year.

Teacher 5: My students did a PowerPoint presentation at the 6th grade promotion and just shocked the community because of the technology that is involved [crosstalk 00:37:44]. It was a year long project. I didn't have them work on it every day, but it was such an exciting thing to see them, the finished product.

Teacher 3: It looked professional too.

Teacher 5: They did really well, better than some of the people that I know.

Interviewer: I'm hearing a lot of ... There is the language part in your schooling. There is the technology part. There is the administrative part. How would you describe the role of education in general, both for community, both for the kids, for you? How would you describe the role?

Teacher 2: The role of education?

Interviewer: Yes.

Teacher 2: To me, and this has just been my own personal perspective, is that the role of education isn't to teach what is in the book, but to make life long lovers of learning. I think if they get some of what is in the book and they can remember and they can talk about it, you've just added a bonus, but when you have kids who come to you on a Monday morning and say, "Did you see ... ?" or, "Did you read about ... ?" or "Did you watch ... ?" or "Did you hear ... ?" They're giving you new information about what they've experienced outside of the classroom, then you've succeeded because you've made someone passionate about learning something new. That's going to carry them for the rest of their lives.

My thing in the classroom has always ... You can relearn the parts of the cell. You can relearn the bones in the human body. You can always pull up something on the computer and another text book and just relearn it, but what about the human body? How does that connect? What does that mean for you as a human being, as a person? What ownership do you have? For me, that's always been I

felt like my role as an educator is to get students passionate about learning just forever. It never ends.

Teacher 8: Then the other thing there too is to somehow use that knowledge and that curiosity and that experience to make them realize that the culture [00:40:00] is just as important. Some of the teachers were talking about culture and language and traditions and stuff like that. Hearing somebody say, "You have to choose your road. Are you going to go traditional or are you going to go Western?" I said, "No, no, no, no, no, no. Let met tell you something else here. This is from the interest and the wisdom of my grandparents and my father.

My father said, "No, no, no, no. You have one road. We all have one road and that one road, they're not asking you to choose this road or that road. You have one road. You pull into your road everything that you need that is going to help you, whether traditional, whether Western, whether college, whether all of these other things that we need to learn, the table songs, all of the traditional culture, dances. Whatever it is, you bring that to your road. You don't choose and go off in separate roads. You make that one road and you bring into your road what you need. The wisdom of that struck a cord so hard that now ...

I look at my brother's ... I don't know if you all know my brother. His name is Joe Garcia. He was the President of the Congress of the American Indian. He served that role for 2 times I think, 2 or 3 terms. Then he goes back home to Ohkay Owingeh and he is the traditional leader at Ohkay Owingeh. For him to do this in Los Alamos, it's like in 2 that person and you wonder, "Wow, he really did take it to heart. He took that one road. [00:42:00] He put all these things into his one road and look at it. That's how I think that we need to make those children, especially Natives, to realize that that is where your road goes. What you put into your road is the most important thing. Those choices are, like I always tell him, "We've got a backpack. If it's getting too heavy, you've got to decide what is going to go out." You've got to choose what you need to choose to get where you're going to."

Teacher 6: May I add to that?

Teacher 8: Sure.

Teacher 6: You're talking the same language that the words of wisdom from my home ... They tell us, "Yes, there is a road, but you are going to

hit bumps. You're going to hit that bump, but it's you. You are the one that is going to get up and start again. Nobody is going to help you. It's you with your mind. It's you with your heart and it's you with a body, your body. You're going to get up and start again if you hit that bump, if you fall. I just want to add to that.

Teacher 3: [crosstalk 00:43:10] My in-laws always say that the road gets a little steeper as you reach. It doesn't get easier.

Interviewer: Maybe just to wrap up the MSA part, is there any short thing that you would like to say additional that I didn't cover in the questions about MSA?

Teacher 2 MSA is that little helper that we can use to hook on because as that road is getting steeper, MSA is there. "MSA help me do this," and then having the free toys. You've even got the free devices, whatever you want to call them. It's there and your help, your expertise, you and Lorenzo and Zack, [00:44:00] they're just there. They're there as our hooks to help and pull ourselves up because, yeah, that will be steeper. For me, MSA isn't [inaudible 00:44:12] because sometimes you go [inaudible 00:44:13] and the teachers have little conferences and meetings. It's always like, "You're teachers. We get our pats on the back," but MSA I think challenges us to break out of that comfort zone that we are teachers and we have our own class and we do our things, but now what are you doing?

What is your next step? What is the next step? What is the next level? Where are you going to push yourself here? Where are you going to push yourself there? MSA is just that challenge I think, that ropes course that we're all trying to go through every summer and it gets a little bit harder or maybe even easier because we've learned the ropes. To me, that's what MSA is it's just that challenge, not so much a pat on the back because sometimes I think at the end of the day we feel like, "I can't put the programs on the computer," or, "I so did not understand the bathtub problem." We leave frustrated which is good though because then that's pushing us to say, "I've got to figure that out. I've got to learn how to get it." For me, that's what MSA is, that challenge.

Teacher 3: For me, it's more than just the individual challenge. It's a forum for us to meet teachers in other schools and other communities, also people in our own school that even though we see each other every day, maybe we're not having these discussions. We're talking about, "How do you grade the kids? Do you count zeros? Do you

grade every single thing they ever do or do you teach and then do formative assessments, adjust your teaching and then grade what comes at the end?" Just some of these everyday things that we as individual teachers may struggle with. It's allowing us to have the discussion like the Fidelity stuff.

Now we know what we used to do in the olden days when we accessed prior knowledge and did things more holistically, maybe that's coming [00:46:00] back en vogue. It just validates [inaudible 00:46:03] meeting the needs. The data that came with the No Child Left Behind, it was alien to me, but now I'm through MSA actually understanding what they're trying to get at when they say data because kids are not numbers. They're human beings. The numbers do tell us things and can guide us in our teaching whether they are understanding or not understanding of the concept. We can go back and adjust what we're doing. I just like the networking part that we're not alone because in your classroom, it becomes your own little kingdom. Sometimes we don't venture out of our own world, our own little ...

Female: We become the queen, the princess and the king and at the same time.

Female: Yes, my princess.

Interviewer: [Teacher 4], you haven't said anything.

Teacher 4: Yeah, I was going to include everything that I was hearing because then for me MSA provided that scaffolding before I entered my master's program because I didn't go to school for education for my bachelor's degree. I had not really any knowledge except with my experience that I had in the classroom. Everything that I have learned here at MSA, it just transferred into my program. I was like, "We already did that in MSA." Everything that I did in my program, it was like, "We already covered that in MSA. I know the answers. I can report back." It made me sound even more knowledgeable, but it was because of all that scaffolding that MSA had provided.

Then just being able to get all this knowledge from all these educators, these teachers that have been in the profession over 20 years, it helps me to just make those connections from the classroom, teaching in a classroom to learning in my college classroom. It's just that bridge where I get to really understand where they're coming from and the theories that they always talk about. Then [00:48:00] just making

those relationships with the teachers. They're all talking about not being able to use technology, whereas it's an expectation for me in my classes. It's, "Okay, I'll help you with this ... So what do you think about this?" While I'm helping them ... I was like, "That's a good idea. I want to use that in my classroom." It's that exchange of information and learning. That's how I have seen MSA helped me especially because then how [Teacher 8] was talking about all the things from our tradition and everything and then being taught that we don't ask questions, we don't ask why. I think that was one of the reasons why I had gone into science was because ... I'm pretty sure there's got to be a reason why. Learning those things along the way was like, "This why they told us not to do that. This is why ... Okay." It puts that knowledge into place and it's helping the students. From my perspective and my experience, it's helping these students to make their own decisions, having them be responsible for themselves and their place in society because then, like they always say, "We're going to be the leaders of the future and we're the ones that have to keep those traditions, those culture going."

Just putting all that knowledge that we have into place and using it to keep that tradition and culture alive is important to me as well. I think even just coming from a different generation, I see that as I grow up that it's become even more important because I can see that loss in culture, language because I wasn't able to speak to my daughter. Things that I had known at her age, she doesn't even know now so I'm trying to help her pick up the language. That way, we don't lose that and she's not falling even further behind than that. I think that technology portion is really pushing and helping along. I think it's just different ways to think about how we can use technology to help in the classroom and make that connection to the traditional culture is one that I try to incorporate into my classroom as well.

Teacher 7: I never thought of video taping a lesson in your language and then doing the lesson. I didn't even think of that.

Interviewer: This is the next question. I'm going to fit all the technology stuff into one question. The MOOC, how do you see it now? What is the potentials you see and how would you like to see it in the future?

Teacher 5: I would like for it to continue so that we can have this connection that we're introduced to each other and to maybe as a professional growth in the future, just keep it up.

Teacher 3: I struggle as a gifted teacher with that curiosity thing about not asking why because my very job, I need them to ask why. I've had a couple of conversations with my parents because I don't want to cross any lines that I shouldn't cross, but at the same time, the very nature of gifted education, higher level thinking requires that the children wonder and ask why and curiosity being a good thing, but that there are boundaries that you don't want to ... That's a conversation I would love to have. I didn't occur to me that curiosity was bad. Do you know what I mean?

Teacher 8: Yeah, it's not in its sense bad by itself. It's finding the correct people somehow to make sure that you know where the lines are. A lot of people probably don't think of me as a very traditional person, but because I'm married into a traditional place, what I was finding out was that I went to my in-laws with my ideas about teaching Tiwa in the classroom. It was like, "Whoa, you can't do that. You don't do that." I'm like, "Okay, okay." Finding the right people to talk to make sure that you know you get that gut feeling. When you know that you're crossing that line, you'd better stop it and go to, "[Teacher 7], what do I do with blah, blah, blah?"

I think that recognizing our own bodies because as long as you've been teaching, you feel it. You get to that certain point, you go, "Okay. It's time to just step away. I need to talk to so and so and discuss this" because we don't listen to our bodies any more. That's one of the things that I've been trying to get my kids to do in my own classroom, my own kids and my own grandkids. I have some kids, gosh, they can feel that tuition and it's like, "Yeah, they'll [inaudible 00:53:34]." I think that that's where we need to go with that.

Teacher 3: Say we're doing the solar system and where do stars come from or ... I'm thinking I'm teaching science, but ... I do have certain people that I do go to and say, "Is it okay if I ... ?" What was okay at [Pueblo G] may not be okay at [Pueblo C]. Hand prints of kids, no, no at [Pueblo G], fine at [Pueblo C]. Pictures of snakes in science books, bad, bad, bad if you're in the Navajo school. We actually all should cover them up. It's also this ballet or intricate dance where ... I want them to know about the Big Bang theory and tectonic plates and those things that ... Then you don't know whether there is a certain belief system about that that you don't want to [crosstalk 00:54:27]

Interviewer: How do you see the MOOC? The MOOC or technology or the devices, how can that bridge those things-

Teacher 3: I think that when the teachers are video taping lessons, I would like to see you guys putting some of those on there so that maybe in observing somebody else teaching something, then you can get ideas of things. What if native teachers could put on there certain "Don't do this" or "It's fine to do that"?

Teacher 8: I'd love to see somebody do a lesson in Tiwa or Keres or Tewa or whatever. If we could get something like that, that would be great. Yeah, those ideas are good too.

Teacher 3: You've got to know your students.

Teacher 7: I think the biggest struggle with the MOOC is once you get into it and you get onto the MOOC is finding the time to get on to the MOOC. I know when we come here it's like, "Yeah, we do it-

Teacher 3: It's our focus.

Teacher 7: But when we get back to our classrooms and you've got all these other things you're trying to do and get done in a day, it's not always convenient to get on, go to the MOOC, log ... Remember your password.

Teacher 8: We need to make it simpler.

Teacher 3: Our network is awful.

Teacher 8: We need to make it simpler to somehow get on, like as simple as like when you go check into the hotel. "What room? 206. Password? Apple." Do you know what I'm saying? Something like that. Maybe that would allow us to, "Oh yeah, it's just MSA. Then I'm number blah, blah, [00:56:00] blah," and I can get in versus "Bovi rainbow, bovi at ... "

Teacher 2: Yeah because you don't even know if something has been posted on the MOOC unless you are in it. Let's say if you post a question like that on the MOOC, unless I was at home and I made the time and got into the MOOC and logged on and saw your question, I couldn't respond. Whereas if, I don't know, incoming mail or something [crosstalk 00:56:27]. Then, "Oh, oh, you were asking about ... " It's almost a way to approach it. "This is what I do with my kids," a quick respond to you.

Interviewer: You mentioned something about you don't have the time to go into the MOOC. How can it be made to be part of your daily routine so it's not this other thing you have to do.

Teacher 2: That's what I'm saying. I think in the classroom I know we're very trained into we get in- We do what we have to. At some point in the day, we check our mail. We check what is coming in from the principal, what's coming in from the ... It becomes a part of your routine because you make that time to do that. I'm not saying you couldn't do that with the MOOC, but I agree. By the time you get it, you log in, you have to go here and then you have to go here. It is time consuming.

Teacher 3: The other thing too is that the school's networks have to be able to support this. I'm using a computer that runs on XP and every little thing I ever do I have to sit here and wait while that thing spins.

Teacher 4: You can pray while it spins.

Teacher 3: If they would buy us laptops that worked well, just think of the efficiency factor. Something that I should be able to do in a few seconds takes minutes so that's time 60 for every little thing.

Interviewer: How many can use Wi-Fi at school, Wi-Fi that they can use with the iPads?

Teacher 8: But we can't use it.

Teacher 3: It's off and on here.

Interviewer: You cannot use ... ?

Teacher 3: Right.

Teacher 5: The BIE, our email things, we can't use our own iPads there because then we're technically stealing the BIE stuff...

Teacher 3: You've given it to the school. If you take something to school like a computer it becomes their property.

Teacher 5: Yes, you can't even take it back to school. We can't use the wireless.

Teacher 3: They're so secure about all this stuff, yet they've gotten into OPM and stolen every person's identity. [crosstalk 00:58:33] How can it be so secure and wonderful and they have all these rules, yet they found just last week that they've gotten hacked into there and gotten everything and retirees data.

Teacher 4: That would be a good conversation for Casey.

Teacher 3: Without the proper equipment, we can't access it. It just takes forever.

Interviewer: Besides the MSA iPads, what kind of ... ? You all have computers?

Teacher 3: XP is what I have. [crosstalk 00:59:00] Dell computer.

Teacher 8: I have been asking for 10 years that I want document camera.

Teacher 6: We have cameras.

Teacher 8: I got a document camera.

Interviewer: Document camera?

Teacher 8: I wanted it so bad, and they kept telling me, "There's no money, there's no money." We only have one computer in our grade level [inaudible 00:59:19] each one. We just can't seem to get that.

Teacher 3: Let's write a Leonard grant. [crosstalk 00:59:26]

Interviewer: How many of you have computers? Desktop computers?

Teacher 3: I don't have a desktop. [crosstalk 00:59:32]

Interviewer: How many have a laptop?

Teacher 3: I have an old laptop [crosstalk 00:59:34].

Interviewer: You have all some kind of a computer. How many have access to internet?

Teacher 3: Some days. [crosstalk 00:59:42]

Interviewer: How many of you have Wi-Fi?

Teacher 3: At school.

Teacher 4: But they don't give us the password.

Teacher 3: We don't know the password.

Female: It's not connected yet.

Female: We're not the only ones.

Interviewer: You have Wi-Fi but you have no passwords?

Teacher 3: It's always somebody who puts it in for us and then ... With the student iPads, they changed it and then they couldn't use them.

Teacher 4: "Okay, go ahead and put it in. Turn away." Let them put it in and so that we can access it.

Teacher 3: Yet. They still hacked all our data. That's the irony of all of that.

Interviewer: These are things I guess I need to learn because I didn't ...

Teacher 2: [crosstalk 01:00:19]. Now you know where the frustration about this comes.

Interviewer: Your frustration is way beyond even the MOOC itself.

Teacher 2: To use the MOOC is not always easy when we're at school.

Interviewer: There's accessibility issues too [crosstalk 01:00:37]. I think it's lunchtime and I don't want you to be late.

Interviewer: Thank you so much for ...

Teacher 5: Thank you for all your patience.

Interviewer: No, thank you. This is really informative. Hopefully we can do something with it, especially start talking to Casey and start

[crosstalk 01:00:57] you can't access all this, actually it's useless then.

Teacher 3: I remember last year, they said there was a debate about the iPads versus the laptop. At first, I was ecstatic about this because it can video. It can do all the stuff a laptop can't do, but then on the other hand, I wish that I had a laptop that would work right.

A7: Interviews

Interview: Principal 1

February 14, 2014
Flying Tortillas, Santa Fe, NM
8:00am

Principal 1:   The biggest thing I believe is that there are no relationships anymore in education and   there is no relationship with just about anything. So, I spent 25 minutes before I got Verizon and then I got a good human being and a good person and we worked on the issue and got it solved. If there was a way to take anything in technology and create the relationship or the human element to it, and so that's why I think Facebook and things like Pinterest, but all those things create how technology and relationship go together in a good way. So in education there might be a curriculum or there might be a lot of things but there is no connection. You have to search. It has to be like there is a question and then you're just looking for an answer instead of a dialog so we can grow and everything about education is speaking, listening, communicating, writing, and a lot of elements in information technology or a lot of elements in technology are missing those components. I don't know how to solve it.

Interviewer: Neither do I. I'm hoping the teachers can help me solve it. I am trying to create a technology that focuses on two aspects: community and cultural relevance. According to literature teachers teaching in Native American schools have a community in college and then they go to these schools that are out there and they loose that community and then if they need something they have to go out to look for it themselves.

Principal 1:   Yeah, it's not pretty much readily available**.**

Interviewer: It's not readily available but if they have a central place that they know "If I'm looking for something I go here" and then somebody else is looking for something and goes here and then a community will start building automatically because they meet there...

Principal 1:   It's a meeting point

Interviewer: whether they are seeking each other or not they meet at this place and that's how communities start. At least that's my theory and that's what I am hoping the teachers can tell me their source of information whether they say they Google answers or they send Lorenzo an email, so where is their source of information right now and how can we gather all that information and put it in one place?

Principal 1: One of the things that you have in education in America is you have an older population teaching that's very good teaching but they are not very good in technology. Lorenzo is an exception that he started with technology at its infancy and stayed with it. I would say he is about 1 of 10% so I would think that more than 50% of teachers are not really connected to technology and I would say that the ones that are a little technologically savvy are losing it because technology moves so fast and therefore you get disconnected and you loose and so therefore the kids loose a lot of things that they can be doing.

One thing is I took the common core writing essentials through Pearson that was required by Casey's boss that we all take an online course in common core. They paid for it but we had to signup for one of six: two were on math, 1 was on writing, 1 was on reading. I signed up writing and then I dispersed everybody in my staff coz we are so small, you do this one, you do this one, you do this one but I put majority of us in writing because I thought that was our very weak component in our school. In the writing essentials it really talks a lot about technology and it says these kids need to at least be blogging, e-paling, finding ePals around the world. They need to be communicating so that they learn how to express themselves at a very early age. So we started working on trying to set that up and the system says we're blocked so then I call the IT department and they say, "What you are talking about doesn't sound like anything we would block." So now I'm back to someone who knows a little bit about technology that comes in once in a while to work with people to see what's going on. A little problem to improve education we're still not there yet and we started in October so in 5 months. We'll get there by April so it will be good for next year but this year we lost 6 months of maybe writing once a week maybe communicating especially if we can learn how to Skype next coz there is a lot to learn about the world and we are global now so you see it in commercials and it looks easy but to do it.

Interviewer: **You were on a different curriculum and then you were required to adapt a different curriculum that's not investigations.**

Principal 1: MSA background even though he is very gifted in his talents reading and math and science as an educator very gifted he was embedded into investigations that program that curriculum that's the way you teach math and with his knowledge you take his knowledge and that curriculum and you have a very good teacher. Then we went from a coach when we were in SRA [Science Research Associates] math we went into envision next which is where we are now and the coach's thought was they were here at the bottom. Envision in her eyes to Line Officer was a little bit of Singapore math and a little bit of a higher level but investigations is up here (SRA lowest, envision middle, investigation highest). That was her thought so basically last summer what happened was all the teachers that I went to conference with were aligning and communicating the curriculum for the school year for investigation but our teachers were aligning investigations but we were not getting professional development in Envision and so there is a big disconnect and it would be nice if there was a connection again going back to what we are doing is everybody that's in investigations is here is your world and if you are in another one you can be in this world of communication where you can become a better teacher but let's connect you with everybody who is in Envision and maybe has the same kinds of kids and you can share ideas like on Pinterest. It would be nice to have a Pinterest in connections of if you are an Envisions teacher or investigations teacher.

Interviewer: **What is the SRA curriculum?**

Principal 1: There is a lot of them but the one they chose four years ago was SRA. I'm not sure what SRA stands for but it's mainly for when I was little coz I was in the program it was for low achievers or special education students so it's real computational oriented but it doesn't go from the concrete to abstract. It only stays on one spot.

Interviewer: **Why was that curriculum chosen?**

Principal 1: Because only 1 student had gained proficiency. The year before only 1 student had gained proficiency that's why they chose the very basic.

Interviewer: **So that was with the expectation that when they start there and they achieve proficiency at that level then they could keep moving up?**

Principal 1: Yeah

Interviewer: **Was that helpful?**

Principal 1: It was very helpful in my opinion in reading because they did a very good job in teaching phonetic sounds and how to pronounce letters and how to pronounce different parts of words and then phonics they did a really good job and then they had a real nice program built in for working on fluency and stuff like that and so in reading we saw better results than we did in math. So in math I would say it wasn't good. I don't know if not connecting kids to every aspects like giving them robust vocabulary and making sure they are writing. I worked on the same group you did yesterday and we worked on fractions and I said guys I'm not very good at math. I can only show you my way but we'll only do 3 problems in 40 minutes and you do them and we'll all talk and you talk about how you are being taught and how you are solving it and then if you don't mind I'll tell you my way and how I'm being taught and if you have questions all we'll do is communicate and that's so we will learn coz you'll be doing it. And they felt very comfortable because I said I really need you to be honest with me and share with me if you feel you can do this problem so I kinda showed them. One of the things is that disconnection and technology is supposed to have improved that and I think it has but not to an extent that is really that the real strong professional learning community of colleagues that are working together to help each other to create more outcomes for students. That's a difficult task. I don't know what you want to take on.

Interviewer: **In talking to teachers on Saturday, I talked to 2 teachers, and they were telling me they want to use technology in the classroom but it's restricted. "You can't go to Khan Academy, you can't go to Youtube." But the interesting part is that teacher gave up she was like I can't get on it so I just don't do it but the other teacher brought her phone that she connected to the projector and would show the videos. So you see a generational difference, you see a determination, and I think it's the comfort...**

Principal 1: That's a great point.

Interviewer: **If the computer doesn't work I'll go find something else that will work.**

Principal 1: Because you have a little bit of technology savvy this tool doesn't work I'll try this tool.

Interviewer: **Right. So even little things like that because I think if Joanna saw that she would say "Oh! I can do that too!" because she's technology comfortable but because she didn't grow up with it or does not interact with it as much the tools are limited. But if she's pointed to the tools I can see her using the tools. But then there is a group that is pushing back. They are like "No, I can teach I don't need technology to help me." So in your school what do you think would be helpful to connect the teachers and give them such resources?**

Principal 1: I think one of the biggest things that our school needs is the students working and struggling through because it seems like the generation that really has learned technology and are very smart because they learned how to read, they learned how to write, they had to learn a lot of things in order to stay up with everything is that the kids do more and the teachers do less. It's probably convincing them we need more time in the computer lab or more time on the computer and less time of them talking and we need to know how to go through the restrictions in order to, if it's good educationally, how do we make it work. It's an educational level with teachers in technology and me. There is a few men that about a month ago they said let's start a little Bible club on the computer if you see something that really inspires you just send it out but blind copy everybody. I don't know how to blind copy so when I sent mine out I sent to 10 guys and they said "Pendejo (stupid) what are you doing? You're supposed to blind copy!"

One of the things that they told you is it would be really good is if you could spend a whole day and I could tell the teachers she won't bring a recording. She just wants to have knowledge in technology what works, what doesn't work, can you think of anything that can fix education by looking at your smart board and your computer and your smart phone and all that stuff. I can ask them that. one of the teachers who doesn't go to MSA she's gonna retire, she doesn't want anything to do with technology but she spent 44 years. She can go off and have a good life and relax but [the teacher] it would be interesting to pick her brain, she's from the Pueblo, she could tell you the history of technology in her eyes, any training they may have gotten or whatever. Teacher was my math coach the last

three years. I removed her and put her back in the classroom because of the budget one, but two, she never was in the classroom but she was working on the computers, she was working but she wasn't doing the work she was supposed to be doing. But she's got 12 years experience. Teacher was a principal before she came to work for me for my wife and she retired and now she is back teaching because she loves the little ones but she was a reading specialist so probably have a lot of information and knowledge. Teacher is back new from being in the DPA. She was in the government. It would be interesting to talk to people just one-on-one in the area of technology an education and see what they tell you coz I think restrictions would be a big thing but I also think how do we gain information how do we gain knowledge in order to, not make their job easier make it more beneficial. There is so much out there. It's like in education there's so much money out there and the kids are not learning. There is but it's splattered all over the place it's not concentrated.

Interviewer: **Another thing I was thinking about is I think some of the problems in the classrooms, even though there is the struggles and the disconnections from the teachers' perspective is for the kids themselves, I think, from my observations with my kids and my own experience coming from a British education system where everything is memorized where you cram and take the test hopefully you pass and move on to the next level and forget everything you crammed before. There is no time to connect what you are learning to everyday life so I was thinking of having something, call it Science for Everyday Life that is taking the kids outside the classroom and go through the daily things they do if it's boys, they play soccer after school, and start learning what is the math and the science that we do subconsciously that we don't think about that is connected with the activities we do and maybe that way when they start opening up and seeing oh, I thought science was hard but I realize I use 10 different theories of science everyday. I wonder if the kids start connecting the classroom to the outside world do you think that this would be helpful for both the teacher and the kids?**

Principal 1:   If you can connect it [technology] to the common core and to the standards and put it in there also so the teachers know that what they are teaching that day is connected and is gonna help them on the test. So this might be the reading and writing aspect of that which aligns to this standard or that standard. So if you took the science standards, which there are not very many but once you look at them, they are very detailed. I think if you can connect

back to it because sometimes a large part of people are still from that kind of system like I need to make sure I'm meeting this standard or this requirement or that requirement but I think that would be a very enjoyable way of learning as long you could connect some reading and connect that they are meeting their standards. They don't have to talk all day to do that. Again the kids are doing it. You need to take 10,000 steps a day to stay healthy minimum. And did you know let's count how many steps to... You're doing a little health, you're doing a little math and writing, always giving them feedback "Well, you said you only go to Gabriel's house on Thursdays that means you're not taking those steps on Thursdays" or whatever, I mean as one example.

Interviewer: **I think story is lacking in schools and that's where the kids are loosing it because when I come to school I have this information overload that I can't wait for 3 o'clock to dump so I can start my story. But if you bring your story into the classroom and the class becomes an addition to your story then it makes more sense. For example in science if I know there is a topic coming up, say climate, and have the support of students learning why the snow is happening, why the storms. So when the kids get to the topic of climate in the classroom then they are like oh yeah, we already know why it snows and they can explain it. So when you're teaching it becomes easier because the kids have already started opening up their minds to it.**

Principal 1: And the stories is something that the Natives at our Pueblo and I think on other Pueblos strive on because they do hear stories from their grandparents and they love it. That is part of their educational process is through the stories because our language isn't written. It's gone from generation to generation since the 1200s being taught through stories, through conversations, and that's a good way. All we are doing is connecting it to the common core standards with the reading and the writing all kids, but I know Pueblo kids love that. And it will be connected to science but then you get all this other stuff out of it: math and reading and writing and speaking and listening and investigating and critically thinking...

Interviewer: **And also comes the part you talked about connecting with others. These kids can connect with kids from San Felipe.**

Principal 1:	Or they can connect with a tribe that is in Mexico that supposedly they took a group of adults 10 years ago and they think that there are from the same people, they look alike. It would be interesting to connect and share stories like that but you're learning science and math and reading and writing they don't even know it. That is one of my goals when I took this course. It was like there's so much learning to be had with this ePal or with this connection especially to another part of the world. I think kids would be like in 1st graders going home and say, "Mom I talked to somebody in China today."

**Interviewer:	And that's LANL CPO's dream was, even when we were developing this MOOC he asked "How can we make it international? How can we make kids in New Mexico speak to some kids in China or India?" Once we have something we can develop that culture in schools here then it's easy to say well, here's a school in China we spend 6 months...**

Principal 1:	Have you heard of Hammer schools, college, there is 4 in the world, maybe there is more. You know Arm and Hammer that makes baking soda and the products. They have 4 schools in the world. I don't the complete history and I can be a little bit off but one is in Las Vegas NM and it's the Arm & Hammer world college. And they take 2 citizens that can apply from countries and the whole reason back in 1980 or something like that he started these in 4 parts of the world is he wanted future leaders to come together and work together in science and math and all the subjects in order to know how they were going to keep harmony of the world and for future generations. The only way they saw was they need to have this connection. They need to have a relationship. The have a lot of world known professors that teach there and get paid vey well. It maybe worth your while with this project. It is in Montezuma which is four miles outside Las Vegas to look them up and see if you can schedule a meeting with them because these kids leave but they have to stay connected and I wonder if it stays connected with global issues or whatever case might be coz I remember when I was in college in 82 83 81 they had the Beach Boys at their graduation come in to little Las Vegas and give them and their parents the big performance. I'm wondering if there is a connection because there's gotta be a good information technology structure there that may not relate to teachers but it may give you an answer or give you some more answers in developing especially science coz that was their big component was technology in science in solving world problems. And to solve world problems in how you are treating the environment here versus over there. I mean there's so much through solving problems you can use

technology and really make the kids be interactive and critically think. I think that's a really good project. And you see a lot of things on the Internet, like I said you have to search. You see a lot of things in reading and in math and I don't know if you see a lot of curriculum enhancement for science. You see a lot of good articles and good lessons on just this but that lesson is pretty much in the classroom. It could be a week project where 2 days we are in the classroom but 60% is outside the classroom and I like that idea. I like it a lot. And we are not doing science in this country.

It's like I told my teachers that taught science I said I don't want you to be in the lab everyday. That's not my point but I do want them to be exposed but that's a great way to expose them and then into Pinterest.

Interviewer: **I really need to know Pinterest because if that's how teachers know how to connect then I better know it because I want to know what they want. I want to know what they use, what they are comfortable with and see whether we can turn that around for their benefit. On the other hand is for the students also because the more the students come into the classroom loaded the easier it is for the teacher to break those walls to get the students to understand. So, would that be something your school would be interested in doing?**

Principal 1: It would be fascinating. What I want to show you when you get there is teachers want things in front of them. We have all these kits from hands on learning. What I would like you to do, if you want to, is spend at least the first 2 hours looking through all these kits and when you talk to them ask why haven't you used it or did you know you had all these resources that you could be doing storytelling I'm looking at developing or this is the same old rhetoric. This is the same thing that kids have been doing for 100 years and it's not gonna improve education. It's not gonna enhance learning. I'd like you to look at them to give you ideas with lessons but also to see if that's something like you may at the beginning of the year with your project here's what you need as a resource kit for this school year. Because teachers are gonna want to know when I do this this week, or that unit I'm gonna need protractors or whatever and maybe that could be a part of it. Because teachers need the whole picture in front of them. But I like it. I like it a lot. When do you want to come out?

Interviewer: **I don't know. I will have to ask MSA.**

Principal 1:   You need to spend a whole day because if you spend an hour with a teacher in their classroom you get to know them a little bit and then when you talk to them they will be a little easier and then you also get a vision of what a teacher does. I know that after a month last year I'd been out for 10 years after about a month I could really relate to them again and that's what you would like is when you're developing this there's teachers you can go and sit in their classroom that way you learn to relate to them. You know their world that they are living as you develop the project. How long do you have to develop it?

Interviewer: 5 months

Principal 1:   So in the end of 5 months you should have a product. You could do one grade though. Do you have all the common core state standards?

Interviewer: Yes, I have the booklet but I don't know what that means because I'm not in the classroom. Yes, I can get the information through the web and resources posted out there but are those helpful to the teachers here?

Principal 1:   I think you should just look at what are they per grade level in science and what does that mean in terms of a story? What does that mean in terms of materials needed? You need to come out and talk to our teachers. I think that would really help you with your project. I really do coz the technology is, I use the word discombobulated. It's there the answers are there but how do you bring it all together and then how do you do away with all the restrictions and how do you gain more information especially as an older educator or even you don't have an educator, an educator that's not.. when you tell somebody they are illiterate they take it the wrong way but when you are technology illiterate you really are technology illiterate. But if you are more literate you could create more solutions for yourself.

Interviewer: So what is the best way to do this? Should I meet all the teachers first and explain what the project is about and then visit the classrooms or visit the classrooms and then talk to them afterwards?

Principal 1:   What I can do is when I walk around the school I can say Josephine is coming with no tape recorder or book or anything like that, especially to the Navajos but what she's doing she's working on what kind of information technology system could be enhanced,

made better, or developed in order to make your teaching job more effective to students. That's all she wants to focus on and talk about. And then when you get to know them you can talk to them about the whole process. But that's what you need to do in the next 5 months. That would be fine with me. And you and Lorenzo can come down together coz he'll go into other classrooms and he observes math and then he meets with them about the math coaching and what we're trying to accomplish and stuff like that or he can go with you it doesn't matter. They are very comfortable with Lorenzo. They don't like a lot of people coming in their classroom a lot but that's just natural.

Interviewer: **And it's disruptive.**

Principal 1: One of the things that I really like about Lorenzo and one of the things that I think will really help in the next three years is when I have a teacher missing he'll go teach math. He'll teach them the lesson so maybe the day that you guys come out there, there might be one teacher missing and he could just teach and you can go visit classrooms and then you and Lorenzo can look at the science kits and stuff like that and we can talk more and we can have a good day and we see if there's not enough time and you wonna do it another day that would be fine too.

Interviewer: **How are we doing on time?**

Principal 1: I need to get back because I forgot it's Valentine's day and they have a Valentine's party at the school. I probably need to get back but that doesn't mean we can't schedule another time. Did it help?

Interviewer: **Thank you for your time. We'll talk more at CENAC.**

Interview: Teacher 1

June 16, 2015

Interviewer: We'll start with MSA. What do you think the role of MSA is, from your perspective?

Teacher 1: From my perspective, I think the role of MSA was to increase the academic performance of students that were leaving the BIE schools and the northern New Mexico schools. When we first started, I believe that was the intent and that was kind of what we went in understanding is that ... Our students, when they go into careers and then they go into the professions that Los Alamos National Labs requires, there weren't a lot of students from northern New Mexico for whatever reason ... Socioeconomics. But academically, I think that the role of MSA was to increase the number of students that could go into those high-paying jobs so that here was a funnel of good-working, good, intelligent people that were in the pool of applicants to fill those positions, which I don't think there was.

Plus secondly, I think it was the role of MSA to just increase the professionalism and the intellect of the teachers because, I think with MSA's role, it's not to directly show us how to teach. It's how to make us better, and I think that's what a lot of people kind of lose sight of - is that we're here to make ourselves better. We're not here to learn how to do a Harry Wong strategy. We're not here to learn how to use [Marzano 02:03] in the classroom, but it's how we can incorporate all of these different ideas, these structures, these ideologies into our own learning so that we become better. In turn, that makes our school better and that kind of filters down into the students, who then become these wonderful, academically-proficient students that go out to college and then get jobs at Los Alamos National Labs.

I think that is the role of MSA. Increase teacher knowledge in the areas of math and science, and to also increase the proficiency of students that are exiting our northern New Mexico schools.

Interviewer: Okay, cool. What is your professional goal?

Teacher 1: My professional goal ... I'd really like to be a principal one day. I always said that I never wanted to. I never wanted to leave a classroom because I have so much fun. It's energizing to be with

the kids and to feed off of their energy, but as I'm growing in my profession I see how what I'm learning could help other teachers and how that role isn't just for me in my classroom anymore. It has suddenly broadened to where I kind of feel like if I could take this information and lead a professional development in another school, or in an environment where you're academically speaking with teachers about common formative assessments, or how can we engage students better? How can we differentiate our instruction to better meet the needs of every student in the classroom? I think that's my goal in my profession right now. But that's somewhere down the road. I'm still having fun teaching.

Interviewer: What grades do you teach?

Teacher 1: I teach third-grade math. Last year and the year before, we piloted departmentalizing our instruction in third grade. Two school years ago we started at the end, or second semester, where I would teach nothing but math and science contents. My partner teacher would teach all of the reading and reading-related subjects, including writing and social studies. We carried that into this previous year and we had phenomenal results on our end of the NWEA [EA 04:44]. We can only wait and see how the PARCC results will come back.

But as we were walking around, my partner and I - we definitely saw the level of understanding that our kids showed on that PARCC test. As teachers, we walk around and we watch how the kids are performing on the PARCC, and we can't really do anything else. It was nice to see all of the information that they were able to put on a sheet of paper, that they were able to put on an answer document, where they took a picture - they took that image, they took that concept, those facts, that language, the procedure - everything was in there because we knew what to actually teach them.

When you think of transferring that information and having them take it from the classroom aspect into an application aspect, where they're actually demonstrating, "Yeah, I know this. I can do this. This is easy." That's their response when we were done with the test. "That was easy. Why's everyone on the news freaking out? There's nothing big about this test." That's what you want, is when you can go in with confidence, into something like that and say, "What are you guys talking about?"

Interviewer: Wow, that's huge.

Teacher 1: That's what we started teaching last ... Well, like I said, year and a half ago. But we've had really good results.

Interviewer: You're planning to continue with that system?

Teacher 1: Yes, yes.

Interviewer: Okay. How has MSA contributed to that? How is it contributing to your professional goal, and how you've seen yourself develop professionally?

Teacher 1: Honestly, in the last year there wasn't the MSA support that we had in maybe the first year when we had Melissa there. When Melissa was working with us in second - I was a second-grade teacher. She was there before she had the baby and she was really working really closely with the teachers and trying to get us to do our own peer evaluations and things like that. We had a lot of grade-level meetings in that year, but then as the years progressed, there was some change in personnel.

Then Carol came in for a while. Carol and I really didn't mesh all that well, so it was kind of hard for us to work professionally because some of my ideas about teaching contradicted what she wanted to do in the classroom. There was that butting of the heads at some point, and so it's difficult when you have that. I understand there's things that want to get expressed, that want to get kind of pushed into the classroom, but in the end we're individuals and the teachers kind of have pushback when you try to show them a different way of doing something. "Well, I have my own way to do it and I like doing it like this." It's nice to try something, but in the end if you don't feel comfortable with it, then you shouldn't be forced to do it. That's kind of my philosophy.

Then, in this last year, we had Randy. Randy spent a lot of time in the coach's area. Every time I'd walk by, "Hey Randy, how's it going?" He helped us with our data quite a bit, but there was no direct support in the classroom. He didn't come in and observe. He didn't come in and work with the kids. That's one thing that Carol did. She came in and she actually watched what the kids were doing. She worked with our common formative assessment.

That direct support was nice to have. I kind of feel like the support, to answer your question, from MSA has kind of diminished into the fourth year. It's maybe something where they think, "Well, we

don't really have to work with them all that closely because we've already had three years with them." If that's the case, then we shouldn't be in the program. But that's my opinion, that we shouldn't be into a fourth year if we're already good to go. I've heard that there's some other reasons why we're in our fourth year - because the whole school is not participating. But that shouldn't be our fault. Did I answer your question? I think I kind of went off on a tangent there.

Interviewer: It's good. You talked about how MSA dynamics have changed and how that affected you. How does that affect your long-term professional goal? Is it what you're learning at MSA? How is MSA helping you achieve that professional goal?

Teacher 1: They started - which was really nice - Lorenzo and UNM, they really got us started with the Master's program. But the Master's program was to go into coaching. I didn't want to go into coaching. I wanted to actually take the courses that are going to lead me into my licensure for administration. That wasn't a good fit for me and that's the only option that we had, was to go in and get a coaching-related degree. It was nice to have that support, but it wasn't, in the educational world, differentiated for everybody. It was a whole group, take it or leave it kind of thing. That didn't really help me in my professional goal.

Interviewer: Did you take the Master's program?

Teacher 1: I started to, at least to get some of the courses. But no, I didn't finish it because I ... Then I transferred to Highlands, so I'm going to be finishing my courses at Highlands. Hopefully some of the credits from that other program are going to transfer over, but I don't know. I'll have to wait and see.

Interviewer: You're still in a Master's program, just not the MSA one?

Teacher 1: Right. I've had to out and kind of do it on my own. In the end I need to have a program that allows me to get that administrative license at the end. That's kind of the carrot that they have at the end.

Interviewer: That's really cool.

Teacher 1: Yeah, but I think support kind of just diminishes after the first year because so much is given to the first-year people. I understand that.

Interviewer: What kind of support would you like? What does support look like for you?

Teacher 1: I think the best thing with MSA is the rational ... As math professionals, the knowledge that we get from Dr. Kitchen is just phenomenal. You can go into a lesson with better understanding of how different approaches can be taken just because you know the content so well. That content knowledge in math, I think, is so important because before I went in, I didn't have nearly the understanding of fractions that I do right now. Just to be able to reason about a fraction before you even approach a problem ... That's something I was never able to do. But through the content knowledge, I think right now I like fractions. But, like a lot of other teachers that don't go through this program, they don't like fractions because they don't understand them.

When you're transferring that knowledge into a lesson and you're able to see how different kids are approaching that topic and coming out with a different solution, the roadmap is endless. There's so many ways to get to point Z and if you don't recognize how to get there, how can point A to Z work? How can point ABZ work? How can point A and Z work? Then, at that point, you don't have that understanding. You lack that differentiation in the classroom. My coffee is getting cold.

Interviewer: I'm getting cold. Take that inside? Do you want to sit out here?

Teacher 1: How many more questions?

Interviewer: Just a few more.

Interviewer: You're talking about being a leader in the education space. What's your vision? What do you think the goal of education is?

Teacher 1: I believe in the Common Core. A lot of teachers you talk to do not like the Common Core for whatever reason, but I think that the Common Core and the intent of the Common Core is to get the kids to a level where they're able to perform in college. They're not struggling in college. If that structure is followed every single year, the way that it's intended, then it can work. I think the role of education is to provide kids with that opportunity, where if they do choose to go into college, if they do choose to get into a career like with Los Alamos, that they're not struggling. It's not something

where they're lacking necessary skills - the basic understanding of fractions, for example.

That, I think, is our role as a teacher - that we need to really address every single part of that Common Core so that they're experts in fractions when they leave third grade. They're experts in multiplication and division when they leave third grade. I have to understand as a third-grade teacher that that's my responsibility. If my responsibility is perceived as covering the lessons from unit one to unit seven, then I've kind of lost focus of what the Common Core is intended to do.

Interviewer: That's good. You're working with majority or almost all Native-American kids, so do you see that that is giving those kids an option to get out and be in the world? Is it something that is perceived? Is it something that can be embedded or ingrained in education? Would that make a difference?

Teacher 1: It's hard to see at third grade. The only thing they're doing at the end of third grade is they're going home and they're playing for the summer. They're not applying for colleges. They're not thinking about what they want to do when they're eighteen. I'm hoping that with the foundation set in third grade, and when they come back in fourth grade, they look at each lesson and they say, "Oh yeah, I remember this. I know how to do fractions. Oh yeah, let's learn something more about fractions." Then a fourth-grade teacher does their job and they give them every single piece of knowledge that they need to move on to fifth grade. Then they go home, they play, and they enjoy their summer. But then in fifth grade they come back, "Oh yeah, I remember fourth grade. I remember third grade." That cycle continues and then, eventually, when you get to the top of the stairs, then at twelfth grade, then they're able to say, "Oh yeah, I remember third grade. I remember fourth grade. Oh yeah, I remember fifth grade. Now I'm ready."

At my point, I don't really see the end result. I won't see it until later. I'm hoping that by me following what I believe, that I do give them that foundation.

Interviewer: The foundation is important.

Teacher 1: It is, because if they go into fourth and they struggle, then they're behind. If they go into fifth grade and they're struggling, they're behind. That cycle then has to be broken. When they leave a grade

level, we have to feel that they can do this. If they can't, then we
need to intervene. We need to do the things that we need to do.

Interviewer: Do you feel like your vision is a generally-shared vision in
your school?

Teacher 1: I don't think so. I really don't think so. I think it has come down to,
"This is my classroom. This is what I do, and as long as I cover the
lessons from lesson one to lesson thirty, then I've done my job."
Overall, can I really say that with one hundred percent proof? No. I
don't go into other teachers' classrooms and watch what they're
doing. As an administrator I certainly would. I'd want to know,
what are we teaching today? I'd want to be in the classrooms.

That's the other drawback of being an administrator. I see our
administrators being pulled away for the administrative duties.
That's hard to see because then you're not working with the
teachers. You're being an office person. You might as well go have
a cubicle in New York because you're not in the classroom. That
needs to be changed. That needs to be changed where principals
don't have to do so much of that paperwork. I hope that when I'm a
principal, that I have that option to delegate that responsibility to
somebody and say, "I don't want to do that. I want to be in the
classroom and I want to be working with these teachers and I'm
going to be working with these students. I want to be developing
our school." That's what I would want to do. But is that always
ideal? Is that always something that's possible?

Interviewer: Anything is possible. We'll transition to tech. What do you
think of the MOOC?

Teacher 1: The MOOC? When we're in summer, it's a great way for us to all
be together. But then when we started going into August, I went
back in there and I looked at it and there wasn't anything new.
Then I went back in there in September and there wasn't anything
new. At that point I'm thinking, "Well, no one is using it anymore,"
so it's not a place that I would frequently visit. That's just the way
that I remember it.

I think it could definitely be improved by having more videos
about education. One thing I like to do is go onto YouTube and
just look at the different ways that teachers are doing their lessons.
The way that they're working with kids, different techniques. If we
had more videos on there, I think that would definitely be a place
where that would be an education portal. But also, the other thing

is Khan Academy. I think we tried to do something like that where the teachers were posting their lessons and, this is how you do a lesson on fractions. I wanted to see more of that stuff, but then nothing ever happened with that.

I was looking for some of the lessons we did at the BIE that one summer, when we were first into the MOOC, and I think we were using Penultimate and we had that PowerPoint that we were trying to incorporate into it. Overall, we were trying to get a lesson that was similar to something I think you would find on Khan Academy. But once again, there wasn't any of that. I couldn't find it for whatever reason. The technology aspect of it ... I think if it were more of the portal, then I think that would be more interesting for people to go into.

Interviewer: That means content that is already made and there, not you guys making the content to go into there.

Teacher 1: Exactly. If it were our proprietary content, that would be great also. But then to also mirror that with what teachers are doing in Massachusetts. What teachers are doing in Florida. What teachers are doing in Singapore. Because it's not just about our little section of the world here. We're seventy-some teachers, I don't know. But we're a small, little niche in that community of teachers. For us to say, "We're the best. We don't want to see what anybody else is doing." That's pretty ignorant right there.

That's pretty vain also, because we want to see - maybe somebody over in Australia did this awesome lesson on fractions. Why can't we see that? Why can't I do it like that? I think if it were that portal, where it had other content that was linked to the MOOC, I think that would make it a place where you could basically setup as your homepage and you could say, "Oh look, there's a new video that was posted. I'm going to click on that." Instead of having the Google search engine, that's your homepage. Maybe that's something that the BIE 22:48 could actually put onto our homepage. That's my idea of the MOOC.

Interviewer: That's good feedback. Then we know how to make it better. If we were to put together a tech team, or a team that can collect those resources and start posting them out there, would you be interested to be part of that team?

Teacher 1: At some point probably no, because I have so much going on. Does that take me away from my classroom? Probably.

Interviewer: No, not really. For example, you say you are on YouTube a lot, right? You find a YouTube video and you think, "Oh, this will be helpful to somebody else." You have administrative rights to go in and do more than just the general teachers. Would that be something that you would like to do?

Teacher 1: Yeah, totally. Yeah, you're right. If you're looking at the video, you can copy the link and then just go into the whatever the source is and then it would link to the video. Yeah, that'd be easy. As you're just perusing the Internet, "Oh yeah, I like that. I think I want to share that with everybody." Yeah, totally.

Interviewer: All right, cool. Then I guess I'll think about how we can do that and then give you admin rights, and you can do that. Okay, cool. That's it. That's all I had unless you had another comment.

Teacher 1: That's it?

Interviewer: There's one question, and you can say on or off the record - I've just been curious. You were in the Navy.

Teacher 1: Yes.

Interviewer: How did that end up leading from Navy, to teaching, to teaching third grade? I find that fascinating.

Teacher 1: Well, check this out. I went to college first. Didn't know what I wanted to do in college, so I went into journalism. I wanted to be a photojournalist. I still like photography, but that's what I wanted to be. Didn't like journalism. Then I went into art and I wanted to get into advertising, thinking I'd love advertise- excuse me. I love advertising and designing things that catch people's attention. I still do that in the school. I think educational advertising is the one of the things that I want to develop. But don't steal my idea.

Interviewer: I will not.

Teacher 1: I went into that, graduated with a degree in art advertising. But then I went into restaurant management out of college. Yeah, look at this little bouncy ball here. I went into restaurant management, and then I went into the Navy. From restaurant management I went into the Navy. Then I spent four years there. I was an intelligence analyst. I got to do all of the fun stuff. I was the Jack Ryan, but without the spy stuff - when he was an analyst. "I'm just the

analyst." That was me in the Navy. I got to see the world, got to do all of the fun stuff.

But then four years later, I got out and had intentions of going to Washington D.C. to be an imagery analyst - satellites and all of that. Had an offer to go out there, but got home, hung out with the family, decided, "No, I don't want to leave the family again." Mom, dad, brother, sister, all of that. I decided to stay in New Mexico. Then I got a job in finance. I worked as a finance specialist, doing mortgages and loans and things like that. Then I left that and I worked for America Online for four years. That was the biggest one after the Navy. But then I worked for America Online in the sales department, which is like, "Hey, I want to cancel my account." "Oh no, no, don't cancel your account." I did that for four years. Great money, way more than I earn as a teacher. But they closed down. They laid off everybody, call center closed in Albuquerque.

That's when I said, "Oh well, my mom is a teacher. [inaudible 27:16] teaching. I like my nieces and nephews. I always have fun playing around with them, so I'm going to try out education." Then I applied to be an educational technician with the Rio Rancho public schools, and they stuck me in a kindergarten classroom. I just loved it, fell in love with it. Teacher that I worked with was great. She kind of helped me, molded me, and kind of made me go into teaching full-time. Then I got my teaching certificate - because I already had my degree, I just needed to get my teaching certificate. Got my teaching certificate, then third grade, fifth grade, third grade in Rio Rancho.

Then the position became available in San Felipe. Then I decided, "Oh yeah, I've always driven by there." [Mauda 28:13], actually - when I was working on my teaching certificate - she came in and she spoke to one of our classes because she was doing her Master's program or whatever over there. "Oh right, San Felipe, that sounds like a pretty cool school." I know this lady, she came and talked to the class and she seemed pretty smart, so it sounds like a great place to work. Then when the position became available, I applied for it and I got it. But it was in eighth grade. I made the transition from a third-grade classroom in a public school to an eighth-grade classroom at a [BIE 28:49] school, which was tough. That was a hard transition. That was a hard year. But made it through that, then I went down to sixth grade. Had a horrible administrator in sixth grade. Nameless. Moved me down to second grade and then I stayed in second grade. Now third grade. That's how Navy, third-grade teaching, little bouncy ball here.

Interviewer: That is a journey.

Teacher 1: That's forty-two years of bouncy ball.

Interviewer: Oh my goodness. That's quite an impressive journey. What did you find difficult transitioning from a public school to a [BIE 29:35] school? Or was it going from second to eighth?

Teacher 1: I think the level of support from families is tremendously different. In third grade, I had parents that were coming into the classroom. I had parents that showed up for Parent Day. I had all this parental involvement, that, when we go over to the BIE, it's just not there. There's a lot more social issues. One of my kids, for example, his mom just up and left one day. Just out of the blue he wakes up and she's not there. Asked the family, "Where's Mama?" "She left." She hasn't been back since.

There's things that happen in a community like that - and it's hard to fathom - but socially, it's kind of tough, which makes you feel for the kids even more, which makes you want to make sure that they have that opportunity so they're not dependent on anyone when they get out of high school. That they're not getting pregnant at fifteen. That hopefully you instill some kind of values in them, some kind of morals - you can be that role model for them. I think what we do is very important - not just for their academic career, for them growing as a person.

Interviewer: You feel parents being involved in the classroom makes a difference?

Teacher 1: Huge.

Interviewer: How?

Teacher 1: Maybe that's something that can be incorporated with the MOOC, is to get a parent page set up. I don't know. The parents, I think, need to feel welcomed at the school. I know a lot of the parents that I talk to, "Well we have to have a background check, and we can't go to the school, and we don't feel welcome." I think that has to change.

Interviewer: They have to have a background check?

Teacher 1: They have to have a background check to come into the classroom.

Interviewer: Really?

Teacher 1: Is what we're always told, but I break the rules.

Interviewer: Was that always the case, or is that something new?

Teacher 1: That's been, for as long as I can remember, that, "Oh yeah, if they want to be in the classroom, they've got to ...

Interviewer: Even in the public school?

Teacher 1: No, not in public school.

Interviewer: Oh, so that's a [BIE 32:10] thing?

Teacher 1: I go to my son's school in Rio Rancho. He went to Cielo Azul Elementary and I wanted to go and just be in the classroom with him. You just go, they scan your ID, they gave you a visitor's pass, and I spent the whole day with him. I had lunch with him, went out to recess, and there was no issue.

Interviewer: Why do you think it's different for [BIE 32:28]? Why is that important?

Teacher 1: I do not know.

Interviewer: Then that adds a barrier for a parent coming into the classroom.

Teacher 1: I think so.

Interviewer: Because if they have a history, "I don't want the school to know," or something, then they can't ... I did not know that.

Teacher 1: I don't if it's that they're concealing anything, but just that the fact that they have to go through that process of-

Interviewer: The process, right.

Teacher 1: It's like, "Why would I want to spend this money?" - I think there was a charge - "to get a background investigation done and then ...
"

Interviewer: Just to bring cupcakes to and spend the day-

Teacher 1: They still bring cupcakes, but to just come and spend the day with their kid ... I haven't had that either. Where the parent would just come and stay the whole day. They'll come and maybe sit for an hour once in a blue moon. I think they need to feel welcome. I think that parents also need to have their own professional development because this new math - they don't get it sometimes. In second and third grade, what we do is we work with the kids on decomposing the numbers to add them and subtract them and that's a big concept with us because we want them to understand that place value. We want them to understand that they can group similar benchmark items like all the hundreds together or the tens together.

The parents, when they get it, they have their own traditional, old-school way of adding and subtracting. "Drop the one and carry the two." That kind of mentality there, where we're doing one thing at school, but it's not being reinforced at home - it's kind of putting the kids in the middle, where they're saying, "Well, Mr. Wetsel said to do it like this and this is how I do it." "No, don't do it like he said. No, let me show you how the quick and easy way to do it is." Then they show them. Then we get them the next day and they're doing what mom and dad show them at home - how they learned how to do it in 1943.

There's battles we have to go through, as teachers at home, where, I think if we could pull those parents in like once a month, then we could show them this is so much easier and it's way more accurate than what you're doing. You're reinforcing the fact that a one - when you carry that one, it's a one. It's not a ten. You're not saying carry the ten. You're saying carry the one. What are you really telling your kids at that point?

If we had that opportunity to really do something like that, I think the parents would be more welcome. They'd be like, "Oh yeah? Okay, that does make sense." When we could teach the parents what we're teaching, what we're learning with a rational, where we can reason - four eighths, that's a half. What is three eighths? Is that less than a half? Is that more than a half? We would know, we

could teach them. Think about it. If you have four eighths, but then if you have one less eighth, then that's smaller.

When you have a number like nine sixteenths - or not even nine sixteenths - nine tenths. Nine tenths, is that closer to one or is that closer to zero? When they understand that numerator and denominator the way that their kids are being taught to understand it, then they could reinforce what we're doing at school. I think parent knowledge has to be brought up for them to really support the kids at school. Because I have parents come up and say, "You know, I just don't understand what you guys are doing. I don't get it. Can you help my kid in the morning with their homework?" "Okay."

Interviewer: Then that puts the parents one step back further even.

Teacher 1: Yeah, maybe that's it too, is that they feel that step back. Then they don't feel like they're maybe smart enough to be in the classroom. They may feel intimidated by being in the classroom because in third grade, my kids are doing their multiplication facts and they're good. By the end of the year, I have kids that are finishing a ten-by-ten grid - just random numbers - in under three minutes. That's just knowing the automaticity of those facts is just solidly ... It's learned at that point. Where the parents - they haven't done it for a long time - they don't know maybe the facts as well as they can see their kids doing it, so there's some intimidation there. There's some confidence issues that could be overcome just by inviting them in.

Interviewer: That's very interesting. How do you envision - you mentioned the parent's page on the MOOC - how do you envision that bridging that gap, or at least lessening that gap?

Teacher 1: I don't know. That was just a quick, little brainstorm. But if you were to incorporate some kind of parent section, how is it different than any other website? With any other website you have tabs at the top or you have different links. On the bottom you have the contact [inaudible 37:55], you have more information, you have all these links. Would it be as simple as adding a link on a homepage? The MOOC homepage parent section. Maybe that could be disaggregated into the different content areas. Maybe that would have a section of math - third-grade math. Maybe it could link to the standards, because sometimes parents want to see the standards. I think building some parent-related information on there. I think just creating a tab and then put in things that are pertinent for the parents.

Josephine: More videos, like you were saying, so that they can see how
Interviewer math is solved.

Teacher 1: Yeah, yeah. Khan Academy. If we're doing a lesson on equivalent fractions, maybe they can go into the Khan Academy at that point, link through the MOOC, and complete a lesson on equivalent fractions. Maybe there's other content that we found along the way where we think, "Oh yeah. Hey, parents - if my third-grade parents wanted to know how to help their kids with the homework, maybe this video ... Look, this guy is showing them - draw a model, label it in halves, and then fourths, and then shade in the parts that you have." I think parents would really benefit from that.

Plus parents, they're video-oriented. Look at YouTube, look at everything that's in our culture now. They want something quick, give it to me now. All right, now I got it. Now I can help little Johnny over here with his equivalent fractions. "Oh look kids, they were doing this on the MOOC. They were doing them."

Interviewer: You think they would engage that way?

Teacher 1: I don't know. What are we doing here? We're just brainstorming ideas. We don't know. Are these parents going to have Internet access? Are they going to have a computer that can support videos or is it a 1937 dinosaur? We don't know.

Interviewer: Accessibility then becomes the issue.

Teacher 1: With the proliferation of smartphones nowadays ... When you look at that, these kids know how to use a smartphone because their parents have a smartphone. They can at least go onto YouTube. They can at least link through the MOOC. A browser on a smartphone is very similar to that of a computer. Have you thought about apps, with the technology?

Interviewer: Yeah, even last summer one of the ideas was to develop an app, but then I thought, "Well, let's see first how this one goes. If it gets picked up and it starts rolling then we can invest a ton." Because after, they are time-consuming to make, so I don't want to invest all that time and then not be used. I guess it's progressive. You've given me a really good idea of having fresh content all the time that we can link. We don't have to wait for our own content. Then once we get that rolling and we have the traffic, then maybe it would be worth investing the time for an app.

Teacher 1: Yeah, I think the app would be more accessible to everybody. Because what I have to do, is I have to go through my browser on my phone, which is the Chrome. I have to go through the Chrome, then I have to go to the MOOC site, like that. But if there's an app right on your phone, you click on the app and it opens it up.

Interviewer: Let's see whether I can get it rolling this year, and then maybe that might be a project for next summer. If we get it going this year.

Teacher 1: Have you ever designed an app?

Interviewer: Yeah. I'm graduating in December, but I really want to keep going because I love what MSA is doing and I love what you guys are doing. I wish I had more time to spend with you guys in the classroom, I really do. As time goes by, that dream gets farther and farther away because I get more and more responsibilities, but I really hope that, at some point-

Teacher 1: What are you going to do when you graduate?

Interviewer: I already got a job at LANL.

Teacher 1: Oh, you did?

Interviewer: Yeah.

Teacher 1: Are you going to stay with the program?

Interviewer: Yeah. I'm hoping to. I already told them when I got the job, every other week I need two days-

Teacher 1: Shoot, you're already doing all the work?

Interviewer: Yeah, but I would like to do more. Right now, because of the courses and all that, I don't have much time to invest in talking to you guys. You just gave me a great idea. If I had that last summer, we could have developed it over this year and then this summer come up with one other idea that we can develop over ... Is it break time already? Oh, okay. Yeah, I would like to do that.

Teacher 1: I think that would be cool. I think it'd be more accessible to everybody, including the parents. But I actually did have a parent

this year. I had her last year. She was always asking me - because we put out a calendar and our calendar has MSA Day in Santa Fe. She was asking me one day, "Oh, can I go?" That would be something where just having the title ... Parent Night. MSA. MSA Parent Night. Come meet the MSA staff and let's have a Math Night. I wonder how many parents would show up for that. We have one parent that would show up.

Interviewer: That's all that we need.

Teacher 1: Then she would take that home and share with her granddaughter. [inaudible 44:08]. So many things. Like you said, you could do anything.

Interviewer: You said you don't have anything profound, but I think I'll ask - if you don't mind - I'll stay in contact with you because your wheels are going.

Teacher 1: They're always going. They go more at 11:30 at night.

Interviewer: Thank you so much. I appreciate your time.

Teacher 1: Yeah, if there is anything else let me know.

Interviewer: Okay, thanks.

A8: Teacher Challenges

What are some of the greatest challenges in your teaching practice?

1642:   Retention
                    Lack of language foundation on which students should be building on

0708:   Students do not come into 4th grade with basic skills or solid foundations in
                    number sense.

7118:   Being able to keep up with the curriculum requirements especially with
                    common core state standards.

7710:   Too many disruptions
                    Not enough time for planning quality student lessons
                    Staff meetings before school, after school, and even in the middle of the day
                    during instruction sometimes

4713:   Getting students to explain their thinking (including myself)

0425:   Meeting increased proficiency standards such as common core

3992:   Plugging holes in students' mathematical knowledge

9893:   Planning instruction for my students
                    Planning assessments for my students
                    Being on a consistent teaching schedule is my greatest challenge because
                    when things occur unexpectedly at our school, then we get out of rhythm.

3746:   Lack of preparation time/gathering resources
                    Lack of administrative support

1846:   There are a lot of gaps in student knowledge
                    0 culture of learning

9196:   Administrative support - none
                    Preparation/planning - not enough
                    Staff meetings - too many, 3 in 1 week, over 30 so far closer to 50 this year

2840:   Teaching with depth of knowledge
                    Administrative support
                    Model a rigorous math lesson from in house coaches
                    Students not being prepared for the grade level.
                    Classroom management hinders student learning.
                    Students' lack of focus and discipline.

Greatest challenge is how do I reach or help the struggling students? How do I make them understand?

6590: Large class sizes
Below grade level students academically

0000: Time

4881: Thinking algebraically. I prefer pictures and tables

4141: Having time to plan for instruction

2622: Preparing for misconceptions in my students

8516: Administrative support
Lack of student collaboration/caring
Student absences

What other challenges you face in the classroom?

1642: Behavioral issues
Time
Lack of time for preparation

0708: Children sometimes have life issues that interfere in learning

7118: Being fully prepared to assist teachers and students with the lessons.
Lack of time to collaborate.

7710: Asking questions (curiosity) is not a "traditional value"
English language issues - students speak Keres

4713: Attention spans (behavior)
Too many gaps in their learning

0425: Behavior
Students with family problems
Lack of parent support for academic and discipline policies

3992: Having students persevere when answers do not come quickly

9893: Keeping the learning environment challenging

6366: Low motivation, parental support, and being challenged for the students is a challenge for me as a teacher.

Behavioral issues
Low morale of staff and students
No money for supplies
Instructional interruptions - searched, announcements

1846: Staff conflict

9196: Behavioral issues - no admin support
Very low morale of staff and students
Limited supplies - no money for supplies
Interruptions from admin (searches, impromptu assemblies that berate everyone)

2840: Positive comments - many times all we hear about is how bad we are doing and never how hard teachers are working.
We have bipolar moments at San Felipe from admin. A lot of hot and cold.

0772: Classroom management
Students lack of motivation

7768: Working together - sometimes I have students butting heads.

6590: Lack of student computers
Lack of space
Lack of time
Lack of help/direction with student emotional issues

0000: Large population

4881: Encouraging students to try new strategies. They get comfortable with one way

4141: Students' lack of focus

2622: Administrative support

A9: Transana Coding

Collection Report

Collection: CHAT > CLASET > Cons

    Clip: Teachers are technologically disconnected
        Collection: CHAT > CLASET > Cons
        Clip Transcript:

> Principal 1: One of the things that you have in education in America is you have an older population teaching that's very good teaching but they are not very good in technology. Lorenzo is an exception that he started with technology at its infancy and stayed with it. I would say he is about 1 of 10% so I would think that more than 50% of teachers are not really connected to technology and I would say that the ones that are a little technologically savvy are losing it because technology moves so fast and therefore you get disconnected and you loose and so therefore the kids loose a lot of things that they can be doing.

        Clip Keywords:
            Challenges : Challenges
            Challenges : Technology
            Data Types : Media
    Clip: Lack of properly trained IT staff
        Collection: CHAT > CLASET > Cons
        Clip Transcript:

> One thing is I took the common core writing essentials through Pearson that was required by Casey's boss that we all take an online course in common core. They paid for it but we had to signup for one of six: two were on math, 1 was on writing, 1 was on reading. I signed up writing and then I dispersed everybody in my staff coz we are so small, you do this one, you do this one, you do this one but I put majority of us in writing because I thought that was our very weak component in our school. In the writing essentials it really talks a lot about technology and it says these kids need to at least be blogging, e-paling, finding ePals around the world. They need to be communicating so that they learn how to express themselves at a very early age. So we started working on trying to set that up and the system says we're blocked so then I call the IT department and they say, "What you are talking about doesn't sound like anything we would block." So now I'm back to someone who knows a little bit about technology that comes in once in a while to work with

people to see what's going on. A little problem to improve education we're still not there yet and we started in October so in 5 months. We'll get there by April so it will be good for next year but this year we lost 6 months of maybe writing once a week maybe communicating especially if we can learn how to Skype next coz there is a lot to learn about the world and we are global now so you see it in commercials and it looks easy but to do it.

Clip Keywords:
 Challenges : Challenges
 Challenges : Technology
 Data Types : Media

Clip: Teachers need technology training to rethink their teaching epistemologies
 Collection: CHAT > CLASET > Cons
 Clip Transcript:

Principal 1: I think one of the biggest things that our school needs is the students working and struggling through because it seems like the generation that really has learned technology and are very smart because they learned how to read, they learned how to write, they had to learn a lot of things in order to stay up with everything is that the kids do more and the teachers do less. It's probably convincing them we need more time in the computer lab or more time on the computer and less time of them talking and we need to know how to go through the restrictions in order to, if it's good educationally, how do we make it work. It's an educational level with teachers in technology and me.

Clip Keywords:
 Challenges : Challenges
 Challenges : Technology
 Data Types : Media

Clip: Lack of technology understanding and finding solutions
 Collection: CHAT > CLASET > Cons
 Clip Transcript:

There is a few men that about a month ago they said let's start a little Bible club on the computer if you see something that really inspires you just send it out but blind copy everybody. I don't know how to blind copy so when I sent mine out I sent to 10 guys and they said "Pendejo (stupid) what are you doing? You're supposed to blind copy!"

Clip Keywords:
 Challenges : Challenges
 Challenges : Technology
 Data Types : Media

Clip: Frustrating
 Collection: CHAT > CLASET > Cons

Clip Transcript:

Teacher 8: It is. There's frustration in the technology and, like you said, when it works it's great, and when it doesn't work, it's frustrating.

Clip Keywords:

Challenges : Challenges
Challenges : Technology
Data Types : Media

Clip: Complex

Collection: CHAT > CLASET > Cons

Clip Transcript:

Teacher 7: I think the biggest struggle with the MOOC is once you get into it and you get onto the MOOC is finding the time to get on to the MOOC. I know when we come here it's like, "Yeah, we do it-
Teacher 3: It's our focus.
Teacher 7: But when we get back to our classrooms and you've got all these other things you're trying to do and get done in a day, it's not always convenient to get on, go to the MOOC, log ... Remember your password.
Teacher 8: We need to make it simpler.
Teacher 3: Our network is awful.
Teacher 8: We need to make it simpler to somehow get on, like as simple as like when you go check into the hotel. "What room? 206. Password? Apple." Do you know what I'm saying? Something like that. Maybe that would allow us to, "Oh yeah, it's just MSA. Then I'm number blah, blah, [00:56:00] blah," and I can get in versus "Bovi rainbow, bovi at ... "

Clip Keywords:

Challenges : Challenges
Challenges : Technology
Data Types : Media

Clip: Lack of automaticity

Collection: CHAT > CLASET > Cons

Clip Transcript:

Teacher 2: Yeah because you don't even know if something has been posted on the MOOC unless you are in it. Let's say if you post a question like that on the MOOC, unless I was at home and I made the time and got into the MOOC and logged on and saw your question, I couldn't respond. Whereas if, I don't know, incoming mail or something [crosstalk 00:56:27]. Then, "Oh, oh, you were asking about ... " It's almost a way to approach it. "This is what I do with my kids," a quick respond to you.

Clip Keywords:

Challenges : Challenges
Challenges : Technology
Data Types : Media

Clip: [Time consuming](#)

    Collection: CHAT > CLASET > Cons
    Clip Transcript:

Teacher 2: That's what I'm saying. I think in the classroom I know we're very trained into we get in- We do what we have to. At some point in the day, we check our mail. We check what is coming in from the principal, what's coming in from the ... It becomes a part of your routine because you make that time to do that. I'm not saying you couldn't do that with the MOOC, but I agree. By the time you get it, you log in, you have to go here and then you have to go here. It is time consuming.

    Clip Keywords:
        Challenges : Challenges
        Challenges : Technology
        Data Types : Media

Clip: [Lack of network infrastructure](#)

    Collection: CHAT > CLASET > Cons
    Clip Transcript:

Teacher 3: The other thing too is that the school's networks have to be able to support this. I'm using a computer that runs on XP and every little thing I ever do I have to sit here and wait while that thing spins.
Teacher 4: You can pray while it spins.
Teacher 3: If they would buy us laptops that worked well, just think of the efficiency factor. Something that I should be able to do in a few seconds takes minutes so that's time 60 for every little thing.

    Clip Keywords:
        Challenges : Challenges
        Challenges : Technology
        Data Types : Media

Clip: [Restrictions](#)

    Collection: CHAT > CLASET > Cons
    Clip Transcript:

Interviewer: How many can use Wi-Fi at school, Wi-Fi that they can use with the iPads?
Teacher 8: But we can't use it.
Teacher 3: It's off and on here.
Interviewer: You cannot use ... ?
Teacher 3: Right.
Teacher 5: The BIE, our email things, we can't use our own iPads there because then we're technically stealing the BIE

stuff...
Teacher 3: You've given it to the school. If you take something to school like a computer it becomes their property.
Teacher 5: Yes, you can't even take it back to school. We can't use the wireless.
Teacher 3: They're so secure about all this stuff, yet they've gotten into OPM and stolen every person's identity. [crosstalk 00:58:33] How can it be so secure and wonderful and they have all these rules, yet they found just last week that they've gotten hacked into there and gotten everything and retirees data.
Teacher 4: That would be a good conversation for Casey.
Teacher 3: Without the proper equipment, we can't access it. It just takes forever.

Clip Keywords:
Challenges : Challenges
Challenges : Technology
Data Types : Media

Clip: More restrictions
Collection: CHAT > CLASET > Cons
Clip Transcript:

Interviewer: How many of you have Wi-Fi?
Teacher 3: At school.
Teacher 4: But they don't give us the password.
Teacher 3: We don't know the password.
Female: It's not connected yet.
Female: We're not the only ones.
Interviewer: You have Wi-Fi but you have no passwords?
Teacher 3: It's always somebody who puts it in for us and then ... With the student iPads, they changed it and then they couldn't use them.
Teacher 4: "Okay, go ahead and put it in. Turn away." Let them put it in and so that we can access it.

Clip Keywords:
Challenges : Challenges
Challenges : Technology
Data Types : Media

Collection: CHAT > CLASET > Pros

Clip: CLASET as a potential bridge to close the parent involvement gap
Collection: CHAT > CLASET > Pros
Clip Transcript:

Teacher 1: Yeah, yeah. Khan Academy. If we're doing a lesson on equivalent fractions, maybe they can go into the

Khan Academy at that point, link through the MOOC, and complete a lesson on equivalent fractions. Maybe there's other content that we found along the way where we think, "Oh yeah. Hey, parents - if my third-grade parents wanted to know how to help their kids with the homework, maybe this video ... Look, this guy is showing them - draw a model, label it in halves, and then fourths, and then shade in the parts that you have." I think parents would really benefit from that.

Plus parents, they're video-oriented. Look at YouTube, look at everything that's in our culture now. They want something quick, give it to me now. All right, now I got it. Now I can help little Johnny over here with his equivalent fractions. "Oh look kids, they were doing this on the MOOC. They were doing them."

Josephine: You think they would engage that way?

Teacher 1: I don't know. What are we doing here? We're just brainstorming ideas. We don't know. Are these parents going to have Internet access? Are they going to have a computer that can support videos or is it a 1937 dinosaur? We don't know.

Josephine: Accessibility then becomes the issue.

Teacher 1: With the proliferation of smartphones nowadays ... When you look at that, these kids know how to use a smartphone because their parents have a smartphone. They can at least go onto YouTube. They can at least link through the MOOC. A browser on a smartphone is very similar to that of a computer. Have you thought about apps, with the technology?

Clip Keywords:
Data Types : Media
Support : Support
Support : Technology Pros

Clip: Medium for connecting students to the world
Collection: CHAT > CLASET > Pros
Clip Transcript:

Principal 1: Or they can connect with a tribe that is in Mexico that supposedly they took a group of adults 10 years ago and they think that there are from the same people, they look alike. It would be interesting to connect and share stories like that but you're learning science and math and reading and writing they don't even know it. That is one of my goals when I took this course. It was like there's so much learning to be had with this ePal or with this connection especially to another part of the world. I think kids would be like in 1st graders going home and say, "Mom I talked to

somebody in China today."

Clip Keywords:
 Data Types : Media
 Support : Support
 Support : Technology Pros

Clip: Creates community
 Collection: CHAT > CLASET > Pros
 Clip Transcript:

I've got so many doors that I can open, yet I'm at that place where, "Okay, if I can't even just open my iPad and say how do I get to the 5 practices and get it download on my iBook." Even those things. It's amazing what we can do, what we're capable of doing, what we choose to do because that is what I'm finding out. Like this morning when somebody said how some of us can just become chicken helpers ... That's what I call that. "Let's be chicken helpers. Those of us who know how to download the iBook, let's just go and help." Some of us, who were ready, just chose to sit there and read our books. Some of us stood up and said, "Let's go help out each other."

Clip Keywords:
 Data Types : Media
 Support : Support
 Support : Technology Pros

Clip: Opens worlds of possibilities
 Collection: CHAT > CLASET > Pros
 Clip Transcript:

Teacher 7: I never thought of video taping a lesson in your language and then doing the lesson. I didn't even think of that.

Clip Keywords:
 Data Types : Media
 Support : Support
 Support : Technology Pros

Clip: MSA community connection
 Collection: CHAT > CLASET > Pros
 Clip Transcript:

Teacher 5: I would like for it to continue so that we can have this connection that we're introduced to each other and to maybe as a professional growth in the future, just keep it up.

Clip Keywords:
 Data Types : Media
 Support : Support
 Support : Technology Pros

Collection: CHAT > CLASET > Purpose

Clip: [Technology that incorporates human aspect to humanize curriculum](#)

    Collection: CHAT > CLASET > Purpose

    Clip Transcript:

Principal 1: The biggest thing I believe is that there are no relationships anymore in education and there is no relationship with just about anything. So, I spent 25 minutes before I got Verizon and then I got a good human being and a good person and we worked on the issue and got it solved. If there was a way to take anything in technology and create the relationship or the human element to it, and so that's why I think Facebook and things like Pinterest, but all those things create how technology and relationship go together in a good way. So in education there might be a curriculum or there might be a lot of things but there is no connection. You have to search. It has to be like there is a question and then you're just looking for an answer instead of a dialog so we can grow and everything about education is speaking, listening, communicating, writing, and a lot of elements in information technology or a lot of elements in technology are missing those components. I don't know how to solve it.

    Clip Keywords:

      Data Types : Media

Clip: [Trust is an essential part of community integration](#)

    Collection: CHAT > CLASET > Purpose

    Clip Transcript:

Principal 1: What I can do is when I walk around the school I can say Josephine is coming with no tape recorder or book or anything like that, especially to the Navajos but what she's doing she's working on what kind of information technology system could be enhanced, made better, or developed in order to make your teaching job more effective to students. That's all she wants to focus on and talk about. And then when you get to know them you can talk to them about the whole process. But that's what you need to do in the next 5 months. That would be fine with me. And you and Lorenzo can come down together coz he'll go into other classrooms and he observes math and then he meets with them about the math coaching and what we're trying to accomplish and stuff like that or he can go with you it doesn't matter. They are very comfortable with Lorenzo. They don't like a lot of people coming in their classroom a lot but that's just natural.

    Clip Keywords:

      Data Types : Media

Clip: [Connection to culture](#)

    Collection: CHAT > CLASET > Purpose

    Clip Transcript:

I think it's just different ways to think about how we can use technology to help in the classroom and make that connection to the traditional culture is one that I try to incorporate into my classroom as well.

Clip Keywords:
Data Types : Media
Support : Support
Support : Technology Pros

Clip: Capture cultural do's and don'ts
Collection: CHAT > CLASET > Purpose
Clip Transcript:

Teacher 3: I think that when the teachers are video taping lessons, I would like to see you guys putting some of those on there so that maybe in observing somebody else teaching something, then you can get ideas of things. What if native teachers could put on there certain "Don't do this" or "It's fine to do that"?
Teacher 8: I'd love to see somebody do a lesson in Tiwa or Keres or Tewa or whatever. If we could get something like that, that would be great. Yeah, those ideas are good too.

Clip Keywords:
Data Types : Media
Support : Support
Support : Technology Pros

Collection: CHAT > COMMUNITY > Culture

Clip: Pueblo learning style
Collection: CHAT > COMMUNITY > Culture
Clip Transcript:

Principal 1: And the stories is something that the Natives at our Pueblo and I think on other Pueblos strive on because they do hear stories from their grandparents and they love it. That is part of their educational process is through the stories because our language isn't written. It's gone from generation to generation since the 1200s being taught through stories, through conversations, and that's a good way. All we are doing is connecting it to the common core standards with the reading and the writing all kids, but I know Pueblo kids love that. And it will be connected to science but then you get all this other stuff out of it: math and reading and writing and speaking and listening and investigating and critically thinking...

Clip Keywords:
Challenges : Academically inferior students
Data Types : Media

Clip: <u>Mistrust of outsiders</u>
    Collection: CHAT > COMMUNITY > Culture
    Clip Transcript:

> Principal 1: What I can do is when I walk around the school I can say Josephine is coming with no tape recorder or book or anything like that, especially to the Navajos but what she's doing she's working on what kind of information technology system could be enhanced, made better, or developed in order to make your teaching job more effective to students. That's all she wants to focus on and talk about.

    Clip Keywords:
        Culture : Trust
        Data Types : Media

Clip: <u>Building trust in the community</u>
    Collection: CHAT > COMMUNITY > Culture
    Clip Transcript:

> Principal 1: What I can do is when I walk around the school I can say Josephine is coming with no tape recorder or book or anything like that, especially to the Navajos but what she's doing she's working on what kind of information technology system could be enhanced, made better, or developed in order to make your teaching job more effective to students. That's all she wants to focus on and talk about. And then when you get to know them you can talk to them about the whole process. But that's what you need to do in the next 5 months. That would be fine with me. And you and Lorenzo can come down together coz he'll go into other classrooms and he observes math and then he meets with them about the math coaching and what we're trying to accomplish and stuff like that or he can go with you it doesn't matter. They are very comfortable with Lorenzo. They don't like a lot of people coming in their classroom a lot but that's just natural.

    Clip Keywords:
        Culture : Trust
        Data Types : Media

Clip: <u>Curiosity is bad</u>
    Collection: CHAT > COMMUNITY > Culture
    Clip Transcript:

> Teacher 3: I struggle as a gifted teacher with that curiosity thing about not asking why because my very job, I need them to ask why. I've had a couple of conversations with my parents because I don't want to cross any lines that I shouldn't cross, but at the same time, the very nature of gifted education, higher level thinking requires that the children wonder and ask why and curiosity being a good thing, but that there are boundaries that you don't want to ...

That's a conversation I would love to have. I didn't occur to me that curiosity was bad. Do you know what I mean?

Clip Keywords:
Challenges : Academically inferior students
Culture : Curiosity
Data Types : Media

Clip: Contrast: Rules are different in predominantly White public school
Collection: CHAT > COMMUNITY > Culture
Clip Transcript:

I go to my son's school in Rio Rancho. He went to Cielo Azul Elementary and I wanted to go and just be in the classroom with him. You just go, they scan your ID, they gave you a visitor's pass, and I spent the whole day with him. I had lunch with him, went out to recess, and there was no issue.

Clip Keywords:
Challenges : Lack of parental support
Challenges : Rules
Data Types : Media

Clip: Lack of parent support affect student education
Collection: CHAT > COMMUNITY > Culture
Clip Transcript:

I think the level of support from families is tremendously different. In third grade, I had parents that were coming into the classroom. I had parents that showed up for Parent Day. I had all this parental involvement, that, when we go over to the BIE, it's just not there.

Clip Keywords:
Challenges : Challenges
Challenges : Lack of parental support
Data Types : Media

Clip: Taboos
Collection: CHAT > COMMUNITY > Culture
Clip Transcript:

Teacher 3: Say we're doing the solar system and where do stars come from or ... I'm thinking I'm teaching science, but ... I do have certain people that I do go to and say, "Is it okay if I ... ?" What was okay at ZM may not be okay at San Felipe. Hand prints of kids, no, no at ZM, [00:54:00] fine at San Felipe. Pictures of snakes in science books, bad, bad, bad if you're in the Navajo school. We actually all should cover them up. It's also this ballet or intricate dance where ... I want them to know about the Big Bang theory and tectonic plates and those things that ... Then you don't know whether there is a certain belief system about that that you don't want to [crosstalk 00:54:27]

Clip Keywords:
    Challenges : Challenges
    Challenges : Curriculum
    Culture : Taboos
    Data Types : Media

Collection: CHAT > COMMUNITY > Parents

   Clip: Lack of parent support affect student education
     Collection: CHAT > COMMUNITY > Parents
     Clip Transcript:

               I think the level of support from families is tremendously different. In third grade, I had parents that were coming into the classroom. I had parents that showed up for Parent Day. I had all this parental involvement, that, when we go over to the BIE, it's just not there.

     Clip Keywords:
       Challenges : Lack of parental support
       Challenges : Rules
       Data Types : Media
   Clip: Socioeconomic dynamics that affect community and education
     Collection: CHAT > COMMUNITY > Parents
     Clip Transcript:

               There's a lot more social issues. One of my kids, for example, his mom just up and left one day. Just out of the blue he wakes up and she's not there. Asked the family, "Where's Mama?" "She left." She hasn't been back since.

     Clip Keywords:
       Challenges : Challenges
       Challenges : Socioeconomics
       Culture : Socioeconomics
       Data Types : Media
   Clip: Socioeconomics that affect community involvement
     Collection: CHAT > COMMUNITY > Parents
     Clip Transcript:

               They have to have a background check to come into the classroom.

     Clip Keywords:
       Challenges : Socioeconomics
       Culture : Socioeconomics
       Data Types : Media
   Clip: Issues affecting parent involvement in the classroom
     Collection: CHAT > COMMUNITY > Parents
     Clip Transcript:

               They still bring cupcakes, but to just come and spend the day with their kid ... I haven't had that either. Where the parent

would just come and stay the whole day. They'll come and maybe sit for an hour once in a blue moon. I think they need to feel welcome. I think that parents also need to have their own professional development because this new math - they don't get it sometimes. In second and third grade, what we do is we work with the kids on decomposing the numbers to add them and subtract them and that's a big concept with us because we want them to understand that place value. We want them to understand that they can group similar benchmark items like all the hundreds together or the tens together.

The parents, when they get it, they have their own traditional, old-school way of adding and subtracting. "Drop the one and carry the two." That kind of mentality there, where we're doing one thing at school, but it's not being reinforced at home - it's kind of putting the kids in the middle, where they're saying, "Well, Mr. Wetsel said to do it like this and this is how I do it." "No, don't do it like he said. No, let me show you how the quick and easy way to do it is." Then they show them. Then we get them the next day and they're doing what mom and dad show them at home - how they learned how to do it in 1943.

There's battles we have to go through, as teachers at home, where, I think if we could pull those parents in like once a month, then we could show them this is so much easier and it's way more accurate than what you're doing. You're reinforcing the fact that a one - when you carry that one, it's a one. It's not a ten. You're not saying carry the ten. You're saying carry the one. What are you really telling your kids at that point?

If we had that opportunity to really do something like that, I think the parents would be more welcome. They'd be like, "Oh yeah? Okay, that does make sense." When we could teach the parents what we're teaching, what we're learning with a rational, where we can reason - four eighths, that's a half. What is three eighths? Is that less than a half? Is that more than a half? We would know, we could teach them. Think about it. If you have four eighths, but then if you have one less eighth, then that's smaller.

When you have a number like nine sixteenths - or not even nine sixteenths - nine tenths. Nine tenths, is that closer to one or is that closer to zero? When they understand that numerator and denominator the way that their kids are being taught to understand it, then they could reinforce what we're doing at school. I think parent knowledge has to be brought up for them to really support the kids at school. Because I

have parents come up and say, "You know, I just don't understand what you guys are doing. I don't get it. Can you help my kid in the morning with their homework?" "Okay."

Josephine: Then that puts the parents one step back further even.

Teacher 1: Yeah, maybe that's it too, is that they feel that step back. Then they don't feel like they're maybe smart enough to be in the classroom. They may feel intimidated by being in the classroom because in third grade, my kids are doing their multiplication facts and they're good. By the end of the year, I have kids that are finishing a ten-by-ten grid - just random numbers - in under three minutes. That's just knowing the automaticity of those facts is just solidly ... It's learned at that point. Where the parents - they haven't done it for a long time - they don't know maybe the facts as well as they can see their kids doing it, so there's some intimidation there. There's some confidence issues that could be overcome just by inviting them in.

Clip Keywords:
Challenges : Lack of parental support
Challenges : Rules
Data Types : Media

Collection: CHAT > COMMUNITY > Role

Clip: Changing community role due to MSA training
Collection: CHAT > COMMUNITY > Role
Clip Transcript:

My professional goal ... I'd really like to be a principal one day. I always said that I never wanted to. I never wanted to leave a classroom because I have so much fun. It's energizing to be with the kids and to feed off of their energy, but as I'm growing in my profession I see how what I'm learning could help other teachers and how that role isn't just for me in my classroom anymore. It has suddenly broadened to where I kind of feel like if I could take this information and lead a professional development in another school, or in an environment where you're academically speaking with teachers about common formative assessments, or how can we engage students better? How can we differentiate our instruction to better meet the needs of every student in the classroom? I think that's my goal in my profession right now. But that's somewhere down the road. I'm still having fun teaching.

Clip Keywords:
Data Types : Media

Support : MSA as career changer
Support : Support

Clip: Teacher role is more than teaching but an agent of reversing social problems
  Collection: CHAT > COMMUNITY > Role
  Clip Transcript:

> There's things that happen in a community like that - and it's hard to fathom - but socially, it's kind of tough, which makes you feel for the kids even more, which makes you want to make sure that they have that opportunity so they're not dependent on anyone when they get out of high school. That they're not getting pregnant at fifteen. That hopefully you instill some kind of values in them, some kind of morals - you can be that role model for them. I think what we do is very important - not just for their academic career, for them growing as a person.

  Clip Keywords:
    Challenges : Socioeconomics
    Data Types : Media
    Support : Support

Clip: Resistance to change
  Collection: CHAT > COMMUNITY > Role
  Clip Transcript:

> [one of the teachers] who doesn't go to MSA she's gonna retire, she doesn't want anything to do with technology but she spent 44 years. She can go off and have a good life and relax but [the teacher] it would be interesting to pick her brain, she's from the Pueblo, she could tell you the history of technology in her eyes, any training they may have gotten or whatever.

  Clip Keywords:
    Data Types : Media

Collection: CHAT > COMMUNITY > Teacher

Clip: Student success is a community effort
  Collection: CHAT > COMMUNITY > Teacher
  Clip Transcript:

> It's hard to see at third grade. The only thing they're doing at the end of third grade is they're going home and they're playing for the summer. They're not applying for colleges. They're not thinking about what they want to do when they're eighteen. I'm hoping that with the foundation set in third grade, and when they come back in fourth grade, they look at each lesson and they say, "Oh yeah, I remember this. I know how to do fractions. Oh yeah, let's learn something more about fractions." Then a fourth-grade teacher does their

job and they give them every single piece of knowledge that they need to move on to fifth grade. Then they go home, they play, and they enjoy their summer. But then in fifth grade they come back, "Oh yeah, I remember fourth grade. I remember third grade." That cycle continues and then, eventually, when you get to the top of the stairs, then at twelfth grade, then they're able to say, "Oh yeah, I remember third grade. I remember fourth grade. Oh yeah, I remember fifth grade. Now I'm ready."

Clip Keywords:
Challenges : Academically inferior students
Challenges : Lack of teacher preparation
Data Types : Media

Clip: Teacher community need to break the 'student left behind' cycle
Collection: CHAT > COMMUNITY > Teacher
Clip Transcript:

It is, because if they go into fourth and they struggle, then they're behind. If they go into fifth grade and they're struggling, they're behind. That cycle then has to be broken. When they leave a grade level, we have to feel that they can do this. If they can't, then we need to intervene. We need to do the things that we need to do.

Clip Keywords:
Challenges : Academically inferior students
Challenges : Challenges
Data Types : Media

Clip: Teachers taking teaching as a job not as an opportunity for student success
Collection: CHAT > COMMUNITY > Teacher
Clip Transcript:

I don't think so. I really don't think so. I think it has come down to, "This is my classroom. This is what I do, and as long as I cover the lessons from lesson one to lesson thirty, then I've done my job." Overall, can I really say that with one hundred percent proof? No. I don't go into other teachers' classrooms and watch what they're doing. As an administrator I certainly would. I'd want to know, what are we teaching today? I'd want to be in the classrooms.

Clip Keywords:
Challenges : Lack of teacher preparation
Data Types : Media

Clip: MSA equips teachers to share skills among other communities
Collection: CHAT > COMMUNITY > Teacher
Clip Transcript:

Teacher 8: I'm teaching students who are going to go into early childhood and elementary education and showing them things that I've learned here in MSA last year, MSA this

year. I've been taking some of those ideas and bringing it to people who are going to be teachers and showing some of those strategies and showing some of the joy factors and the 3 ... What is that called? 3 minute ... What is that?

Interviewer: Motivators.

Teacher 8: The motivators. Using a lot of that stuff and thinking, "Gosh, my job is still not done." 34 years and my job ... I mean 40 years, 45 years. You guys, my goodness, and we're thinking, "What is that we still need to do?"

Clip Keywords:

Data Types : Media

Support : MSA as career changer

Support : Support

Clip: Student are below grade level

Collection: CHAT > COMMUNITY > Teacher

Clip Transcript:

Students do not come into 4th grade with basic skills or solid foundations in number sense

Clip Keywords:

Challenges : Academically inferior students

Challenges : Challenges

Data Types : Document

Clip: MSA community

Collection: CHAT > COMMUNITY > Teacher

Clip Transcript:

Teacher 3: For me, it's more than just the individual challenge. It's a forum for us to meet teachers in other schools and other communities, also people in our own school that even though we see each other every day, maybe we're not having these discussions. We're talking about, "How do you grade the kids? Do you count zeros? Do you grade every single thing they ever do or do you teach and then do formative assessments, adjust your teaching and then grade what comes at the end?" Just some of these everyday things that we as individual teachers may struggle with. It's allowing us to have the discussion like the Fidelity stuff. Now we know what we used to do in the olden days when we accessed prior knowledge and did things more holistically, maybe that's coming [00:46:00] back en vogue. It just validates [inaudible 00:46:03] meeting the needs. The data that came with the No Child Left Behind, it was alien to me, but now I'm through MSA actually understanding what they're trying to get at when they say data because kids are not numbers. They're human beings. The numbers do tell us things and can guide us in our teaching whether they are understanding or not understanding of the concept. We can

go back and adjust what we're doing. I just like the
networking part that we're not alone because in your
classroom, it becomes your own little kingdom. Sometimes
we don't venture out of our own world, our own little ...

Clip Keywords:
   Data Types : Media
   Support : MSA teacher and school support
   Support : Support
Clip: Administrative disruptions
   Collection: CHAT > COMMUNITY > Teacher
   Clip Transcript:
   7710: Too many disruptions
   Clip Keywords:
   Challenges : Challenges
   Challenges : Lack of administrative support
   Challenges : Socioeconomics
   Data Types : Document
Clip: Staff meetings
   Collection: CHAT > COMMUNITY > Teacher
   Clip Transcript:
      Staff meetings before school, after school, and even in the middle of the day
      during instruction sometimes
   Clip Keywords:
   Challenges : Challenges
   Challenges : Rules
   Data Types : Document
Clip: Disruptions causing teaching inconsistencies
   Collection: CHAT > COMMUNITY > Teacher
   Clip Transcript:
      Being on a consistent teaching schedule is my greatest challenge because when
      things occur unexpectedly at our school, then we get out of rhythm.
   Clip Keywords:
   Challenges : Challenges
   Challenges : Rules
   Data Types : Document
Clip: No support
   Collection: CHAT > COMMUNITY > Teacher
   Clip Transcript:
      Lack of administrative support
   Clip Keywords:
   Challenges : Challenges
   Challenges : Lack of administrative support
   Data Types : Document
Clip: No administrative support
   Collection: CHAT > COMMUNITY > Teacher
   Clip Transcript:

Administrative support - none
Clip Keywords:
Challenges : Challenges
Challenges : Lack of administrative support
Data Types : Document
Clip: [Too many staff meetings]{.blue}
Collection: CHAT > COMMUNITY > Teacher
Clip Transcript:
Staff meetings - too many, 3 in 1 week, over 30 so far closer to 50 this year
Clip Keywords:
Challenges : Challenges
Challenges : Rules
Data Types : Document
Clip: [No support3]{.blue}
Collection: CHAT > COMMUNITY > Teacher
Clip Transcript:
Administrative support
Clip Keywords:
Challenges : Challenges
Challenges : Lack of administrative support
Data Types : Document

Collection: CHAT > DIVISION OF LABOR > Administration

Clip: [Administrators fail to do their jobs due to paperwork requirements]{.blue}
Collection: CHAT > DIVISION OF LABOR > Administration
Clip Transcript:

That's the other drawback of being an administrator. I see our administrators being pulled away for the administrative duties. That's hard to see because then you're not working with the teachers. You're being an office person. You might as well go have a cubicle in New York because you're not in the classroom. That needs to be changed. That needs to be changed where principals don't have to do so much of that paperwork. I hope that when I'm a principal, that I have that option to delegate that responsibility to somebody and say, "I don't want to do that. I want to be in the classroom and I want to be working with these teachers and I'm going to be working with these students. I want to be developing our school." That's what I would want to do. But is that always ideal? Is that always something that's possible?

Clip Keywords:
Challenges : Challenges
Challenges : Lack of administrative support
Data Types : Media

Collection: CHAT > DIVISION OF LABOR > BIE

> **Clip: BIE's mandate for all teachers to be in MSA program**
>   **Collection:** CHAT > DIVISION OF LABOR > BIE
>   **Clip Transcript:**
>
>> I've heard that there's some other reasons why we're in our fourth year - because the whole school is not participating. But that shouldn't be our fault.
>
>   **Clip Keywords:**
>   Challenges : BIE mandates
>   Challenges : Challenges
>   Data Types : Media

Collection: CHAT > DIVISION OF LABOR > Curriculum

> **Clip: Curriculum is disconnected from reality**
>   **Collection:** CHAT > DIVISION OF LABOR > Curriculum
>   **Clip Transcript:**
>
>> Principal 1: The biggest thing I believe is that there are no relationships anymore in education and there is no relationship with just about anything. So, I spent 25 minutes before I got Verizon and then I got a good human being and a good person and we worked on the issue and got it solved. If there was a way to take anything in technology and create the relationship or the human element to it, and so that's why I think Facebook and things like Pinterest, but all those things create how technology and relationship go together in a good way. So in education there might be a curriculum or there might be a lot of things but there is no connection. You have to search. It has to be like there is a question and then you're just looking for an answer instead of a dialog so we can grow and everything about education is speaking, listening, communicating, writing, and a lot of elements in information technology or a lot of elements in technology are missing those components. I don't know how to solve it.
>
>   **Clip Keywords:**
>   Challenges : Challenges
>   Challenges : Curriculum
>   Data Types : Media
> **Clip: A whole school taking special ed curriculum due to low achievement**
>   **Collection:** CHAT > DIVISION OF LABOR > Curriculum
>   **Clip Transcript:**
>
>> **Josephine: What is the SRA curriculum?**
>> Principal 1: There is a lot of them but the one they chose four years ago was SRA. I'm not sure what SRA stands for but it's mainly for when I was little coz I was in the program

it was for low achievers or special education students so it's real computational oriented but it doesn't go from the concrete to abstract. It only stays on one spot.

Josephine: Why was that curriculum chosen?

Principal 1: Because only 1 student had gained proficiency. The year before only 1 student had gained proficiency that's why they chose the very basic.

Josephine: So that was with the expectation that when they start there and they achieve proficiency at that level then they could keep moving up?

Principal 1: Yeah

Josephine: Was that helpful?

Principal 1: It was very helpful in my opinion in reading because they did a very good job in teaching phonetic sounds and how to pronounce letters and how to pronounce different parts of words and then phonics they did a really good job and then they had a real nice program built in for working on fluency and stuff like that and so in reading we saw better results than we did in math. So in math I would say it wasn't good. I don't know if not connecting kids to every aspects like giving them robust vocabulary and making sure they are writing. I worked on the same group you did yesterday and we worked on fractions and I said guys I'm not very good at math. I can only show you my way but we'll only do 3 problems in 40 minutes and you do them and we'll all talk and you talk about how you are being taught and how you are solving it and then if you don't mind I'll tell you my way and how I'm being taught and if you have questions all we'll do is communicate and that's so we will learn coz you'll be doing it. And they felt very comfortable because I said I really need you to be honest with me and share with me if you feel you can do this problem so I kinda showed them. One of the things is that disconnection and technology is supposed to have improved that and I think it has but not to an extent that is really that the real strong professional learning community of colleagues that are working together to help each other to create more outcomes for students. That's a difficult task. I don't know what you want to take on.

Clip Keywords:

　　Data Types : Media

Clip: Connecting curriculum to natural way of learning

　　Collection: CHAT > DIVISION OF LABOR > Curriculum

　　Clip Transcript:

Principal 1: And the stories is something that the Natives at our Pueblo and I think on other Pueblos strive on because

they do hear stories from their grandparents and they love it. That is part of their educational process is through the stories because our language isn't written. It's gone from generation to generation since the 1200s being taught through stories, through conversations, and that's a good way. All we are doing is connecting it to the common core standards with the reading and the writing all kids, but I know Pueblo kids love that. And it will be connected to science but then you get all this other stuff out of it: math and reading and writing and speaking and listening and investigating and critically thinking...

Clip Keywords:
   Data Types : Media

Collection: CHAT > DIVISION OF LABOR > MSA > Cons

Clip: [MSA change in staff affects professional development positively and negatively](#)
   Collection: CHAT > DIVISION OF LABOR > MSA > Cons
   Clip Transcript:

Honestly, in the last year there wasn't the MSA support that we had in maybe the first year when we had Melissa there. When Melissa was working with us in second - I was a second-grade teacher. She was there before she had the baby and she was really working really closely with the teachers and trying to get us to do our own peer evaluations and things like that. We had a lot of grade-level meetings in that year, but then as the years progressed, there was some change in personnel.

Then Carol came in for a while. Carol and I really didn't mesh all that well, so it was kind of hard for us to work professionally because some of my ideas about teaching contradicted what she wanted to do in the classroom. There was that butting of the heads at some point, and so it's difficult when you have that. I understand there's things that want to get expressed, that want to get kind of pushed into the classroom, but in the end we're individuals and the teachers kind of have pushback when you try to show them a different way of doing something. "Well, I have my own way to do it and I like doing it like this." It's nice to try something, but in the end if you don't feel comfortable with it, then you shouldn't be forced to do it. That's kind of my philosophy.

Then, in this last year, we had Randy. Randy spent a lot of time in the coach's area. Every time I'd walk by, "Hey Randy, how's it going?" He helped us with our data quite a bit, but there was no direct support in the classroom. He

didn't come in and observe. He didn't come in and work with the kids. That's one thing that Carol did. She came in and she actually watched what the kids were doing. She worked with our common formative assessment.

Clip Keywords:
　　Data Types : Media
Clip: MSA's diminishing support
　　Collection: CHAT > DIVISION OF LABOR > MSA > Cons
　　Clip Transcript:

That direct support was nice to have. I kind of feel like the support, to answer your question, from MSA has kind of diminished into the fourth year. It's maybe something where they think, "Well, we don't really have to work with them all that closely because we've already had three years with them." If that's the case, then we shouldn't be in the program. But that's my opinion, that we shouldn't be into a fourth year if we're already good to go. I've heard that there's some other reasons why we're in our fourth year - because the whole school is not participating. But that shouldn't be our fault. Did I answer your question? I think I kind of went off on a tangent there.

Clip Keywords:
　　Data Types : Media

Collection: CHAT > DIVISION OF LABOR > MSA > Cons > Does not meet teacher needs

　Clip: Does not differentiate curricula training
　　Collection: CHAT > DIVISION OF LABOR > MSA > Cons > Does not meet teacher needs
　　Clip Transcript:

Lorenzo's background even though he is very gifted in his talents reading and math and science as an educator very gifted he was embedded into investigations that program that curriculum that's the way you teach math and with his knowledge you take his knowledge and that curriculum and you have a very good teacher. Then we went from a coach when we were in SRA math we went into envision next which is where we are now and the coach's thought was they were here at the bottom. Envision in her eyes to Casey Sovo was a little bit of Singapore math and a little bit of a higher level but investigations is up here (SRA lowest, envision middle, investigation highest). That was her thought so basically last summer what happened was all the teachers that I went to conference with were aligning and communicating the curriculum for the school year for investigation but our teachers were aligning investigations

but we were not getting professional development in Envision and so there is a big disconnect and it would be nice if there was a connection again going back to what we are doing is everybody that's in investigations is here is your world and if you are in another one you can be in this world of communication where you can become a better teacher but let's connect you with everybody who is in Envision and maybe has the same kinds of kids and you can share ideas like on Pinterest. It would be nice to have a Pinterest in connections of if you are an Envisions teacher or investigations teacher.

Clip Keywords:

Challenges : Challenges

Challenges : MSA is not differentiated

Data Types : Media

Clip: MSA does not differentiate teacher needs

Collection: CHAT > DIVISION OF LABOR > MSA > Cons > Does not meet teacher needs

Clip Transcript:

They started - which was really nice - Lorenzo and UNM, they really got us started with the Master's program. But the Master's program was to go into coaching. I didn't want to go into coaching. I wanted to actually take the courses that are going to lead me into my licensure for administration. That wasn't a good fit for me and that's the only option that we had, was to go in and get a coaching-related degree. It was nice to have that support, but it wasn't, in the educational world, differentiated for everybody. It was a whole group, take it or leave it kind of thing. That didn't really help me in my professional goal.

Clip Keywords:

Challenges : Challenges

Challenges : MSA is not differentiated

Data Types : Media

Collection: CHAT > DIVISION OF LABOR > MSA > Pros

Clip: MSA program provides professional development that leads to content mastery

Collection: CHAT > DIVISION OF LABOR > MSA > Pros

Clip Transcript:

I think the best thing with MSA is the rational ... As math professionals, the knowledge that we get from Dr. Kitchen is just phenomenal. You can go into a lesson with better understanding of how different approaches can be taken just because you know the content so well. That content knowledge in math, I think, is so important because before I

went in, I didn't have nearly the understanding of fractions that I do right now. Just to be able to reason about a fraction before you even approach a problem ... That's something I was never able to do. But through the content knowledge, I think right now I like fractions. But, like a lot of other teachers that don't go through this program, they don't like fractions because they don't understand them.

Clip Keywords:
Data Types : Media
Support : Professional development
Support : Support

Clip: MSA does more than professional development
Collection: CHAT > DIVISION OF LABOR > MSA > Pros
Clip Transcript:

Principal 1: One of the things that I really like about Lorenzo and one of the things that I think will really help in the next three years is when I have a teacher missing he'll go teach math. He'll teach them the lesson so maybe the day that you guys come out there, there might be one teacher missing an he could just teach and you can go visit classrooms and then you and Lorenzo can look at the science kits and stuff like that and we can talk more and we can have a good day and we see if there's not enough time and you wonna do it another day that would be fine too.

Clip Keywords:
Data Types : Media
Support : MSA teacher and school support
Support : Support

Clip: MSA pushes teachers out of their comfort zones
Collection: CHAT > DIVISION OF LABOR > MSA > Pros
Clip Transcript:

Teacher 2: Yeah, just because I think as a teacher, in any profession, you get to a comfort zone, a comfort level. MSA has definitely pushed me out of that comfort level, and so this was just another push to get me out of that comfort level, to learn more.

Clip Keywords:
Data Types : Media
Support : Professional development
Support : Support

Clip: MSA offers advanced academic opportunities
Collection: CHAT > DIVISION OF LABOR > MSA > Pros
Clip Transcript:

Teacher 3: Maybe MS ... In fact, that's part of why I signed up for MSA because in the beginning they did say, "We're going to have a master's program and then we're going to

offer a doctorate." That's why I signed up in the first place, but now you guys hooked me in, so I'm on year 4, my fourth summer.

Clip Keywords:
    Data Types : Media
    Support : MSA as career changer
    Support : Support

Clip: [MSA gives teachers skills to navigate difficult situations](#)
    Collection: CHAT > DIVISION OF LABOR > MSA > Pros
    Clip Transcript:

I am the intervention teacher at [School E]. This past year, I had 3 6th grade students, and even though that I had the 3 different students, they were all intensive, but yet their ability levels were still amazing because you had the high, medium, low again. I really made sure that I rotated and pretty soon they weren't afraid to talk to me. Whatever concerns that they had with their teacher, they would come through me for me to communicate to the regular classroom teacher. That was nice. We really ended up making sure that we were gaining. Whatever I had learned at the MSA last year, I took them back to the classroom. You still had to follow that everyday math or the Envision curriculum, but making sure in back of my mind, "Don't forget what you have learned over here at MSA."

Clip Keywords:
    Data Types : Media
    Support : Professional development
    Support : Support

Collection: CHAT > DIVISION OF LABOR > MSA > Pros > Career Changer

Clip: [Teacher 1](#)
    Collection: CHAT > DIVISION OF LABOR > MSA > Pros > Career Changer
    Clip Transcript:

My professional goal ... I'd really like to be a principal one day. I always said that I never wanted to. I never wanted to leave a classroom because I have so much fun. It's energizing to be with the kids and to feed off of their energy, but as I'm growing in my profession I see how what I'm learning could help other teachers and how that role isn't just for me in my classroom anymore. It has suddenly broadened to where I kind of feel like if I could take this information and lead a professional development in another school, or in an environment where you're academically speaking with teachers about common formative assessments, or how can we engage students better? How can we differentiate our

instruction to better meet the needs of every student in the classroom? I think that's my goal in my profession right now. But that's somewhere down the road. I'm still having fun teaching.

Clip Keywords:

Data Types : Media

Support : MSA as career changer

Support : Support

Clip: Teacher 4

Collection: CHAT > DIVISION OF LABOR > MSA > Pros > Career Changer

Clip Transcript:

Teacher 4: My name is [Teacher 4], and I'm from [School G]. Right now, after joining MSA as an ed tech and will all the support from all the teachers that I've met through MSA and just at the school levels, they've encouraged me to go back for my teaching degree, which I am doing now. I'm almost finished with my master's. I guess now I feel like the doors have opened. I'm looking at a doctorate and I'm also looking a couple of years later maybe going for a national board certification.

That's still down the road, but I want to get at least a few years under my best before I start deciding what I want to do. After working with all the teachers with MSA, that's really encouraged me and opened my eyes to the teaching profession and just showed me what my passion is. Before, I didn't know what it was. That's why I never went [00:06:00] back for a master's degree in any field, but now I see that I really, really like teaching. That's what I really want to go into and later on hopefully go for my doctorate so that way I can teach at the college level.

Clip Keywords:

Data Types : Media

Support : MSA as career changer

Support : Support

Collection: CHAT > DIVISION OF LABOR > MSA > Role

Clip: MSA's primary role is to recruit for the Lab

Collection: CHAT > DIVISION OF LABOR > MSA > Role

Clip Transcript:

From my perspective, I think the role of MSA was to increase the academic performance of students that were leaving the BIE schools and the northern New Mexico schools. When we first started, I believe that was the intent and that was kind of what we went in understanding is that ... Our students, when they go into careers and then they go

into the professions that Los Alamos National Labs requires, there weren't a lot of students from northern New Mexico for whatever reason ... Socioeconomics. But academically, I think that the role of MSA was to increase the number of students that could go into those high-paying jobs so that here was a funnel of good-working, good, intelligent people that were in the pool of applicants to fill those positions, which I don't think there was.

Clip Keywords:
  Data Types : Media
Clip: MSA's professional development is a means for recruiting for the Lab
  Collection: CHAT > DIVISION OF LABOR > MSA > Role
  Clip Transcript:

Plus secondly, I think it was the role of MSA to just increase the professionalism and the intellect of the teachers because, I think with MSA's role, it's not to directly show us how to teach. It's how to make us better, and I think that's what a lot of people kind of lose sight of - is that we're here to make ourselves better. We're not here to learn how to do a Harry Wong strategy. We're not here to learn how to use [Marzano 02:03] in the classroom, but it's how we can incorporate all of these different ideas, these structures, these ideologies into our own learning so that we become better. In turn, that makes our school better and that kind of filters down into the students, who then become these wonderful, academically-proficient students that go out to college and then get jobs at Los Alamos National Labs.

Clip Keywords:
  Data Types : Media
Clip: Challenging ropes course
  Collection: CHAT > DIVISION OF LABOR > MSA > Role
  Clip Transcript:

Teacher 2 MSA is that little helper that we can use to hook on because as that road is getting steeper, MSA is there. "MSA help me do this," and then having the free toys. You've even got the free devices, whatever you want to call them. It's there and your help, your expertise, you and Lorenzo and Zack, [00:44:00] they're just there. They're there as our hooks to help and pull ourselves up because, yeah, that will be steeper. For me, MSA isn't [inaudible 00:44:12] because sometimes you go [inaudible 00:44:13] and the teachers have little conferences and meetings. It's always like, "You're teachers. We get our pats on the back," but MSA I think challenges us to break out of that comfort zone that we are teachers and we have our own class and we do our things, but now what are you doing?

What is your next step? What is the next step? What is the next level? Where are you going to push yourself here? Where are you going to push yourself there? MSA is just that challenge I think, that ropes course that we're all trying to go through every summer and it gets a little bit harder or maybe even easier because we've learned the ropes. To me, that's what MSA is it's just that challenge, not so much a pat on the back because sometimes I think at the end of the day we feel like, "I can't put the programs on the computer," or, "I so did not understand the bathtub problem." We leave frustrated which is good though because then that's pushing us to say, "I've got to figure that out. I've got to learn how to get it." For me, that's what MSA is, that challenge.

Clip Keywords:
Data Types : Media
Support : MSA teacher and school support
Support : Support

Clip: Community
Collection: CHAT > DIVISION OF LABOR > MSA > Role
Clip Transcript:

Teacher 3: For me, it's more than just the individual challenge. It's a forum for us to meet teachers in other schools and other communities, also people in our own school that even though we see each other every day, maybe we're not having these discussions. We're talking about, "How do you grade the kids? Do you count zeros? Do you grade every single thing they ever do or do you teach and then do formative assessments, adjust your teaching and then grade what comes at the end?" Just some of these everyday things that we as individual teachers may struggle with. It's allowing us to have the discussion like the Fidelity stuff. Now we know what we used to do in the olden days when we accessed prior knowledge and did things more holistically, maybe that's coming [00:46:00] back en vogue. It just validates [inaudible 00:46:03] meeting the needs. The data that came with the No Child Left Behind, it was alien to me, but now I'm through MSA actually understanding what they're trying to get at when they say data because kids are not numbers. They're human beings. The numbers do tell us things and can guide us in our teaching whether they are understanding or not understanding of the concept. We can go back and adjust what we're doing. I just like the networking part that we're not alone because in your classroom, it becomes your own little kingdom. Sometimes we don't venture out of our own world, our own little ...

Clip Keywords:

Data Types : Media
Support : MSA teacher and school support
Support : Support

Collection: CHAT > RULES > Administrative

Clip: [Administrators are missing in classroom action due to policy demands](#)
    Collection: CHAT > RULES > Administrative
    Clip Transcript:

> That's the other drawback of being an administrator. I see our administrators being pulled away for the administrative duties. That's hard to see because then you're not working with the teachers. You're being an office person. You might as well go have a cubicle in New York because you're not in the classroom. That needs to be changed. That needs to be changed where principals don't have to do so much of that paperwork. I hope that when I'm a principal, that I have that option to delegate that responsibility to somebody and say, "I don't want to do that. I want to be in the classroom and I want to be working with these teachers and I'm going to be working with these students. I want to be developing our school." That's what I would want to do. But is that always ideal? Is that always something that's possible?

    Clip Keywords:
        Challenges : Challenges
        Challenges : Lack of administrative support
        Challenges : Rules
        Data Types : Media

Collection: CHAT > RULES > Policies

Clip: [Rules that create barriers to parent involvement](#)
    Collection: CHAT > RULES > Policies
    Clip Transcript:

> Maybe that's something that can be incorporated with the MOOC, is to get a parent page set up. I don't know. The parents, I think, need to feel welcomed at the school. I know a lot of the parents that I talk to, "Well we have to have a background check, and we can't go to the school, and we don't feel welcome." I think that has to change.

    Clip Keywords:
        Challenges : Challenges
        Challenges : Rules
        Data Types : Media
Clip: [Policies that create technology gap](#)
    Collection: CHAT > RULES > Policies

Clip Transcript:

One thing is I took the common core writing essentials through Pearson that was required by Casey's boss that we all take an online course in common core. They paid for it but we had to signup for one of six: two were on math, 1 was on writing, 1 was on reading. I signed up writing and then I dispersed everybody in my staff coz we are so small, you do this one, you do this one, you do this one but I put majority of us in writing because I thought that was our very weak component in our school. In the writing essentials it really talks a lot about technology and it says these kids need to at least be blogging, e-paling, finding ePals around the world. They need to be communicating so that they learn how to express themselves at a very early age. So we started working on trying to set that up and the system says we're blocked so then I call the IT department and they say, "What you are talking about doesn't sound like anything we would block." So now I'm back to someone who knows a little bit about technology that comes in once in a while to work with people to see what's going on. A little problem to improve education we're still not there yet and we started in October so in 5 months. We'll get there by April so it will be good for next year but this year we lost 6 months of maybe writing once a week maybe communicating especially if we can learn how to Skype next coz there is a lot to learn about the world and we are global now so you see it in commercials and it looks easy but to do it.

Clip Keywords:
Challenges : Challenges
Challenges : Rules
Challenges : Technology
Data Types : Media

Clip: Education policy and standards restrict innovation
Collection: CHAT > RULES > Policies
Clip Transcript:

Principal 1: If you can connect it [technology] to the common core and to the standards and put it in there also so the teachers know that what they are teaching that day is connected and is gonna help them on the test. So this might be the reading and writing aspect of that which aligns to this standard or that standard. So if you took the science standards, which there are not very many but once you look at them, they are very detailed. I think if you can connect back to it because sometimes a large part of people are still from that kind of system like I need to make sure I'm meeting this standard or this requirement or that requirement

but I think that would be a very enjoyable way of learning as long you could connect some reading and connect that they are meeting their standards. They don't have to talk all day to do that. Again the kids are doing it. You need to take 10,000 steps a day to stay healthy minimum. And did you know let's count how many steps to... You're doing a little health, you're doing a little math and writing, always giving them feedback "Well, you said you only go to Gabriel's house on Thursdays that means you're not taking those steps on Thursdays" or whatever, I mean as one example.

Clip Keywords:
 Challenges : Challenges
 Challenges : Rules
 Challenges : Technology
 Data Types : Media

Collection: CHAT > TEACHERS > Expectation

Clip: Consumer: Expectation of content to be generated by someone else
 Collection: CHAT > TEACHERS > Expectation
 Clip Transcript:

The MOOC? When we're in summer, it's a great way for us to all be together. But then when we started going into August, I went back in there and I looked at it and there wasn't anything new. Then I went back in there in September and there wasn't anything new. At that point I'm thinking, "Well, no one is using it anymore," so it's not a place that I would frequently visit. That's just the way that I remember it.
I think it could definitely be improved by having more videos about education. One thing I like to do is go onto YouTube and just look at the different ways that teachers are doing their lessons. The way that they're working with kids, different techniques. If we had more videos on there, I think that would definitely be a place where that would be an education portal. But also, the other thing is Khan Academy. I think we tried to do something like that where the teachers were posting their lessons and, this is how you do a lesson on fractions. I wanted to see more of that stuff, but then nothing ever happened with that.

Clip Keywords:
 Challenges : Challenges
 Challenges : Technology
 Data Types : Media

Clip: Expectation that his products would be posted by someone else
 Collection: CHAT > TEACHERS > Expectation

Clip Transcript:

I was looking for some of the lessons we did at the BIE that one summer, when we were first into the MOOC, and I think we were using Penultimate and we had that PowerPoint that we were trying to incorporate into it. Overall, we were trying to get a lesson that was similar to something I think you would find on Khan Academy. But once again, there wasn't any of that. I couldn't find it for whatever reason. The technology aspect of it ... I think if it were more of the portal, then I think that would be more interesting for people to go into.

Clip Keywords:
Data Types : Media

Clip: Conflict: Requirement to generate content relevant to this community of teachers
Collection: CHAT > TEACHERS > Expectation
Clip Transcript:

If it were our proprietary content, that would be great also. But then to also mirror that with what teachers are doing in Massachusetts. What teachers are doing in Florida. What teachers are doing in Singapore. Because it's not just about our little section of the world here. We're seventy-some teachers, I don't know. But we're a small, little niche in that community of teachers. For us to say, "We're the best. We don't want to see what anybody else is doing." That's pretty ignorant right there.

That's pretty vain also, because we want to see - maybe somebody over in Australia did this awesome lesson on fractions. Why can't we see that? Why can't I do it like that? I think if it were that portal, where it had other content that was linked to the MOOC, I think that would make it a place where you could basically setup as your homepage and you could say, "Oh look, there's a new video that was posted. I'm going to click on that." Instead of having the Google search engine, that's your homepage. Maybe that's something that the BIE 22:48 could actually put onto our homepage. That's my idea of the MOOC.

Clip Keywords:
Data Types : Media

Clip: Fifth dimension: Realization of ability to contribute material to CLASET
Collection: CHAT > TEACHERS > Expectation
Clip Transcript:

Yeah, totally. Yeah, you're right. If you're looking at the video, you can copy the link and then just go into the whatever the source is and then it would link to the video. Yeah, that'd be easy. As you're just perusing the Internet, "Oh yeah, I like that. I think I want to share that with

everybody." Yeah, totally.

Clip Keywords:
    Data Types : Media

Collection: CHAT > TEACHERS > Survey 1: Challenges

Clip: Administrative disruptions
    Collection: CHAT > TEACHERS > Survey 1: Challenges
    Clip Transcript:
        7710: Too many disruptions
    Clip Keywords:
        Challenges : Challenges
        Challenges : Lack of administrative support
        Challenges : Socioeconomics
        Data Types : Document

Clip: Staff meetings
    Collection: CHAT > TEACHERS > Survey 1: Challenges
    Clip Transcript:
        Staff meetings before school, after school, and even in the middle of the day during instruction sometimes
    Clip Keywords:
        Challenges : Challenges
        Challenges : Rules
        Data Types : Document

Clip: Disruptions causing teaching inconsistencies
    Collection: CHAT > TEACHERS > Survey 1: Challenges
    Clip Transcript:
        Being on a consistent teaching schedule is my greatest challenge because when things occur unexpectedly at our school, then we get out of rhythm.
    Clip Keywords:
        Challenges : Challenges
        Challenges : Rules
        Data Types : Document

Clip: No support
    Collection: CHAT > TEACHERS > Survey 1: Challenges
    Clip Transcript:
        Lack of administrative support
    Clip Keywords:
        Challenges : Challenges
        Challenges : Lack of administrative support
        Data Types : Document

Clip: No administrative support
    Collection: CHAT > TEACHERS > Survey 1: Challenges
    Clip Transcript:
        Administrative support - none
    Clip Keywords:

Challenges : Challenges
Challenges : Lack of administrative support
Data Types : Document

Clip: [Too many staff meetings]{.blue}

    Collection: CHAT > TEACHERS > Survey 1: Challenges

    Clip Transcript:

        Staff meetings - too many, 3 in 1 week, over 30 so far closer to 50 this year

    Clip Keywords:

    Challenges : Challenges
    Challenges : Rules
    Data Types : Document

Clip: [No support3]{.blue}

    Collection: CHAT > TEACHERS > Survey 1: Challenges

    Clip Transcript:

        Administrative support

    Clip Keywords:

    Challenges : Challenges
    Challenges : Lack of administrative support
    Data Types : Document

Clip: [Insufficient lesson planning time]{.blue}

    Collection: CHAT > TEACHERS > Survey 1: Challenges

    Clip Transcript:

        Not enough time for planning quality student lessons

    Clip Keywords:

    Challenges : Challenges
    Challenges : Lack of administrative support
    Challenges : Lack of planning time
    Data Types : Document

Clip: [Difficulty getting students to explain their mathematical thinking]{.blue}

    Collection: CHAT > TEACHERS > Survey 1: Challenges

    Clip Transcript:

    4713: Getting students to explain their thinking (including myself)

    Clip Keywords:

    Data Types : Document

Clip: [Plugging holes in students' mathematical knowledge]{.blue}

    Collection: CHAT > TEACHERS > Survey 1: Challenges

    Clip Transcript:

    3992: Plugging holes in students' mathematical knowledge

    Clip Keywords:

    Challenges : Academically inferior students
    Challenges : Challenges
    Data Types : Document

Clip: [Lack of time for planning instruction and assessments]{.blue}

    Collection: CHAT > TEACHERS > Survey 1: Challenges

    Clip Transcript:

    9893: Planning instruction for my students

Planning assessments for my students

Clip Keywords:

Challenges : Challenges

Challenges : Lack of planning time

Data Types : Document

Clip: Lack of preparation time

Collection: CHAT > TEACHERS > Survey 1: Challenges

Clip Transcript:

Lack of preparation time/gathering resources

Clip Keywords:

Challenges : Challenges

Challenges : Lack of planning time

Data Types : Document

Clip: Not enough preparation and planning time

Collection: CHAT > TEACHERS > Survey 1: Challenges

Clip Transcript:

Preparation/planning - not enough

Clip Keywords:

Challenges : Challenges

Challenges : Lack of planning time

Data Types : Document

Clip: Lack of teaching with depth of knowledge

Collection: CHAT > TEACHERS > Survey 1: Challenges

Clip Transcript:

2840: Teaching with depth of knowledge

Clip Keywords:

Challenges : Challenges

Challenges : Lack of teacher preparation

Data Types : Document

Clip: Lack of modeling from coaches

Collection: CHAT > TEACHERS > Survey 1: Challenges

Clip Transcript:

Model a rigorous math lesson from in house coaches

Clip Keywords:

Challenges : Challenges

Challenges : Lack of teacher preparation

Data Types : Document

Clip: Classroom management hinders student learning

Collection: CHAT > TEACHERS > Survey 1: Challenges

Clip Transcript:

Classroom management hinders student learning.

Clip Keywords:

Challenges : Challenges

Challenges : Lack of teacher preparation

Data Types : Document

Clip: Not knowing how to help struggling students

Collection: CHAT > TEACHERS > Survey 1: Challenges
Clip Transcript:
> Greatest challenge is how do I reach or help the struggling students? How do I make them understand?

Clip Keywords:
Challenges : Challenges
Challenges : Lack of teacher preparation
Data Types : Document

Clip: Large class sizes
Collection: CHAT > TEACHERS > Survey 1: Challenges
Clip Transcript:
Large class sizes

Clip Keywords:
Challenges : Challenges
Challenges : Lack of teacher preparation
Data Types : Document

Clip: Teachers not thinking algebraically
Collection: CHAT > TEACHERS > Survey 1: Challenges
Clip Transcript:
4881: Thinking algebraically. I prefer pictures and tables

Clip Keywords:
Challenges : Challenges
Challenges : Lack of teacher preparation
Data Types : Document

Clip: Teachers prepared for students' misconceptions
Collection: CHAT > TEACHERS > Survey 1: Challenges
Clip Transcript:
2622: Preparing for misconceptions in my students

Clip Keywords:
Challenges : Challenges
Challenges : Lack of teacher preparation
Data Types : Document

Clip: Lack of collaboration time
Collection: CHAT > TEACHERS > Survey 1: Challenges
Clip Transcript:
> Lack of time to collaborate.

Clip Keywords:
Challenges : Challenges
Challenges : Lack of planning time
Challenges : Lack of teacher preparation
Data Types : Document

Clip: Common Core
Collection: CHAT > TEACHERS > Survey 1: Challenges
Clip Transcript:
0425: Meeting increased proficiency standards such as common core

Clip Keywords:

Challenges : Challenges

Challenges : Curriculum

Data Types : Document

Clip: Common Core Standards requirements

    Collection: CHAT > TEACHERS > Survey 1: Challenges

    Clip Transcript:

        7118: Being able to keep up with the curriculum requirements especially with common core state standards.

    Clip Keywords:

    Challenges : Challenges

    Challenges : Curriculum

    Data Types : Document

Clip: Retention

    Collection: CHAT > TEACHERS > Survey 1: Challenges

    Clip Transcript:

    1642: Retention

    Clip Keywords:

    Data Types : Document

Clip: Lack of language foundation

    Collection: CHAT > TEACHERS > Survey 1: Challenges

    Clip Transcript:

    Lack of language foundation on which students should be building on

    Clip Keywords:

    Data Types : Document

Clip: Lack of foundational skills in mathematics

    Collection: CHAT > TEACHERS > Survey 1: Challenges

    Clip Transcript:

        0708: Students do not come into 4th grade with basic skills or solid foundations in number sense.

    Clip Keywords:

    Data Types : Document

Clip: Gaps in student knowledge

    Collection: CHAT > TEACHERS > Survey 1: Challenges

    Clip Transcript:

    1846: There are a lot of gaps in student knowledge

    Clip Keywords:

    Data Types : Document

Clip: Missing culture of learning

    Collection: CHAT > TEACHERS > Survey 1: Challenges

    Clip Transcript:

    0 culture of learning

    Clip Keywords:

    Data Types : Document

Clip: Students are not prepared for the grade level

    Collection: CHAT > TEACHERS > Survey 1: Challenges

    Clip Transcript:

Students not being prepared for the grade level.

Clip Keywords:

Data Types : Document

Clip: Students lack focus and discipline

Collection: CHAT > TEACHERS > Survey 1: Challenges

Clip Transcript:

Students' lack of focus and discipline.

Clip Keywords:

Data Types : Document

Clip: Students performing below grade level

Collection: CHAT > TEACHERS > Survey 1: Challenges

Clip Transcript:

Below grade level students academically

Clip Keywords:

Data Types : Document

Clip: Students don't care

Collection: CHAT > TEACHERS > Survey 1: Challenges

Clip Transcript:

Lack of student collaboration/caring

Clip Keywords:

Data Types : Document

Clip: Student absences

Collection: CHAT > TEACHERS > Survey 1: Challenges

Clip Transcript:

Student absences

Clip Keywords:

Data Types : Document

Clip: Student behavioral issues

Collection: CHAT > TEACHERS > Survey 1: Challenges

Clip Transcript:

Behavioral issues

Clip Keywords:

Data Types : Document

Clip: Social issues that affect learning

Collection: CHAT > TEACHERS > Survey 1: Challenges

Clip Transcript:

0708: Children sometimes have life issues that interfere in learning

Clip Keywords:

Data Types : Document

Clip: Curiosity is not a cultural value

Collection: CHAT > TEACHERS > Survey 1: Challenges

Clip Transcript:

7710: Asking questions (curiosity) is not a "traditional value"

Clip Keywords:

Data Types : Document

Clip: Language issues as students speak Keres

Collection: CHAT > TEACHERS > Survey 1: Challenges
Clip Transcript:
>   English language issues - students speak Keres
Clip Keywords:
>   Data Types : Document

Collection: CHAT > TEACHERS > Survey 1: Challenges > Administration

Clip: Administrative disruptions
>   **Collection:** CHAT > TEACHERS > Survey 1: Challenges > Administration
>   **Clip Transcript:**
>>   7710: Too many disruptions
>   **Clip Keywords:**
>>   Challenges : Challenges
>>   Challenges : Lack of administrative support
>>   Challenges : Socioeconomics
>>   Data Types : Document

Clip: Staff meetings
>   **Collection:** CHAT > TEACHERS > Survey 1: Challenges > Administration
>   **Clip Transcript:**
>>   Staff meetings before school, after school, and even in the middle of the day during instruction sometimes
>   **Clip Keywords:**
>>   Challenges : Challenges
>>   Challenges : Rules
>>   Data Types : Document

Clip: Disruptions causing teaching inconsistencies
>   **Collection:** CHAT > TEACHERS > Survey 1: Challenges > Administration
>   **Clip Transcript:**
>>   Being on a consistent teaching schedule is my greatest challenge because when things occur unexpectedly at our school, then we get out of rhythm.
>   **Clip Keywords:**
>>   Challenges : Challenges
>>   Challenges : Rules
>>   Data Types : Document

Clip: No support
>   **Collection:** CHAT > TEACHERS > Survey 1: Challenges > Administration
>   **Clip Transcript:**
>>   Lack of administrative support
>   **Clip Keywords:**
>>   Challenges : Challenges
>>   Challenges : Lack of administrative support
>>   Data Types : Document

Clip: No administrative support
>   **Collection:** CHAT > TEACHERS > Survey 1: Challenges > Administration
>   **Clip Transcript:**

Administrative support - none
Clip Keywords:
Challenges : Challenges
Challenges : Lack of administrative support
Data Types : Document
Clip: Too many staff meetings
Collection: CHAT > TEACHERS > Survey 1: Challenges > Administration
Clip Transcript:
Staff meetings - too many, 3 in 1 week, over 30 so far closer to 50 this year
Clip Keywords:
Challenges : Challenges
Challenges : Rules
Data Types : Document
Clip: No support3
Collection: CHAT > TEACHERS > Survey 1: Challenges > Administration
Clip Transcript:
Administrative support
Clip Keywords:
Challenges : Challenges
Challenges : Lack of administrative support
Data Types : Document

Collection: CHAT > TEACHERS > Survey 1: Challenges > Classroom

Clip: Insufficient lesson planning time
Collection: CHAT > TEACHERS > Survey 1: Challenges > Classroom
Clip Transcript:
Not enough time for planning quality student lessons
Clip Keywords:
Challenges : Challenges
Challenges : Lack of administrative support
Challenges : Lack of planning time
Data Types : Document
Clip: Difficulty getting students to explain their mathematical thinking
Collection: CHAT > TEACHERS > Survey 1: Challenges > Classroom
Clip Transcript:
4713: Getting students to explain their thinking (including myself)
Clip Keywords:
Data Types : Document
Clip: Plugging holes in students' mathematical knowledge
Collection: CHAT > TEACHERS > Survey 1: Challenges > Classroom
Clip Transcript:
3992: Plugging holes in students' mathematical knowledge
Clip Keywords:
Challenges : Academically inferior students
Challenges : Challenges

Data Types : Document

Clip: [Lack of time for planning instruction and assessments](#)

    Collection: CHAT > TEACHERS > Survey 1: Challenges > Classroom

    Clip Transcript:

        9893: Planning instruction for my students

            Planning assessments for my students

    Clip Keywords:

        Challenges : Challenges

        Challenges : Lack of planning time

        Data Types : Document

Clip: [Lack of preparation time](#)

    Collection: CHAT > TEACHERS > Survey 1: Challenges > Classroom

    Clip Transcript:

        Lack of preparation time/gathering resources

    Clip Keywords:

        Challenges : Challenges

        Challenges : Lack of planning time

        Data Types : Document

Clip: [Not enough preparation and planning time](#)

    Collection: CHAT > TEACHERS > Survey 1: Challenges > Classroom

    Clip Transcript:

            Preparation/planning - not enough

    Clip Keywords:

        Challenges : Challenges

        Challenges : Lack of planning time

        Data Types : Document

Clip: [Lack of teaching with depth of knowledge](#)

    Collection: CHAT > TEACHERS > Survey 1: Challenges > Classroom

    Clip Transcript:

        2840: Teaching with depth of knowledge

    Clip Keywords:

        Challenges : Challenges

        Challenges : Lack of teacher preparation

        Data Types : Document

Clip: [Lack of modeling from coaches](#)

    Collection: CHAT > TEACHERS > Survey 1: Challenges > Classroom

    Clip Transcript:

            Model a rigorous math lesson from in house coaches

    Clip Keywords:

        Challenges : Challenges

        Challenges : Lack of teacher preparation

        Data Types : Document

Clip: [Classroom management hinders student learning](#)

    Collection: CHAT > TEACHERS > Survey 1: Challenges > Classroom

    Clip Transcript:

            Classroom management hinders student learning.

Clip Keywords:
  Challenges : Challenges
  Challenges : Lack of teacher preparation
  Data Types : Document
Clip: <u>Not knowing how to help struggling students</u>
  Collection: CHAT > TEACHERS > Survey 1: Challenges > Classroom
  Clip Transcript:
      Greatest challenge is how do I reach or help the struggling students? How do I
      make them understand?
  Clip Keywords:
  Challenges : Challenges
  Challenges : Lack of teacher preparation
  Data Types : Document
Clip: <u>Large class sizes</u>
  Collection: CHAT > TEACHERS > Survey 1: Challenges > Classroom
  Clip Transcript:
  Large class sizes
  Clip Keywords:
  Challenges : Challenges
  Challenges : Lack of teacher preparation
  Data Types : Document
Clip: <u>Teachers not thinking algebraically</u>
  Collection: CHAT > TEACHERS > Survey 1: Challenges > Classroom
  Clip Transcript:
  4881: Thinking algebraically. I prefer pictures and tables
  Clip Keywords:
  Challenges : Challenges
  Challenges : Lack of teacher preparation
  Data Types : Document
Clip: <u>Teachers prepared for students' misconceptions</u>
  Collection: CHAT > TEACHERS > Survey 1: Challenges > Classroom
  Clip Transcript:
  2622: Preparing for misconceptions in my students
  Clip Keywords:
  Challenges : Challenges
  Challenges : Lack of teacher preparation
  Data Types : Document
Clip: <u>Lack of collaboration time</u>
  Collection: CHAT > TEACHERS > Survey 1: Challenges > Classroom
  Clip Transcript:
      Lack of time to collaborate.
  Clip Keywords:
  Challenges : Challenges
  Challenges : Lack of planning time
  Challenges : Lack of teacher preparation
  Data Types : Document

Collection: CHAT > TEACHERS > Survey 1: Challenges > Curriculum

    Clip: <u>Common Core</u>
        Collection: CHAT > TEACHERS > Survey 1: Challenges > Curriculum
        Clip Transcript:
            0425: Meeting increased proficiency standards such as common core
        Clip Keywords:
            Challenges : Challenges
            Challenges : Curriculum
            Data Types : Document
    Clip: <u>Common Core Standards requirements</u>
        Collection: CHAT > TEACHERS > Survey 1: Challenges > Curriculum
        Clip Transcript:
            7118: Being able to keep up with the curriculum requirements especially with common core state standards.
        Clip Keywords:
            Challenges : Challenges
            Challenges : Curriculum
            Data Types : Document

Collection: CHAT > TEACHERS > Survey 1: Challenges > Students

    Clip: <u>Retention</u>
        Collection: CHAT > TEACHERS > Survey 1: Challenges > Students
        Clip Transcript:
            1642: Retention
        Clip Keywords:
            Data Types : Document
    Clip: <u>Lack of language foundation</u>
        Collection: CHAT > TEACHERS > Survey 1: Challenges > Students
        Clip Transcript:
            Lack of language foundation on which students should be building on
        Clip Keywords:
            Data Types : Document
    Clip: <u>Lack of foundational skills in mathematics</u>
        Collection: CHAT > TEACHERS > Survey 1: Challenges > Students
        Clip Transcript:
            0708: Students do not come into 4th grade with basic skills or solid foundations in number sense.
        Clip Keywords:
            Data Types : Document
    Clip: <u>Gaps in student knowledge</u>
        Collection: CHAT > TEACHERS > Survey 1: Challenges > Students
        Clip Transcript:
            1846: There are a lot of gaps in student knowledge
        Clip Keywords:

Data Types : Document
Clip: Missing culture of learning
    Collection: CHAT > TEACHERS > Survey 1: Challenges > Students
    Clip Transcript:
        0 culture of learning
    Clip Keywords:
    Data Types : Document
Clip: Students are not prepared for the grade level
    Collection: CHAT > TEACHERS > Survey 1: Challenges > Students
    Clip Transcript:
        Students not being prepared for the grade level.
    Clip Keywords:
    Data Types : Document
Clip: Students lack focus and discipline
    Collection: CHAT > TEACHERS > Survey 1: Challenges > Students
    Clip Transcript:
        Students' lack of focus and discipline.
    Clip Keywords:
    Data Types : Document
Clip: Students performing below grade level
    Collection: CHAT > TEACHERS > Survey 1: Challenges > Students
    Clip Transcript:
        Below grade level students academically
    Clip Keywords:
    Data Types : Document
Clip: Students don't care
    Collection: CHAT > TEACHERS > Survey 1: Challenges > Students
    Clip Transcript:
        Lack of student collaboration/caring
    Clip Keywords:
    Data Types : Document
Clip: Student absences
    Collection: CHAT > TEACHERS > Survey 1: Challenges > Students
    Clip Transcript:
        Student absences
    Clip Keywords:
    Data Types : Document
Clip: Student behavioral issues
    Collection: CHAT > TEACHERS > Survey 1: Challenges > Students
    Clip Transcript:
    Behavioral issues
    Clip Keywords:
    Data Types : Document
Clip: Social issues that affect learning
    Collection: CHAT > TEACHERS > Survey 1: Challenges > Students
    Clip Transcript:

0708: Children sometimes have life issues that interfere in learning

Clip Keywords:

Data Types : Document

Clip: Curiosity is not a cultural value

Collection: CHAT > TEACHERS > Survey 1: Challenges > Students

Clip Transcript:

7710: Asking questions (curiosity) is not a "traditional value"

Clip Keywords:

Data Types : Document

Clip: Language issues as students speak Keres

Collection: CHAT > TEACHERS > Survey 1: Challenges > Students

Clip Transcript:

English language issues - students speak Keres

Clip Keywords:

Data Types : Document

Collection: RESEARCH QUESTIONS > Q1: Under what circumstances and expectations were the teachers willing and able to use CLASET? > Circumstances

Clip: Time consuming

Collection: RESEARCH QUESTIONS > Q1: Under what circumstances and expectations were the teachers willing and able to use CLASET? > Circumstances

Clip Transcript:

Teacher 2: That's what I'm saying. I think in the classroom I know we're very trained into we get in- We do what we have to. At some point in the day, we check our mail. We check what is coming in from the principal, what's coming in from the ... It becomes a part of your routine because you make that time to do that. I'm not saying you couldn't do that with the MOOC, but I agree. By the time you get it, you log in, you have to go here and then you have to go here. It is time consuming.

Clip Keywords:

Data Types : Media

Clip: Poor network and outdated technologies

Collection: RESEARCH QUESTIONS > Q1: Under what circumstances and expectations were the teachers willing and able to use CLASET? > Circumstances

Clip Transcript:

Teacher 3: The other thing too is that the school's networks have to be able to support this. I'm using a computer that runs on XP and every little thing I ever do I have to sit here and wait while that thing spins.

Teacher 4: You can pray while it spins.

Teacher 3: If they would buy us laptops that worked well, just think of the efficiency factor. Something that I should be able to do in a few seconds takes minutes so that's time 60

for every little thing.

Clip Keywords:
    Data Types : Media
Clip: Lack of proper support
    Collection: RESEARCH QUESTIONS > Q1: Under what circumstances and expectations were the teachers willing and able to use CLASET? > Circumstances
    Clip Transcript:

Interviewer: How many can use Wi-Fi at school, Wi-Fi that they can use with the iPads?

Teacher 8: But we can't use it.

Teacher 3: It's off and on here.

Interviewer: You cannot use ... ?

Teacher 3: Right.

Teacher 5: The BIE, our email things, we can't use our own iPads there because then we're technically stealing the BIE stuff...

Teacher 3: You've given it to the school. If you take something to school like a computer it becomes their property.

Teacher 5: Yes, you can't even take it back to school. We can't use the wireless.

Teacher 3: They're so secure about all this stuff, yet they've gotten into OPM and stolen every person's identity. [crosstalk 00:58:33] How can it be so secure and wonderful and they have all these rules, yet they found just last week that they've gotten hacked into there and gotten everything and retirees data.

Teacher 4: That would be a good conversation for Casey.

Teacher 3: Without the proper equipment, we can't access it. It just takes forever.

Clip Keywords:
    Data Types : Media
Clip: Restrictions
    Collection: RESEARCH QUESTIONS > Q1: Under what circumstances and expectations were the teachers willing and able to use CLASET? > Circumstances
    Clip Transcript:

Interviewer: How many of you have Wi-Fi?

Teacher 3: At school.

Teacher 4: But they don't give us the password.

Teacher 3: We don't know the password.

Female: It's not connected yet.

Female: We're not the only ones.

Interviewer: You have Wi-Fi but you have no passwords?

Teacher 3: It's always somebody who puts it in for us and then ... With the student iPads, they changed it and then they couldn't use them.

Teacher 4: "Okay, go ahead and put it in. Turn away." Let them put it in and so that we can access it.

Teacher 3: Yet. They still hacked all our data. That's the irony of all of that.

Interviewer: These are things I guess I need to learn because I didn't ...

Teacher 2: [crosstalk 01:00:19]. Now you know where the frustration about this comes.

Interviewer: Your frustration is way beyond even the MOOC itself.

Teacher 2: To use the MOOC is not always easy when we're at school.

Clip Keywords:

Data Types : Media

Collection: RESEARCH QUESTIONS > Q1: Under what circumstances and expectations were the teachers willing and able to use CLASET? > Expectations

Clip: **Expectation to be shown how to do everything**

Collection: RESEARCH QUESTIONS > Q1: Under what circumstances and expectations were the teachers willing and able to use CLASET? > Expectations

Clip Transcript:

Teacher 8: ...but this MSA has been a challenge. It really has been a challenge. The little iPads, I've had to go to my grandson, who is in the 2nd grade, to say, "How do you do ... ?" He looks at me, like, "You just push this button twice and it gets you out of that program." I'm like, "Wow, how come nobody told me that?" Downloading the 5 practices a while ago, I was like, "Nobody told me I just had to push that little button that says download to the iBook." I'm like, "Wow."

Clip Keywords:

Data Types : Media

Clip: **Chicken helpers**

Collection: RESEARCH QUESTIONS > Q1: Under what circumstances and expectations were the teachers willing and able to use CLASET? > Expectations

Clip Transcript:

Teacher 8: I've got so many doors that I can open, yet I'm at that place where, "Okay, if I can't even just open my iPad and say how do I get to the 5 practices and get it download on my iBook." Even those things. It's amazing what we can do, what we're capable of doing, what we choose to do because that is what I'm finding out. Like this morning when somebody said how some of us can just become chicken helpers ... That's what I call that. "Let's be chicken helpers. Those of us who know how to download the iBook, let's just go and help." Some of us, who were ready, just chose to sit

there and read our books. Some of us stood up and said, "Let's go help out each other."

Clip Keywords:
    Data Types : Media
Clip: Bridge language gap
    Collection: RESEARCH QUESTIONS > Q1: Under what circumstances and expectations were the teachers willing and able to use CLASET? > Expectations
    Clip Transcript:

Teacher 8: You know what we need to do is we need to find those people who are doing that [00:26:00] because I've been in [School F] ... For as long as I've been up there, I have been doing that. I have been fighting with math coaches and reading coaches and all of those people, including principals, which I why I got 1st grade. That info, that data, those important facts need to somehow come out of there. The worst part about it, like I just said, when I first started teaching, those kids were speaking Tiwa. Those kids are sitting right there. She was one my students. I go back and I'm thinking, "I've got their kids. I've had their kids and now these kids that are coming in, they're not speaking Tiwa much. [crosstalk 00:26:55]. Somewhere somehow, it's got to come back. If technology is there to help us to do that, then let's find out how to use it to help us to get there.

Clip Keywords:
    Data Types : Media
Clip: Expectation of MSA to upload content
    Collection: RESEARCH QUESTIONS > Q1: Under what circumstances and expectations were the teachers willing and able to use CLASET? > Expectations
    Clip Transcript:

Teacher 3: I think that when the teachers are video taping lessons, I would like to see you guys putting some of those on there so that maybe in observing somebody else teaching something, then you can get ideas of things. What if native teachers could put on there certain "Don't do this" or "It's fine to do that"?

Clip Keywords:
    Data Types : Media
Clip: Make is simple and automated
    Collection: RESEARCH QUESTIONS > Q1: Under what circumstances and expectations were the teachers willing and able to use CLASET? > Expectations
    Clip Transcript:

Teacher 7: I think the biggest struggle with the MOOC is once you get into it and you get onto the MOOC is finding the time to get on to the MOOC. I know when we come here it's like, "Yeah, we do it-
Teacher 3: It's our focus.

Teacher 7: But when we get back to our classrooms and you've got all these other things you're trying to do and get done in a day, it's not always convenient to get on, go to the MOOC, log ... Remember your password.

Teacher 8: We need to make it simpler.

Teacher 3: Our network is awful.

Teacher 8: We need to make it simpler to somehow get on, like as simple as like when you go check into the hotel. "What room? 206. Password? Apple." Do you know what I'm saying? Something like that. Maybe that would allow us to, "Oh yeah, it's just MSA. Then I'm number blah, blah, [00:56:00] blah," and I can get in versus "Bovi rainbow, bovi at ... "

Teacher 2: Yeah because you don't even know if something has been posted on the MOOC unless you are in it. Let's say if you post a question like that on the MOOC, unless I was at home and I made the time and got into the MOOC and logged on and saw your question, I couldn't respond. Whereas if, I don't know, incoming mail or something [crosstalk 00:56:27]. Then, "Oh, oh, you were asking about ... " It's almost a way to approach it. "This is what I do with my kids," a quick respond to you.

Clip Keywords:
   Data Types : Media

Clip: Supplement MSA training in the classroom
   Collection: RESEARCH QUESTIONS > Q1: Under what circumstances and expectations were the teachers willing and able to use CLASET? > Expectations
   Clip Transcript:

Teacher 5: I think MSA has caused me to go into depth of what a child is thinking and learning more about that student and all the math that we're doing. I'm old school where I used to do all this. Now we're breaking it up into connections, what the kids can connect to. The technology has just been really exciting. I feel like I can really do something with technology now.

Clip Keywords:
   Data Types : Media

Clip: Human connection
   Collection: RESEARCH QUESTIONS > Q1: Under what circumstances and expectations were the teachers willing and able to use CLASET? > Expectations
   Clip Transcript:

Principal 1: The biggest thing I believe is that there are no relationships anymore in education and there is no relationship with just about anything. So, I spent 25 minutes before I got Verizon and then I got a good human being and a good person and we worked on the issue and got it solved.

If there was a way to take anything in technology and create the relationship or the human element to it, and so that's why I think Facebook and things like Pinterest, but all those things create how technology and relationship go together in a good way. So in education there might be a curriculum or there might be a lot of things but there is no connection. You have to search. It has to be like there is a question and then you're just looking for an answer instead of a dialog so we can grow and everything about education is speaking, listening, communicating, writing, and a lot of elements in information technology or a lot of elements in technology are missing those components. I don't know how to solve it.

Clip Keywords:
    Data Types : Media

Clip: Build community of colleagues
    Collection: RESEARCH QUESTIONS > Q1: Under what circumstances and expectations were the teachers willing and able to use CLASET? > Expectations
    Clip Transcript:

One of the things is that disconnection and technology is supposed to have improved that and I think it has but not to an extent that is really that the real strong professional learning community of colleagues that are working together to help each other to create more outcomes for students. That's a difficult task. I don't know what you want to take on.

Clip Keywords:
    Data Types : Media

Clip: Connected to Common Core Standards
    Collection: RESEARCH QUESTIONS > Q1: Under what circumstances and expectations were the teachers willing and able to use CLASET? > Expectations
    Clip Transcript:

Principal 1: If you can connect it [technology] to the common core and to the standards and put it in there also so the teachers know that what they are teaching that day is connected and is gonna help them on the test. So this might be the reading and writing aspect of that which aligns to this standard or that standard. So if you took the science standards, which there are not very many but once you look at them, they are very detailed. I think if you can connect back to it because sometimes a large part of people are still from that kind of system like I need to make sure I'm meeting this standard or this requirement or that requirement but I think that would be a very enjoyable way of learning as long you could connect some reading and connect that they are meeting their standards. They don't have to talk all day to do that. Again the kids are doing it. You need to take 10,000

steps a day to stay healthy minimum. And did you know let's count how many steps to... You're doing a little health, you're doing a little math and writing, always giving them feedback "Well, you said you only go to Gabriel's house on Thursdays that means you're not taking those steps on Thursdays" or whatever, I mean as one example.

Clip Keywords:
   Data Types : Media
Clip: <u>Connection to the world</u>
   Collection: RESEARCH QUESTIONS > Q1: Under what circumstances and expectations were the teachers willing and able to use CLASET? > Expectations
   Clip Transcript:

Principal 1: And the stories is something that the Natives at our Pueblo and I think on other Pueblos strive on because they do hear stories from their grandparents and they love it. That is part of their educational process is through the stories because our language isn't written. It's gone from generation to generation since the 1200s being taught through stories, through conversations, and that's a good way. All we are doing is connecting it to the common core standards with the reading and the writing all kids, but I know Pueblo kids love that. And it will be connected to science but then you get all this other stuff out of it: math and reading and writing and speaking and listening and investigating and critically thinking...
Or they can connect with a tribe that is in Mexico that supposedly they took a group of adults 10 years ago and they think that there are from the same people, they look alike. It would be interesting to connect and share stories like that but you're learning science and math and reading and writing they don't even know it. That is one of my goals when I took this course. It was like there's so much learning to be had with this ePal or with this connection especially to another part of the world. I think kids would be like in 1st graders going home and say, "Mom I talked to somebody in China today."

Clip Keywords:
   Data Types : Media
Clip: <u>Expectation of content to be populated by MSA</u>
   Collection: RESEARCH QUESTIONS > Q1: Under what circumstances and expectations were the teachers willing and able to use CLASET? > Expectations
   Clip Transcript:

Teacher 1: The MOOC? When we're in summer, it's a great way for us to all be together. But then when we started going into August, I went back in there and I looked at it and there wasn't anything new. Then I went back in there in September

and there wasn't anything new. At that point I'm thinking, "Well, no one is using it anymore," so it's not a place that I would frequently visit. That's just the way that I remember it.

I think it could definitely be improved by having more videos about education. One thing I like to do is go onto YouTube and just look at the different ways that teachers are doing their lessons. The way that they're working with kids, different techniques. If we had more videos on there, I think that would definitely be a place where that would be an education portal. But also, the other thing is Khan Academy. I think we tried to do something like that where the teachers were posting their lessons and, this is how you do a lesson on fractions. I wanted to see more of that stuff, but then nothing ever happened with that.

I was looking for some of the lessons we did at the BIE that one summer, when we were first into the MOOC, and I think we were using Penultimate and we had that PowerPoint that we were trying to incorporate into it. Overall, we were trying to get a lesson that was similar to something I think you would find on Khan Academy. But once again, there wasn't any of that. I couldn't find it for whatever reason. The technology aspect of it ... I think if it were more of the portal, then I think that would be more interesting for people to go into.

Clip Keywords:
   Data Types : Media

Collection: RESEARCH QUESTIONS > Q2: How did CLASET support Native American teachers' cultural ways of thinking?

   Clip: Opened an avenue of thinking about mediating language gap
   Collection: RESEARCH QUESTIONS > Q2: How did CLASET support Native American teachers' cultural ways of thinking?
   Clip Transcript:

Teacher 4: Yeah, I was going to include everything that I was hearing because then for me MSA provided that scaffolding before I entered my master's program because I didn't go to school for education for my bachelor's degree. I had not really any knowledge except with my experience that I had in the classroom. Everything that I have learned here at MSA, it just transferred into my program. I was like, "We already did that in MSA." Everything that I did in my program, it was like, "We already covered that in MSA. I know the answers. I can report back." It made me sound even more knowledgeable, but it was because of all that

scaffolding that MSA had provided.

Then just being able to get all this knowledge from all these educators, these teachers that have been in the profession over 20 years, it helps me to just make those connections from the classroom, teaching in a classroom to learning in my college classroom. It's just that bridge where I get to really understand where they're coming from and the theories that they always talk about. Then [00:48:00] just making those relationships with the teachers. They're all talking about not being able to use technology, whereas it's an expectation for me in my classes. It's, "Okay, I'll help you with this ... So what do you think about this?" While I'm helping them ... I was like, "That's a good idea. I want to use that in my classroom." It's that exchange of information and learning. That's how I have seen MSA helped me especially because then how [Teacher 8] was talking about all the things from our tradition and everything and then being taught that we don't ask questions, we don't ask why. I think that was one of the reasons why I had gone into science was because ... I'm pretty sure there's got to be a reason why. Learning those things along the way was like, "This why they told us not to do that. This is why ... Okay." It puts that knowledge into place and it's helping the students. From my perspective and my experience, it's helping these students to make their own decisions, having them be responsible for themselves and their place in society because then, like they always say, "We're going to be the leaders of the future and we're the ones that have to keep those traditions, those culture going."

Just putting all that knowledge that we have into place and using it to keep that tradition and culture alive is important to me as well. I think even just coming from a different generation, I see that as I grow up that it's become even more important because I can see that loss in culture, language because I wasn't able to speak to my daughter. Things that I had known at her age, she doesn't even know now so I'm trying to help her pick up the language. That way, we don't lose that and she's not falling even further behind than that. I think that technology portion is really pushing and helping along. I think it's just different ways to think about how we can use technology to help in the classroom and make that connection to the traditional culture is one that I try to incorporate into my classroom as well.

Clip Keywords:
    Data Types : Media
Clip: Capturing language

Collection: RESEARCH QUESTIONS > Q2: How did CLASET support Native American teachers' cultural ways of thinking?
Clip Transcript:

Teacher 7: I never thought of video taping a lesson in your language and then doing the lesson. I didn't even think of that.

Clip Keywords:
   Data Types : Media
Clip: Use CLASET to learn cultural do's and don'ts
   Collection: RESEARCH QUESTIONS > Q2: How did CLASET support Native American teachers' cultural ways of thinking?
   Clip Transcript:

Teacher 3: I think that when the teachers are video taping lessons, I would like to see you guys putting some of those on there so that maybe in observing somebody else teaching something, then you can get ideas of things. What if native teachers could put on there certain "Don't do this" or "It's fine to do that"?

   Clip Keywords:
   Data Types : Media
Clip: Cultural lesson
   Collection: RESEARCH QUESTIONS > Q2: How did CLASET support Native American teachers' cultural ways of thinking?
   Clip Transcript:

Teacher 8: I'd love to see somebody do a lesson in Tiwa or Keres or Tewa or whatever. If we could get something like that, that would be great. Yeah, those ideas are good too.

   Clip Keywords:
   Data Types : Media

Collection: RESEARCH QUESTIONS > Q3: How did the teachers use CLASET?

   Clip: Gave freedom to integrate technology in the classroom
   Collection: RESEARCH QUESTIONS > Q3: How did the teachers use CLASET?
   Clip Transcript:

Teacher 5: With my job right now? I think it's helping me with my students because they're so into devices now. They refer to these as devices. At 2:30 every day, I have them work on their devices. We work on things like math and reading. They're forever looking for new things, a new way of learning. I think I'm motivated that way. I'm motivated myself because I see them get excited when I get excited. That's really helped me. Just a different way of thinking better than what I've done in the past. I'm a curriculum person so it's got to be this way, this way, but now it's opened doors for me so I appreciate that.

Clip Keywords:
    Data Types : Media

Collection: RESEARCH QUESTIONS > Q4: What were the spillover effects in the classroom attributable to technology?

   Clip: CLASET skills applicable to classroom
      Collection: RESEARCH QUESTIONS > Q4: What were the spillover effects in the classroom attributable to technology?
      Clip Transcript:

Teacher 7: I have 2 more years before I retire so I'm going to keep trying my best. I'm helping those students with special needs. Then I am the SET person there at the day school. I'm just here to enhance my learning. Of course, I take a lot of notes and everybody is like, "Are you sure you're going to use those notes [00:14:00] again?" Then here again learning about recording, I didn't know how to do that. Then downloading, like today the ebook, I was like, "Oh my gosh, that was so nice." Then when it comes to downloading a lot of the different programs and I'm like, "Okay, do I have enough memory to do that?" My son and my daughter, they're always helping me along the way. That's all I have to share.

   Clip Keywords:
       Data Types : Media
   Clip: Gave freedom to integrate technology in the classroom
      Collection: RESEARCH QUESTIONS > Q4: What were the spillover effects in the classroom attributable to technology?
      Clip Transcript:

Teacher 5: With my job right now? I think it's helping me with my students because they're so into devices now. They refer to these as devices. At 2:30 every day, I have them work on their devices. We work on things like math and reading. They're forever looking for new things, a new way of learning. I think I'm motivated that way. I'm motivated myself because I see them get excited when I get excited. That's really helped me. Just a different way of thinking better than what I've done in the past. I'm a curriculum person so it's got to be this way, this way, but now it's opened doors for me so I appreciate that.

   Clip Keywords:
       Data Types : Media
   Clip: Opened up different avenues of classroom applications
      Collection: RESEARCH QUESTIONS > Q4: What were the spillover effects in the classroom attributable to technology?
      Clip Transcript:

Teacher 3: I would like to talk about the technology piece because if we hadn't been given these ... I see my children using them. I know almost all the students have a phone in their pocket and I see in Albuquerque that my own personal children have been taught to use their phones as tools in the classroom, whereas we are punishing our students for even having a phone. We're taking them away. We're assuming that they're using them for negative purposes, but I would love to see them all pull out their phone and look up a word or pull out their phone for whatever. I'm the gifted and talented teacher now and I didn't have any computers in my classroom so when I saw these and how cool they were ... Somebody sent us an email at the beginning of the year saying, "Hey Leonard Foundation has grant money. All you have to do is write a grant."

I was thinking, "I want my students to have some of these because they know they're not allowed to use the phones." If I could get the phones out, we could have used those. I wrote the grant and I got it and purchased the iPads. Then from there, I was able to then do individualized research projects. It was handy because it came right at testing time when the kids sometimes come, sometimes don't come, depending on their testing schedule and what not and how much interruption we have. It was really cool because instead of looking up whales in the encyclopedia and seeing a picture of whales and facts, they were clicking on images and finding the videos. They were saying, "Look, watch the whales. Look at this one," so that the animals became real to them. They're asked questions on a test about oceans that they've never seen, but now it became real to them.

Then we went on in the hallway because the blue whale is the largest animal that has ever lived on the planet Earth, even bigger than dinosaurs. It said that they were 100 feet. The kids were going, "Yeah, 100 feet," but it wasn't until we out our rules and yard sticks and they were measuring on floor and then one of the kids noticed, "Hey, these tiles are all a foot. We don't have to crawl on the floor with the rulers. We can count the tiles." When they counted the tiles going down that hallway, 100 feet is pretty long. Then we were thinking, "Now, do you think a whale could fit in the hallway?" "No because if the animal is that long, it's going to be way bigger than the hall. There's no ... " It just led into all this. How many kids would it take to equal the length of a whale? Of course, with gifted, I don't have that many at a time, but they were laying on the floor.

The technology may be just one part of it, but it led to so

many other things that I never envisioned because I'm the same. It's like, "Now me, come help me. Make this thing work" because they do come to it naturally because they're playing with it. I remember the first time I saw somebody's 2 year old playing with their mother's phone. I was like, "Ah," but then it turns out a 2 year old can't hurt your phone and the 2 year old knew how to use the phone better than I did. I learned click twice and you can exit off all the programs that you had so your battery doesn't die. I'm hoping to see at our school where phones stop becoming bad things and start being understood as devices that the children can use as tools because then everybody has an encyclopedia right here in their hand. Any question that you ever had- Let me look it up. Yeah, there's a calculator in here. There's books in here. [00:36:00] They're more comfortable with this than sometimes the paper and pencil. Do you have kids who hate ... ? Not that they can't write because they don't have the ideas. They have the ideas, but they absolutely just hate holding a pencil in their hand, bouncing on their chair and writing, the physical act of writing, but that gets eliminated because you should see how fast ... They can really type faster than I do. They're just so comfortable because this is the future and we're not using up all this paper any more, killing all these trees and making all this trash.

On and for the reasons why, but I just found it expanded my teaching in ways that I never dreamed of until last summer when somebody actually put one of these in my hand. I like it better than a laptop too because it can take pictures. It can do videos. A computer is great, but these are so versatile and the kids are so comfortable with them that ... I was just blown away, an old school phrase. It blew my mind.

Clip Keywords:
    Data Types : Media

Keyword Summary Report

Challenges

    Academically inferior students
        Teachers confronted by students who are not prepared for the grade level.
    BIE mandates
        Top down mandates from BIE to the teachers.
    Challenges
        Challenges that teachers face.

Curriculum
  Curriculum disconnected from reality.
Lack of administrative support
  Administrators not supporting teachers.
Lack of parental support
  Lack of parental support in the classroom.
Lack of planning time
  Lack of planning time for lessons and assessments.
Lack of teacher preparation
  Teachers lack of content knowledge, modeling from coaches, challenges differentiating classroom, large class sizes, and helping students with misconceptions.
MSA is not differentiated
  MSA is not differentiated to meet teacher and curriculum needs.
Rules
  Rules that create barriers between teachers and students, parents, technology, and each other.
Socioeconomics
  Student socioeconomics that affect learning.
Technology
  Technology challenges.

Culture

Curiosity
Socioeconomics
Taboos
Trust

Data Types

Document
  Data made up of text documents.
Media
  Data made up of video or audio files

Support

MSA as career changer
  Teachers' change in community roles due to MSA training.
MSA teacher and school support
  MSA does more than professional development.
Professional development
  MSA supports teacher through continuous professional development.
Support
  Supportive structures for teachers.
Technology Pros

Advantages of technology