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Pepperdine University

Graduate School of Education and Psychology

EXAMINING THE IMPACT OF ONLINE PROFESSIONAL DEVELOPMENT ON TEACHER PRACTICE

A dissertation submitted in partial satisfaction

of the requirements for the degree of

Doctor of Education in Learning Technologies

by

Tracy R. Edwards

July, 2015

Linda Polin, Ph.D. – Dissertation Chairperson

This dissertation, written by

Tracy R. Edwards

under the guidance of a Faculty Committee and approved by its members, has been submitted to and accepted by the Graduate Faculty in partial fulfillment of the requirements for the degree of

DOCTOR OF EDUCATION

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This dissertation is dedicated to my husband, who is beginning his journey and the rest of my family, who believed in me.

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- Responsible for various aspects of digital literacy curriculum including teaching, writing, development and testing from inception to launch.
- Oversee curriculum team to ensure integrity of project goals and maintain deadlines.
- Serve as demonstration teacher for middle-school literacy block using developed curriculum.

Instructor, Westwood College of Technology, September 2009-May 2010
Academic Writing, 2 quarters

- Develop course materials and assess student mastery of academic skills and competencies as determined by course outcomes.
- Revise and update English curriculum in collaboration with the departmental faculty.
- Maintain up-to-date online course materials utilizing web-based platform.
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Teaching Assistant, University of Illinois, August 1995-August 1996

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Instructor /Department Chair, University of Chicago Charter School
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- Facilitate implementation of balanced literacy framework by serving as lead teacher.
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- Serve as part of school leadership team and technology lead for department.

Teacher/Instructional Coach, Chicago Public Schools, August 2001-August 2006

- Conduct workshops and provide classroom based mentoring to individual teachers.
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- Edwards T., Panel Session: Digital Media and Learning: Diving Deep into the Digital Youth Network Learning Model. Digital Media and Learning Conference. March 14-16 2013, Chicago, IL.

- Edwards, T., Panel Session: Tapping into the Multiplicity of Composition. Presented at Digital Media & Learning Conference March 1st-3rd, 2012, San Francisco, CA.

- Edwards, T., Gray,T., Pinkard N., Digital Media and Learning. Presented at National Writing Conference, November 18, 2009.

- Edwards, T., Gray, T., Pinkard N., Developing Critical Literacies: A Classroom Teacher's Experience. Presented at University of Queensland, Australia. July 7-9, 2007.

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International Society of Technology and Education (ISTE), San Diego, California, June 24-27 2012.

National Council for Teaching of English (NCTE), New York, NY, June 16-19 2011.

National Writing Project, Portland, Oregon, April 23, 2010.

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Research Interests

Instructional Design
Curriculum Development
Teacher Professional Development
Social Networks
Online Learning Communities

ABSTRACT

The purpose of the research was to explore the experiences of a group of 3 ELA teachers as they participated in online professional development using a social learning network. Utilizing case study methodology, the researcher examined how an online social learning network could be used to impact instructional practices amongst ELA teachers participating in hybrid professional development during implementation of a writing curriculum. Employing social constructivism as the dominant framework for analysis, the researcher explored the extent to which professional development delivered online combined with face-to-face supports impacted teacher instructional practices in the classroom.

The researcher examined teachers' actual online behaviors by using data captured by the online social network and compared this to teachers' self reports of impact and use, concluding that online professional development, delivered through a social learning network was effective in impacting teachers' classroom instruction.

Findings indicate that in order to be effective, professional learning should emphasize the learning of content and pedagogy and how technology can enhance instructional practices. Features of the online social learning network utilized more frequently were those that enhanced teachers' goals around writing instruction. The online social learning network was also found to include several aspects of Community of Practice, resulting in the sustained use and integration of the online social learning network for instructional purposes. Factors such as convenience, flexibility and ubiquitous access to resources and peers were cited as benefits to participating in hybrid professional development models.

Chapter 1: Introduction

Introduction to the Problem

The National Education Technology Plan (NETP) drafted in 2010 aggressively addresses the need for continued teacher development by placing education directly at the center of America's global economic growth and survival. In addition to increasing college graduation rates from 41% to 60% by the year 2020 (Department of Education, 2010) the plan speaks to the significance of creating a highly educated citizenry adept at problem-solving, collaborating and creatively utilizing technological tools and harnessing information. In an effort to prepare students, the plan highlights the importance of providing access, resources, peers, and data through technology and touts connected teaching as a powerful means of improving instructional practices and building expertise.

Moreover, the current educational landscape in the United States further highlights the need for quality professional development as districts across the country grapple with challenges around how to best support teachers in implementing the National Common Core Standards (2010). Teachers are now tasked with teaching and understanding increasingly complex concepts such as analyzing text complexity, integrating evidence in written responses, and building knowledge by incorporating informational and non-fiction texts (Common Core Standards Initiative, 2010). Professional needs around teachers tasked with implementing Common Core standards require an increased and intentional focus on developing teacher skills nationwide that include a focus on technology, pedagogy, curriculum and assessment while simultaneously providing sustained support systems that allow for ongoing collaboration, modeling, experimentation, and problem solving.

The extensive history of reform movements in the United States has yielded less than stellar results, with 25% of American students failing to earn a basic high school diploma and 40% of minority students also failing to reach this benchmark (Alliance for Education, 2010). Amongst students that do manage to finish high school, 1/3 of them are unprepared to meet the demands of higher education, resulting in an increase in costs for remedial education courses at the post secondary level (U.S. Department of Education, National Center for Education Statistics, 2011). These, along with other staggering statistics around student achievement, have led to increased pressure from policymakers in the last 10 years for states to closely examine teacher training and development efforts in hopes of positively impacting students nationwide.

Accountability efforts as outlined by federal and state initiatives such as NCLB and Common Core Standards Initiative have resulted in renewed demand in creating quality professional development experiences for teachers. No Child Left Behind (NCLB, 2002) is the largest federal education reform effort in United States history, and calls for all students to be proficient in state designed assessments by the year 2014. The focus on creating higher standards for students, nation-wide has had direct implications for the continued development and retention of "highly qualified" teachers as defined by NCLB. Moreover, the recent adaptation of the Common Core Standards by 46 of the 50 states (Common Core Standards Initiative, 2010) places preparation of American students for both post-secondary education and an increasingly technological global workforce at the forefront of reform goals. Furthermore, school districts across the world are placing increased demands on teachers to also integrate technology into their instruction, while keeping abreast of issues around pedagogy, practice and content knowledge (Collins, 2008; Hooper & Rieber, 1995).

Teacher development requires rethinking ways in which teachers learn, communicate, and utilize instructional strategies that not only incorporate traditional issues such as strategy and subject-area expertise, but also intentionally attends to the increasingly technological world in which both they and their students live, work and communicate. In order to continue to meet the professional demands of their roles,

> Educators must be more than information experts; they must be collaborators in learning, seeking new knowledge and constantly acquiring new skills alongside their students. Students must be fully engaged in school—intellectually, socially, and emotionally. This level of engagement requires the chance to work on interesting and relevant projects, the use of technology environments and resources, and access to an extended social network of adults and peers who support their intellectual growth. (U.S. Department of Education, 2010, p. 1)

Ultimately, teacher professional development requires creating extended, teacher support systems through "meaningful pedagogical intervention" (Jenkins, 2006, p. 18), that consider issues of work and collaboration in the 21st century while expanding traditional pedagogical skills such as reading, writing and research.

It is widely agreed upon that teacher professional development is a major factor in improving the quality of education (Borko & Putnam, 1995; Darling-Hammond, 1997, 2006a; Guskey, 2009) yet providing meaningful, professional development programs remain problematic. Due to the persistence of traditional models of professional development, many school districts are seeking innovative alternatives to meet the needs of teachers. Beginning in the 1950s, with renewed interest in 1980s and 1990s with the publication of *A Nation At Risk* and *Goals 2000* (Grant, Young, & Montbriand, 2001), these top-down approaches delivered in brief, workshop style formats disconnected from teacher practice have been heavily criticized as being ineffective (Borko, 2004; Darling-Hammond, 2006b; Garet et al., 2001; Guskey, 2009). The limitations posed by utilizing traditional professional development models can be addressed by

providing experiences where teachers are continuously connected with a community of peers, engaging in practices stemming from authentic contexts make alternative models of professional development such as online social learning networks a viable alternative to addressing teacher needs.

Advancements in web based technologies such as Learning Management Systems, combined with the rapidly increasing popularity of social networking sites aimed at educators such as *Classroom 2.0* and *EdModo*, present increased possibilities to address the rapidly changing needs of the 21st century teacher. Urgency around implementation of Common Core Standards has further fueled an explosion of online professional development opportunities dedicated to providing resources and support as states grapple with ways in which to support teachers (Ash, 2011). Nationwide interest amongst teachers continues to grow exponentially, as the push to become a connected learner has resulted in thousands of thriving online communities for educators (MMS Education, 2012). These, anytime, anywhere access to models of professional development opportunities online, potentially serve to address the needs of teachers seeking to deepen their professional knowledge, connect with peers ubiquitously and strengthen their technological savvy; all potentially transformative in impacting students expected to be college ready and entering an increasingly competitive global workforce.

Description of Research Problem

Research on American schools, as well as school in other countries, indicate teacher professional development as critical factor in impacting student achievement (Campbell, McNamara & Gilroy, 2004; Darling-Hammond & Bransford, 2005). Yet teachers in the United States have significantly less time for professional learning than their counterparts in other countries where student achievement surpasses that of American students (Darling-Hammond,

2010). Teacher professional development has largely consists of traditional techniques such as sporadic workshops, emphasizing a top-down approach and failing to take into account teacher beliefs and knowledge around what they are practicing as part of their everyday context. These models regarded as widely ineffective often leave teachers isolated as they attempt to wrangle with challenges such as increasingly diverse populations of students, limited planning time and lack of access to other experts in the field (Darling-Hammond, 2006a; Garet et al., 2001; Guskey, 2009; Lieberman & Miller, 2001). These challenges are prompting school districts seeking to provide quality experiences to examine more innovative methods of delivery including online models.

Teachers are often faced with insufficient time within the school day to plan, practice and engage with other teachers around issues ranging from content to best practices (Borko, 2004; Diaz-Maggioli, 2004; Fullan & Hargreaves, 1996). Connected teaching, as made possible by participation in online learning communities such as social networks, allows educators to actively shape their development, interact continuously with other experts and share exemplary practices. This level of sustained, social engagement around practice, as posited by Community of Practice theorists (Lave & Wenger, 1991; Wegner, 1988) is largely absent utilizing traditional, episodic models of professional development, often resulting in a lack of engagement, participation and even complete resistance to participating in traditional professional development initiatives. Moreover traditional methods of delivery are often the result of state or administrative mandates and fail to take into account teacher expertise, beliefs and experience in the process. Teachers are often positioned as passive learners, receiving information as opposed to active, constructers of their own learning experiences.

Traditional teacher professional development models often occur outside the context of actual classroom experiences, resulting in a disconnection from everyday teaching tasks, situated in authentic problems of practice (Ball & Cohen, 1999; Borko & Putnam, 1995; Darling-Hammond, 2006a; Guskey**,** 2009; Lieberman & Pointer-Mace, 2008). In order for professional development to be effective, teachers must be afforded time to apply new ideas in their own contexts and interact with others continuously around issues of classroom practice (Desimone, Porter, Garet, Yoon, & Birman, 2002). This type of prolonged engagement with peers is made possible by participation in online communities such as social learning networks.

> Changes in teachers' beliefs are more likely to occur in settings in which teachers consider learning a communal activity. When teachers take time to interact, study together, discuss teaching, and help one another put into practice new skills and strategies, they grow and their students' behaviors improve accordingly. (Harwell, 2003, p. 4)

Ongoing research efforts have revealed several indicators of quality professional development programs including sustained, inquiry based practice based in actual teaching experiences, focused on content and place value on teacher interaction, collaboration and ownership of the ownership of the learning process (Darling-Hammond, 2006a, 2006b; Garet et al., 2001; Guskey & Huberman, 1995). Garet et al. (2001), after conducting a study detailing the experiences of over 1,000 math teachers concluded "there is a clear need for new, systematic research on the effectiveness of alternative professional development strategies" (p. 917).

This large scale, empirical study identified the core features of effective professional development as focus on content knowledge, opportunities to engage in active learning experiences and coherence with larger goals such as state or school wide initiatives. These findings suggest that providing meaningful, effective professional development experiences requires collaboration and active participation in a sustained manner, around common goals or

interests, such as touted by social learning theorists such as Wenger (1998) and Dewey (1938). These factors, often missing in traditional models can be addressed by utilizing online professional development models such as social networks.

The limitations in traditional methods of professional development such as fragmented, short-term, top-down methods of delivery, with limited time to engage with others around shared meanings and values, point to a need to re-examine current professional development practices and explore innovative ways to encourage participation in activities that directly impact classroom practices. “Teaching is a complex task, and substantial time will be required for teachers and other educators to test out new ideas, assess their effects, adjust their strategies and approaches…to make learning more meaningful” (Darling-Hammond & Bransford, 2005, p. 29). The advent of technology such as social learning networks provides a unique opportunity to provide teachers with ubiquitous, ongoing access to others allowing for the capture of professional knowledge, interactions and practices in ways not previously possible.

Purpose of Research

The purpose of the multiple case study research was to explore the experiences of a group of 3 ELA teachers as they participated in professional development using an online social learning network during implementation of a hybrid writing curriculum, with teachers using both the online social learning network as well as face-to-face elements for curriculum delivery. Utilizing traditional case study methodology, the researcher examined how a social learning network could be used to impact instructional practices amongst ELA teachers participating in hybrid professional development during implementation of a writing curriculum. Employing social constructivism as the dominant framework for analysis, the researcher explored the extent to which professional development delivered online combined with face-to-face supports

impacted teacher instructional practices in the classroom. The researcher examined the impact of professional development delivered utilizing an online social learning network on teacher practice by conducting an in-depth examination of teachers' usage of 3 features covered in professional development: (a) notebooks, (b) blogs, and (c) groups.

Rationale

Though extensive research has been dedicated to outlining teacher professional development opportunities, "considerably less research has linked these opportunities to teacher change" (Parise & Spillane, 2010, p. 326), particularly in regards to impact on behaviors and practices in the classroom. Moreover, additional research examining the complex relationship between teacher practice, technology and content area as put forth by Mishra and Koehler (2008) in defining the Technological Pedagogical Content Knowledge (TPACK) are imperative as policymakers, researchers and educators further seek to explore ways of helping teachers hone instructional practices in the 21st century. As the conducted project involved teacher implementation of a writing curriculum utilizing an online social learning network, the impact of professional development on instructional strategies pertaining to both use of technology and writing instruction were examined.

After an extensive analysis in the field on K-12 online professional development, Dede, Ketelhut, Whitehouse, Breit, and McCloskey (2009), concluded questions that addressed "enablers of durable teacher change, such as interventions designed to increase pedagogical content knowledge" and impact of professional development on teacher change, particularly improvements that transform practice" (p. 16) were priorities for future research in the field. Additionally, a large number of studies focusing on changes in teacher practice and behavior rely

heavily on self-reports making it difficult to accurately capture actual patterns and changes in teacher practices.

Emerging research also indicates that building a true community can be problematic when attempted in purely online spaces (Barab, Kling, & Gray, 2004; Hur & Hara, 2007), and propose that blending online interactions with face-to-face contact lead to increased likelihood in building successful communities. However, empirical support for hybrid learning approaches to fostering communities is limited (Hur & Hara, 2007), particularly when discussing professional development amongst teachers in the K-12 arena. Further research on the role of hybrid learning models for the purposes of delivering sustained, content-driven professional development in K-12 settings is needed, as the majority of the studies on blended learning are tied to higher education, business models and other fields outside of the K-12 educational community (INACOL, 2008). The study seeks to add to the growing body of research on online professional development models by specifically examining implications for professional development and instruction in K-12 settings.

Research Questions

The study conducted sought to add to the growing body of research on online professional development by specifically examining online social learning networks for professional development in K-12 settings and addressed the following questions:

1. To what extent did professional development delivered using an online social learning network (OSLN) impact teacher practice?
2. To what extent did teachers perceive professional development activities delivered utilizing an OSLN as impacting their instructional practices?

The Project in Context

The study sought to add to the growing body of research on online professional development for teachers by specifically examining the experiences of a 3 English Language Art (ELA) teachers as they utilized an online social learning network (OSLN) for professional development during implementation of a writing curriculum. Participating teachers utilized both the online social learning network, as well as face-to-face components throughout curriculum implementation. Employing a multiple case study design, the researcher examined how participation in online professional development impacted instructional practice and also explored teacher perceptions of its influence on instructional practice.

C21, "Communicators of the 21st Century, is a 6th grade writing curriculum, developed in alignment with National Common Core Standards and contextualized using an online social learning network as a vehicle for delivery. The curriculum focuses on the core mechanics of traditional writing across genres while providing opportunities to "write" in non-traditional modes using various modes of digital media. Piloted in 2012, 6th grade students who had participated in the project demonstrated significant growth in writing performance over a 4-month period (National Writing Project, 2012). The curriculum utilizes an online social learning network (OSLN) to promote interactions between teachers, students and other curriculum experts. The C21 curriculum is hybrid in that it includes online as well as face-to-face components for professional development and instruction.

It is important to note that the C21 curriculum was a new model for writing instruction being implemented by the 3 participating, 6th grade ELA teachers. The C21 Curriculum Model included 2 distinct components of implementation: (a) professional development, and (b) classroom instruction, placing teachers in dual roles of learner and teacher. Thus, the

professional development component was integral in encouraging teachers to interact around issues related to content and pedagogy, while also grappling with issues surrounding technology use for writing instruction, as suggested by Mishra and Koehler (2008) in their explanation of the TPACK Framework, which focuses on the intersection between content, pedagogy and the role of technology as crucial in facilitating teacher development.

The dual focus on content knowledge as well as technological knowledge during professional development was an integral component of facilitating teachers' use and understanding of the utility of the OSLN for instructional purposes in their own classrooms. The C21 curriculum involved participation in several hours of professional development delivered online with face-to-face supports. The professional development model included ongoing coaching, modeling, discussions, demonstrations of strategies around technological features of the OSLN and focus on pedagogical issues related to writing instruction. The focus on content, pedagogy and technological knowledge as part of professional development was a crucial component of facilitating teachers use and deep understanding of the utility of the OSLN for instruction in their own classrooms.

Limitations of Study

The researcher acknowledges one limitation of the study is the fact that teachers underwent a combination of online and face-to-face professional development sessions. Although the majority of activities such as discussions and modeling of writing instructional strategies occurred online, teachers also benefitted from individualized, coaching sessions and demonstration lessons around implementation of the writing curriculum. Due to the hybrid nature of the professional development model, it was difficult at times to discern which aspects of potential impact on teacher practice were the result of the professional development activities

delivered through the online social network, face-to-face sessions or the combination of both aspects of delivery. Another limitation is that information obtained from direct classroom observation was not included in data collection for the study. Data collection only included documented teacher activities online and interview responses around experiences and perceived impact of the professional development experiences.

Definition of Terms Used in the Study

In order to address the research questions posed around the impact of online professional development on teacher practice, an examination of professional development, teacher learning, and the role of technology in facilitating teacher development is needed. For the purposes of the study, professional development, is defined as activities designed to advance teachers' understanding of content, pedagogy, and practice, and how technology can be used to support this understanding. In considering the best practice around delivering effective professional development, the terms form and reform are used throughout literature. Form refers to more traditional activities such as workshops and in-services, while reform models are generally viewed as more effective and refer to more collaborative, extended activities, emphasizing teacher collaboration and the community-oriented view of development (Garet et al., 2001).

Professional development can be delivered face-to-face, meaning all the participants are in the same geographical location, online, with participants utilizing various forms of technology to participate or hybrid, which includes a combination of both face-to-face and online components. Online professional development is defined as professional development offered via the Internet for the purposes of enhancing job related skills or knowledge. Models can include varying delivery modes, including synchronous with participants interacting in real time,

asynchronous, allowing which allows teachers to participate at any time or a combination of both.

The project for the study was a demonstration of online, job-embedded professional development, situating activities in teachers' authentic, day-to-day contexts as they implement the C21 writing curriculum. The curriculum utilized a social network in combination with face-to-face supports for professional development and instructional purposes. Social networks are online tools that allow people to easily share ideas, knowledge and experiences, and therefore are can be critical in facilitating interactions around content and pedagogy throughout implementation. The highly collaborative nature allows for increased levels of interactions, communications between individuals, making social networks potentially valuable in facilitating learning experiences amongst teachers engaging in practice.

An Online Social Learning Network is a distinct type of social network that integrates the collaborative features of social networks and learning management systems, that allow teachers to organize and monitor assignments, with the goal of supporting an online learning community (Martin, 2012). Online Social Learning Networks have distinct properties that distinguish them from social networks which include specific learning objectives with built in supports for learning, the ability to share work, multiple ways to provide individual guidance and support and analytics allowing for the visual capture of learning activities over time.

The Online Social Learning Network housing the C21 Curriculum included various community members including teachers, students, digital media experts, curriculum coaches and researchers. The combination of teachers and other members of the online social learning network participating in the project contain various elements of a Community of Practice, a social learning system where members continuously shared, negotiated and collaboratively

contributed to knowledge as they engaged in practice around writing instruction. Participation, when speaking of teachers in a Community of Practice online, is defined in several ways including actual conversations, messages, creation and sharing of content, logging in, commenting and viewing the work of others. The use of an online social learning network throughout C21 Curriculum implementation presented a unique opportunity to capture teachers' interactions as they created, questioned and revised professional knowledge in ways not previously possible.

Statement of Researcher's Position

Prior to my current work at Digital Youth Network, I was a former classroom teacher with 14 years of experience teaching English Language Arts. I also served as literacy coach at the middle school level, where I developed curriculum and conducted teacher professional development for 4 years. The middle school, located on the south side of Chicago, was the only one of its kind at the time, utilizing a one-to-one laptop programs for all students in attendance. My traditional background as a teacher in an urban education setting made me highly resistant initially to the idea of utilizing technology, as I was concerned about various issues ranging from student distraction to simply questioning the value of the technology in my 6th grade literacy classes where I had historically experienced great success without these tools.

My role at the school where technology and innovation was "in the air", however, shifted as I watched the students embrace and use technology in ways that displayed critical thinking, initiative and creativity in ways I had not imagined. My role, as literacy coordinator was to push classroom teachers' thinking around ways to use the technology to enhance their existing Language Arts Curricula. I left the role after 4 years to pursue my doctoral work and professional role as curriculum developer for the C21 Project.

The C21 Project was part of a larger, ongoing research being conducted by Digital Youth Network. I co-created the curriculum, along with a digital media team at the organization, and was responsible for helping to facilitate interactions online, conducting teacher professional development both online and face-to-face and taught the curriculum during the pilot study, which showed promising results after an external assessment conducted by the National Writing Project in 2012.

The study contributed to DYN's larger organizational research around social learning networks as vehicles for learning. Having previously taught the curriculum, I was aware of the both the challenges and benefits of learning online using a social network. My former role as a teacher and professional developer also made me aware of how difficult it can be to implement any new curriculum. As the curriculum developer and participant-observer in the study, I was open to all possibilities and outcomes as my interest is in the process; what teachers actually experienced, created, discussed, rejected, and revised were important. Social networks for learning are a relatively new phenomenon, and learning about how they can be used to potentially support teachers as they practice, as well as documenting the challenges as they arise were equally valuable to me in the research process.

Chapter 2: Review of Literature

Examining the impact of professional development delivered by utilizing an online social learning network requires attention to the interplay of 3 components: (a) professional development, (b) teacher learning, and (c) the role of technology in enhancing professional learning. The Technological Pedagogical Content Knowledge Framework (TPACK), as posited by Mishra and Koehler (2008) serves as a framework for examining the relationship between teacher learning, pedagogical and content expertise and the role of technology in teaching and learning.

Derived from the highly regarded work of Shulman (1987) critiquing the tendency of teacher preparation programs to focus on either pedagogy or subject matter, TPACK is a conceptual framework for implementing educational technology. Shulman (1986) argued that professional development should center on three areas: (a) content knowledge, (b) pedagogical knowledge, and (c) pedagogical-content knowledge. Content knowledge refers to deep knowledge of the subject-matter and skills being taught, while pedagogical knowledge refers to expertise in instructional practices related to the content is taught. Pedagogical-content knowledge is the expertise in instructional practices that address the challenges of teaching and learning associated with specific subject areas. Asserting that teachers interpret subject matter differently, Shulman asserted knowledge and pedagogical practice are intertwined and should not be treated as separate components.

Building on Shulman's work, Mishra and Koehler (2006) argue that a similarly integrated view of content, pedagogy and technology is needed to enhance teacher learning and that thoughtful, arguing that thoughtful, purposeful use of technology for teaching and learning is part of a situated learning process. Echoing Shulman's criticisms around separating content from

pedagogy, Mishra and Koehler (2006) posit that technology integration is too often considered as a separate body of knowledge. This view of technology as a discrete entity, fails to address the connections between technology, content and pedagogy. The TPACK Framework speaks to the thoughtful, pedagogical use of technology for the purposes of teaching and learning. Mishra and Koehler (2006) assert,

> Technologies often come with their own imperatives that constrain the content that has to be covered and the nature of possible representations. These decisions have a ripple effect by defining, or in other ways constraining, instructional moves and other pedagogical decisions. (p. 1025)

Mishra and Koehler (2006) argue that technology tools are not neutral and focusing on the dynamic interplay between technology, content and pedagogy are essential from learning and teaching perspectives. The use of technological tools should not be separated from the content, and therefore, should be situated in what is being learned or taught.

From a professional development standpoint, the TPACK Framework speaks to the need to for teachers to become adept at using technological tools that best enhance the content they are teaching, as well consider pedagogical issues such as instructional goals and learning processes. In order to effectively teach with technology, teachers must first understand the constraints of using technology tools and how these tools function to support content and instructional goals. As the researcher is interested in exploring how online social networks ultimately impact teacher instructional practices, a thorough review of the literature around professional development, teacher learning, and online communities will be conducted to inform the study.

The Critical Importance of Professional Development

Professional development is defined as "activities that are designed in some way to increase the skill and knowledge of educators" (Elmore, 2002, p. 6). The No Child Left Behind

Act (NCLB, 2002) extended this definition for teachers by adding that professional development includes activities that "improve and increase teacher's knowledge of the academic subjects the teachers teach" (115 STAT. 1963), "give teachers…the knowledge and skills to provide students with the opportunity to meet challenging state academic content standards" (115 STAT. 1963), and "to the extent appropriate, provide training for teachers...in the use of technology so that…technology applications are effectively used in the classroom to improve teaching and learning" (115 STAT. 1963). Taken together, professional development can be defined as activities designed to advance teachers' understanding of content, pedagogy and practice, and how technology can be used to support this understanding.

The advent of Common Core Standards Initiative (2010) has resulted in further demands to prepare teachers to meet the needs of American students, placing professional development at the core of fueling teacher changes in practice and pedagogy.

Recognizing the role of professional development in preparing students for the 21st century, The Center of American Progress asserts,

> teaching to the Common Core and preparing students to reach more rigorous standards than ever before requires teachers to change their practice and pedagogy. It is unreasonable, however, to expect teachers to accomplish this on their own. For a smooth transition, states should make considerable investments in ongoing, high-quality, job-embedded professional development that is content specific and teaches the standards, related curricula, assessments, best practices, and strategies. (Martin, Marchitello, & Lazarin, 2014, p. 21)

Professional development is ultimately used as a tool to strengthen teacher craft (Grierson & Gallagher, 2009) with the ultimate goal being to enhance student learning. Goals of teacher professional development can vary from implementation of school-wide practices, enhancing content skills and content knowledge, to assuring compliance with district policies and administrative rules. The primary goal of most large-scale professional development programs

has been to enhance teacher practice and skills in order to ultimately impact student achievement, by focusing on issues of content, pedagogy and knowledge (Darling-Hammond, 1997; Elmore, 2002; Guskey, 2009).

Rationale for Professional Development

The increasing demands placed on teachers due to federal and state mandates such as No Child Left Behind (2002) and the National Common Core Standards (2010) have resulted in renewed focus on improving teacher performance. Improved teacher quality had been found to be a vital component in improving student achievement (Sanders & Rivers, 1996). While conducting value-added studies, Sanders and Rivers found that students assigned to 3 effective teachers consecutively scored approximately 30 percentile points higher than their counterparts assigned to 3 ineffective teachers. Additionally, evidence is growing indicating that providing meaningful professional development may assist in teacher recruitment and retention, particularly in high poverty schools (Shapiro & Laine, 2005). Research in the field of professional development also shows that teachers have more impact on student achievement than any other factor (Kane, Rockoff, & Staiger, 2006; U.S. Department of Education, 2010).

High quality professional development can improve teacher practice positively impacting student achievement (Ball & Cohen, 1999; Cohen & Hill; 2001; Desimone et al., 2002; Kennedy, 1998; Rhoton & Stiles, 2002; Supovitz, 2001). Professional development is potentially transformative and can increase teachers' knowledge around issues of content and pedagogy while also changing teachers' beliefs about learning when designed with particular components (Birman, Desimone, Porter, & Garet, 2000).

Although researchers agree that providing effective professional development is warranted, many teachers are still not experiencing professional development experiences that

impact changes in instructional practice or have been proven to impact student achievement (Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009). Researchers estimate that the United States spends approximately $14 billion on professional development every year, yet providing quality professional development experiences remains a challenge (National Institute for Excellence In Teaching, 2012).

Of the 95% of teachers reporting that they had participated in some form of professional development, fewer than half felt what they learned was valuable (Choy, Chen, & Bugarin, 2006; Darling-Hammond et al., 2009) and did little to impact their instructional practice. Yoon et al. (2007) analyzed the results from over 1,300 studies and evaluation reports associated with the impact of effective professional development. Using standards created by the U.S. Department of Education, the researchers concluded that only 9 investigations met the criteria of effectiveness (Guskey, 2009). These results were corroborated by findings by the National Center for Education Evaluation around professional development programs associated with literacy (Garet et al., 2008).

Similarly, in a survey by the National Mathematics Advisory Panel (NMAP) in 2008, studies on professional development programs in math were found to lack methodological rigor (NMAP, 2008), making it difficult to determine effectiveness. These findings, particularly when considering annual costs of professional development warrant further analysis on what it truly means for these experiences to be considered effective.

Features of Effective Professional Development

Numerous research studies over the past 20 years have been conducted on teacher professional development. While many have been focused on specific cases of successful school or district programs (Richardson, 2003; WestEd, 2000) or researchers' accounts of professional

development (Darling-Hammond & McLaughlin, 1995), a growing number have looked at large-scale surveys of teachers about their professional development experiences (Garet, Birman, Porter, Desimone, & Herman, 1999; Parsad, Lewis, & Farris; 2001; Porter, Garet, Desimone, Yoon, & Birman, 2000). Many of these large-scale studies categorize professional development as effective when it results in changes in teaching practices, although a few relate effectiveness with improved student achievement (Cohen & Hill, 2001; Carpenter, Fennema, Franke, Levim, & Empson, 2000; Wenglinsky, 2000; Yoon, Duncan, Lee, Scarloss, & Shapley, 2007). After surveying a nationally representative sample of over 1,000 teachers who had participated in the federally funded Eisenhower professional development program, Garet et al. (2001), examined the relationship between characteristics of professional development and teacher-reported outcomes and found three structural features that heavily influenced teacher outcomes. Garet et al. recommended following components as integral in providing effective professional development:

- Form: Form refers to how the activity is structured such as workshop, study group or lesson study. Garet et al. (2001) defined "form" as traditional activities such as episodic workshops and in-services, while "reform" activities were considered more collaborative such as study groups, mentoring and teacher learning communities.
- Duration: Duration is defined as the number of hours teachers spent engaged in the activity. Extended activities where teachers participated in longer experiences with follow-up and support and continuous interaction with others were found to be optimal.
- Participation: Participation looks at who is involved such as how many teachers and what they doing. Participation should include groups of teachers or other school personnel working on activities relevant to everyday teaching settings.

Garet's (2001) research team also identified other core features that should be combined with the 3 structural features discussed previously in order to craft effective professional development experiences. These features include a focus on active learning activities, content-driven experiences and coherence with school or district standards, goals or improvement initiatives. Garet et al.'s findings are consistent with other experts in the field who similarly cited components such as duration, grounding in professional practice, active participation and collaboration amongst teachers and content focus as key in promoting effective professional development for teachers (Archibald, Coggshall, Croft, & Goe, 2011; Borko, 2004; Darling-Hammond & Bransford, 2005; Desimone et al., 2002; Elmore, 2002; Guskey & Huberman, 1995; Kedzior & Fifield, 2004; Lieberman & Miller, 2001; Lieberman & Pointer-Mace, 2009; Marzano, 2000). Drawing upon Garet et al. (2001) and the work of other researchers in the field, the researcher will examine 4 over-arching common, critical features in providing effective professional development experiences for teachers: (a) sustained time, (b) collaborative and active participation, (c) content-driven, and (d) situated activity.

Time. Research indicates teachers are not spending enough time engaged in professional development activities (Borko, 2004; Darling-Hammond, 2006a, 2006b; Garet et al., 2001). "While teachers approximately need substantial professional development in a given area…to improve their skills and student learning, most professional development opportunities are much shorter" (Darling-Hammond et al., 2009, p. 7). The National Center for Education Statistics (NCES) showed that over 50% of respondents to the survey administered in 1999-2000 spent a day or less engaged in professional development activities, with a small number of teachers reporting attending 4 or more activities within the span of a year (Hill, 2009).

There is evidence that suggests that the number of hours teachers spend in professional development is related to effect on teaching practice (U.S. Department of Education, 1999; Weiss, Banilower, & Shimkus 2004). This may be because professional development activities that are sustained over time allow for more time to engage in problems of practice, experiment with new strategies and get feedback on teaching practices (Desimone et al., 2002; Garet et al., 2001). Yoon et al. (2007), in examining the impact of professional development on student achievement, also found that effective professional development usually consisted of at least 49 hours of teacher participation. The U.S. Department of Education study (1999) conducted on Eisenhower teacher participants, also found that teachers who reported more engagement in professional development over time also reported improvements in teaching practices.

In surveying over 1,000 teachers, Garet et al. (2001) examined the relationship between features previously identified in literature designation professional development activities as effective and self-reported teacher outcomes while holding all other variables constant. Utilizing a survey, Garet and team inquired about contact hours for selected activities, as well as the span of time over which activities occurred such as days, weeks or months. Garet et al. found that many teachers were still engaged in traditional models of professional development, which included workshops, institutes, and seminars, which had little impact on practice or teacher learning. However, Garet et al. found that workshops, when designed to be implemented on a long-term basis as part of a larger professional development initiative and included other types of content-driven activities such as student work analysis and discussion groups, teachers reported changes in instructional practices.

Similar results were reported in studies conducted around math and science professional development initiatives, with duration of participation in professional development activities

being linked to the teacher change (Weiss et al., 2004). A study examining approximately 1,500 math and science teachers in Ohio focused on inquiry-based instructional methods. Teachers participated in a 6-week summer institute that included 6 days of follow up and support throughout the school year, access to a network of other teachers and on-demand support. The study examined the impact of the professional development on attitudes and classroom practices, and found that teachers showed statistically significant gains during the 1st year of participation. Teachers were surveyed in order to measure perceptions of instructional practices, with self-report data showing significant gains in attitude, preparation and planning time and inquiry-based practice. These gains were also sustained throughout the 3 years of implementation (Supovitz, Mayer, & Kahle, 2000).

Killion (1999), as part of ongoing work conducted by National Staff Development Council, looked at professional development programs appearing to have a positive effect on student achievements. One such program, Project CRISS (Creating Independence through Student-Owned Strategies) relied heavily on summer institutes. However after an initial training session, follow-up sessions were provided, along with a facilitator to provide teacher support at the school level. The project, designed to improved students' reading and writing skills, resulted in significantly greater gains in retention for students whose teachers participated in the project, when compared to those students whose teachers did not undergo professional development. Teachers who reported spending more time in professional development were more likely to also report improvement in teaching practices. A study examining the Mathematics Professional Development Institutes in California (MPDI), a large-scale professional development initiative, found that teachers who participated in a summer workshop of up to 3 weeks in duration and

subsequently participated in approximately 80 hours of follow-up activities improved their content knowledge in mathematics as measured by pre and post assessments (Hill & Ball, 2004).

"Teaching is a complex task, and substantial time will be required for teachers and other educators to test out new ideas, assess their effects, adjust their strategies and approaches…to make learning more meaningful" (Darling-Hammond, French, & Garcia Lopez, 2002, p. 29). Extended periods of time, where teachers have time to practice new strategies in their own classrooms and develop new understandings is necessary in order to impact changes in classroom practice (Joyce & Showers, 2002; Reeves 2006), appear to be influential in promoting teachers' enhanced skills, knowledge around classroom practices.

However, simply providing more time is insufficient in bringing about changes in teachers' beliefs and instructional practices (Kenney, 1998). In order to be effective, time spent participating in professional development should be thoughtfully organized, focused and goal-oriented (Birman et al., 2000; Darling-Hammond et al., 2009; Guskey, 2009). Professional development designed to truly impact teacher practice must extend beyond infrequent workshops and teacher in-service days. In an effort to address the challenges around providing well-organized, extended learning experiences for teachers, many school districts are now implementing "reform-oriented" professional development strategies, combining extended time with other critical features cited in literature such as collaborative and active participation, and content-driven, context centered experiences in order to support teacher engagement in professional learning.

Collaborative and active participation. Researchers in the 1970s interested in school effectiveness have long documented the importance of promoting a climate of collaboration, community and collegial relationships amongst teachers (Berman & McLaughlin, 1977;

Venezky & Winfield, 1980). The past 20 years of research in the field have corroborated early findings of the importance of culture and community in impacting classroom practice (Borko, 2004; Guskey, 2009, Lieberman & Miller, 2001; Little, 1993). The National Staff Development Council (2001) supports the position that many of the most valuable forms of professional development activities occur in groups, pointing out the importance of social interaction in supporting teachers in their learning goals. The need to move teachers away from the isolation typically associated with the profession is being replaced by the concept of collaboration and shared inquiry around practice.

In a 5-year case study of approximately 900 teachers, McLaughlin and Talbert (1993) found that teachers who belonged to professional communities, such as NCTM or NCTE, were better equipped to adapt to challenges arising in everyday classrooms. Student performance has also been positively linked to collaborative school cultures where characteristics such as shared practice and reflective dialogue with colleagues were the norm (Hord, 1998; Louis & Marks, 1998). Newmann (1996), in studying 24 schools during reform periods, found that more successive schools focused on group professional development efforts as opposed to individual teachers. Hill, Stumbo, Paliokas, Hansen, and McWalters (2010) point out, "teachers develop expertise not as isolated individuals but through job-embedded professional development, as members of collaborative, interdisciplinary teams with common goals for student learning" (p. 10).

Garet at al. (2001), in studying the effects of characteristics of professional development on teacher practice, found that active learning did have a positive impact on teacher knowledge. Several researchers have further documented the impact of active engagement around content with other teachers in activities such as curriculum planning and student work analysis on

improving teacher practice (Lieberman, 1996; Loucks-Horsley, Hewson, Love, & Stiles, 1997). Membership in a teaching community means being part of a network where teachers actively engage with peers in knowledge building. Fahey and Prusak (1998) in distinguishing between information and knowledge, assert that knowledge is not static but continuously changes as individuals in a community actively create it. When teachers are part of a community they inquire, reflect, share, discuss and contribute language, tools and understanding about the practice of teaching. "Therefore, knowledge is inseparable from the individuals who build, transmit and leverage it" (Barab et al., 2001, p. 75). Barab et al. refers to this dynamic, active process "as creating a flow " (p. 75) of information among individuals, and views it as the basis of building long-term relationships with each other. These relationships, built on shared goals and values around practice are essential in promoting a sense of community and are more likely to result in teacher change (Barab, MaKinster, Moore, & Cunningham, 2001).

Content-driven. Joyce and Showers (2002) assert that content-driven experiences based on issues around issues of curriculum and instructions are considerably more likely to impact student learning. This contention is supported by other research in the field, suggesting that professional development activities should include a focus on improving and enhancing teachers' subject-area content knowledge (Birman et al., 2000; Conway, Hibbard, Albert, & Hourigan, 2005; Hirsh, 2005; Wilson & Berne, 1999).

Content knowledge is knowledge about the subject matter being taught or learned (Shulman, 1986), such as facts, concepts, and theories within a particular content area. Pedagogical knowledge is described as instructional expertise, which includes deep knowledge about the processes, practices and methods around teaching a particular subject area. Pedagogical knowledge can include knowledge around lesson planning, curriculum

development, implementation and evaluation (Kennedy, 1998; Shulman, 1986). A third category, pedagogical-content knowledge refers to instructional practice that addresses distinct problems of practice associated with teaching and learning in specific content areas.

Professional development that is content focused and inclusive of pedagogical-content knowledge was the most frequently mentioned characteristic of professional development in Guskey's (2009) analysis on common features of effective professional development. Content and pedagogy-focused has also been found to be critical in increasing student achievement (Cohen & Hill, 2001; Desimone et al., 2002; Hill & Ball, 2004; National Reading Panel, 2000; Supovitz, 2001).

In Borko's (2004) research on Cognitively Guided Instruction (CGI) Project, teachers learned to construct new understanding through professional development focused on students' thinking, conceptions and misconceptions around scientific concepts. Teachers participating in the CGI Project reported deeper understanding of students' problems solving strategies, students' challenges in conceptual understanding, and alternative ways to present problems to students than teachers in the control group. A second phase of Borko's research examined teachers' ability to incorporate subject area content matter and student thinking into the classroom. Observations of CGI participants and the control group were conducted during the following year, with results indicating that CGI teachers used problem-solving strategies more frequently than the control group to facilitate student discussion. CGI Teachers were also able to solve more mathematical problems, were more skilled at problems solving, and demonstrated more confidence in their ability to teach and solve mathematical problems than those teachers in the control group.

As Borko's (2004) research indicates, teachers benefit from studying the subject matter they are expected to teach. The National Science Foundation's Project Discovery offered sustained professional development focused on implementing changes in science standards and curriculum. Teachers attended summer institutes covering science or mathematics content, followed six seminars during the school year that focused on curriculum issues. Participation in this professional development program resulted in long-term increase in teachers' use of inquiry-based instructional practices (Supovitz et al., 2000). In 2001, Saxe, Gearhear, and Nasir found that teachers participating in the Integrated Mathematics Assessment approach, which directly engaged teachers around issues of mathematics content and pedagogy, had students that showed the greatest gains in achievement, compared to two other approaches (a) traditional professional development, and (b) professional communities involved in building curriculum. Professional development focused on content and pedagogy can assist teachers in developing a rich understanding of content they teach and ultimately have positive impact on student learning (Kennedy, 1998). Although research supports the position that professional development activities designed to enhance teachers' knowledge around subject-area are critical, the success of these programs is often contingent upon context (Guskey, 2009).

Situated activity. Effective professional development programs should be "situated in schools that is always about the current work of schools" (Archibald et al., 2011, p.5). Traditional professional development models heavily rely on workshops, conferences, in-service days where topics are disconnected from teachers' daily practice (Borko, 2004; Darling-Hammond et al., 2009). These traditional models are dismissive of teacher needs and goals for their classrooms, often resulting in frustration and even resistance to participation (Darling-Hammond et al., 2009; Guskey, 2009), and fail to bring about desired changes in teacher practice

and student achievement. Research shows that when professional development is directly connected to teachers' personal goals as well as aligned with larger school standards it is more likely to impact teacher practice and ultimately student achievement (Bradley, 1996; Desimone et al., 1999; Guskey, 2009; Garet et al., 2001; Zepeda, 2008).

Research on professional development stemming from 2 large scale studies, the Eisenhower study discussed previously (Garet et al., 2001) and The Council of Chief State School Officer's cross state study on professional development in math (Blank, de las Alas, & Smith, 2007), deemed professional development as effective if it was relevant to the teacher as well as the school. Both studies described effective professional development as consistent with curriculum, aligned with school, state or district standards for student performance and focused on teachers' day-to-day teaching practices.

Professional development grounded in daily teaching practices and aligned with school or district-wide goal is defined as job-embedded (Darling-Hammond & McLaughlin, 1995; Hirsch, 2005). Job-embedded professional development grounded in teachers' everyday practice and designed to address questions around content and instructional practices that improve student achievement (Darling-Hammond & McLauglin, 1995; Hirsch, 2005). This model of professional development is situated in authentic, everyday teacher practice and focuses on solving authentic problems encountered in the classroom (Archibald et al., 2011; Darling-Hammond, 2010), encouraging teachers to apply and reflect on strategies being utilized in the classroom.

Job-embedded professional development can come in various forms including coaching, lesson study, peer observation, professional learning communities and analysis of student work (Archibald et al., 2011; Darling-Hammond & McLaughlin, 1995), and allows teachers to engage

in research based practices while drawing upon teacher knowledge and experience that impact their unique contexts (Killion & Roy, 2009).

Form v. Reform Models of Professional Development

Garet et al. (2001) and others researchers typically differentiate between "form" and "reform" models of delivery. "Form" refers to more traditional models of face-to-face professional development such as workshops, in-services or other training opportunities. These often brief, sporadic models are widely regarded as ineffective in impacting teacher practice services, and are often designed to transmit ideas from experts, positioning teachers as passive recipients of knowledge. (Atay, 2008; Cohen & Hill, 1991; Cullen, 1998; Guskey, 2000; Little, 1993; Parsad et al., 2001; Porter et al., 2000).

Challenges Posed by Traditional Models of Professional Development

Although researchers widely agree on the benefits of providing professional development experiences by encompassing the four overarching characteristics of time, collaboration, content focused, context centered practice, the persistence of traditional models of professional development that do not embed these characteristics remains prevalent (Darling-Hammond et al., 2009; Guskey, 2009; Croft, Coggshall, Dolan, & Powers, 2010; Joyce & Showers, 2002).

Lack of extended time. Traditional professional development is often criticized for being brief and sporadic, consisting of one-shot experiences disconnected from teacher practice (Ball & Cohen, 1999; Borko & Putnam, 1995; Guskey**,** 2009; Lieberman & Pointer-Mace, 2008). Limited time during the workday are often challenges for school districts wishing to provide ongoing professional development for teachers that affords continuous opportunities to interact with others and reflect around classroom practice (Lieberman & Pointer-Mace, 2009).

Many teachers continue to report a lack of release time to engage in professional development as a primary hindrance in participating in these activities (Klingner, Ahwee, Pilonieta, & Menendez, 2003; Lieberman & Pointer-Mace, 2009). This lack of dedicated time for professional development contributes to the persistence of brief, sporadic experiences still reported by many teachers. Additionally, with teachers attempting to balance family life while being involved in before and after-school activities like coaching and other extra-curricular responsibilities, time for professional development becomes increasingly difficult to manage (Shanklin, 2009). Traditional models fail to provide teachers with the needed follow up support as they attempt to apply new strategies and understandings to their unique teaching contexts. Thus, the time required to effectively engage in sustained learning processes with extended support is largely absent.

Lack of collaborative, active experiences. Episodic workshops are often presented by specialists, consultants, and other content area experts and fail to provide the extended support and collaboration needed to engage in issues around professional knowledge and practice. These models are designed to transmit knowledge to teachers and do not position teachers as active constructors of their learning experiences (Little, 1993). Further exacerbating the problem is the fact that "each teacher spends most of the day in a single room, separated from other adults-the American teaching professions has not yet developed a strong tradition of professional collaboration (Darling-Hammond et al., 2009, p. 11). U.S. schools have not historically been structured to allow time for teachers to work together around critical issues of practice such as lesson planning, classroom management, curriculum design and other pedagogical or content-area issues. Teachers who leave the profession often cite the lack of support as a primary reason for high rates of dissatisfaction (Futernick, 2007). The cultural norms of teaching in isolation

persist making collaboration and culture building problematic unless professional development is strategically planned to foster communal relationships needed to begin to transform teaching practice (Darling-Hammond et al., 2009).

Failure to provide content-centered, situated activity. Top-down traditional approaches to professional development are often dismissive of teacher needs and situated outside teacher and school goals. Professional development experiences that do no align with what teachers want and need to do in their classrooms, and do not align with school or community goals, are less likely to be have impact on instructional practice. When disconnect is apparent, professional development is ineffective and fails to impact teacher practice and student achievement (Darling-Hammond et al., 2009). Professional development activities should be designed to promote active, collective analysis of job-embedded practices such as examining student work, observation, discussion, curriculum planning and sharing of values, knowledge and understandings.

Recognizing, the shortcomings of traditional professional development models and responding to state and federal mandates to improve professional development experiences and raise student achievement levels nationwide, school districts are beginning to address the barriers presented by traditional models by providing experiences that embody the critical featured cited in research around effective professional development. These reform models are often inclusive of the characteristics outlined in literature around effective professional development.

Reform Professional Development Models

Reform models are those professional development experiences that are job-embedded, extended over time, and designed to actively engage teachers in collaborative participation around issues of professional knowledge. Several professional development delivery models are

typically categorized as reform oriented, and, therefore, more effective in promoting teacher knowledge and skills (Curry & Killion, 2009; Desimone et al., 2002; Elmore, 2002; Garet et al., 2001; Guskey, 2009). Each of these models will be discussed in order to provide an overview of and alignment with research-based indicators of effective professional development: (a) time, (b) collaborative and active participation, (c) content-driven, and (d) situated activity. Some examples of reform-oriented professional development programs encompassing features of effective professional development are (a) lesson study, (b) coaching, and (d) professional learning communities.

Lesson study. Lesson study originated in Japan and involves a structured process where teachers plan, observe, discuss and revise lessons (Fernandez, 2002). Lesson study involves small groups of teachers that collectively set goals, plan a lesson and select a Research Question to explore that serves to guide their work (Lewis, Perry, & Hurd, 2004). Using the guiding research question, the teachers implement, observe others' practice, evaluate and revise the lesson. The process is an extended, highly collaborative and draws upon teacher knowledge of practice to enhance the collective learning (Stepanek, Appel, Leong, Mangan, & Mitchell, 2007).

Research in support of the lesson study is emerging. Lewis et al. (2004) after investigating the impact of lesson study on teaching practices found that employing this model resulted in increased understanding of content and curriculum, stronger relationships between classroom practices and goals, stronger collegial relationships, increased teacher motivation and improved lesson plan quality. Other studies of us teachers involved in the lesson study model at different sites have similarly yielded positive results such as increased knowledge of subject matter, improved instructional practices, increased ability to observe and assess students and

stronger connections between long-term goals and daily classroom practice (Perry, Lewis, & Akiba, 2002; Watanbe, 2002).

Coaching. Coaching involves two or more educators working together to improve teaching practice. Usually, coaching a more experienced teacher with a less experienced peer and include a cycle of participation inclusive of conferencing, observation, and follow up (Loucks-Hoursley et al., 1997). Effective coaching usually focuses on issues directly related to learning and improvement related to a specific content area and may include activities such as assessment strategies, curriculum design, examining student work and instructional methods. Showers and Joyce (1996) found that teachers in coaching relationships were more likely to try out and adapt new strategies and use them more frequently than teachers that had not been coached. Spencer and Logan (2003) similarly found that teachers who had received coaching used interventions more frequently and consistently in their classrooms than teachers who had not been coached.

Professional learning communities. Professional Learning Communities is defined as group of educators that focus on learning rather than teaching and "work collaboratively and hold each other accountable for results" (DuFour, 2004, p. 6). In professional learning communities, teachers work collaboratively to discuss teaching strategies and practices around job-embedded issues. Hord (1998) in defining effective professional learning communities list the following attributes: supportive and shared leadership, collective creativity, shared vision, supportive conditions and shared personal practice. Professional Learning Communities are designed to combat teacher isolation and position teaching as a collective effort amongst a cohesive group focusing on the co-creation of professional knowledge.

DuFour (2004) found that teachers involved in professional learning communities engaged in a wide variety activities such as lesson planning, development of common assessments and development of new teaching strategies. Hall and Hord (2006) also assert that participation in professional learning communities also promote teacher reflection on their own effectiveness. Research on teacher collaboration through professional learning communities can positively impact school environment, teacher practice and student achievement. Spiegel-Stroud (2007) found that shared planning time resulted in rich conversation and an increased sense of collegiality, and lead to improved student learning. Bunker (2008) similarly determined that students demonstrated growth in reading and math when teachers were part of a professional learning community.

Section Summary: Features of Effective Professional Development

Various models of reform-models of professional development have been discussed to highlight the importance of extended, collaborative, context driven participation in impacting teacher practices. The examples discussed vary in how the features are applied in creating effective professional development programs experiences. However, all encompass the characteristics of effective professional development: (a) sustained time, (b) collaborative and active participation, (c) content-driven, and (d) situated activity. Allowing teachers extended time to collectively plan, implement and revise lessons around content and other job-embedded issues, encourages the type of active participation that promotes a sense of community, collegiality, and engagement in the learning process. Research indicates this level of extended engagement is potentially transformative in impacting instructional processes for participating teachers as they engage in everyday practice, yet large-scale implementation remains problematic.

Barriers to Implementing Effective Professional Development

Although well documented by the literature, effective, reform models of professional development that provide sustained collaborative engagement with others around critical issues of professional pedagogy and practice can be challenging to implement. Many school districts do not have the financial resources or expertise to provide effective professional development experiences to all teachers. Additionally, finding dedicated, common time for teachers to meet during the school day can be challenging due to school structures and teachers' heavy workloads and conflicting schedules.

Studies on effective professional development cite cost as a major drawback in implementing this model of professional development, noting the investment in teacher planning time, as well as expenses related to compensating subject-area experts as potential barriers in large-scale implementation. Faced with increasingly limited budgets, schools districts are seeking alternative ways to meet teacher needs for professional development and improve student achievement. Online approaches could serve to address the problems posed by more traditional methods of delivery by promoting the type of job-embedded, interaction and collaboration suggested by experts in the field, while addressing barriers faced by many school communities such as time constraints, conflicting schedules and lack of engagement around content.

Online communities additionally can be the source of data streams that can assist in informing what is already known about perceived effectiveness of professional development on teacher practice, by tracking and visualizing what teachers actually do when engaged in professional learning. Providing quantitative measures to enhance results from anecdotal evidence offers an innovative view of what professional development actually "looks like" in

practice, making validation of teacher perceptions of change a possibility; a possibility that is difficult to obtain utilizing traditional methods.

Enhancing Professional Development with Technology

The use of technology as both a teaching and learning tool is critical for teachers faced with classroom populated with increasingly savvy learners. Widespread use of the internet, advancements in technological tools such as Learning Management Systems and tablets, along with increased demand for effective, reform-oriented professional development models have resulted in the proliferation online professional development options for teachers in recent years (Dede, 2006).

It is tantamount that teachers be equipped with not only pedagogical skills and content knowledge, but also requires them to seek knowledge in effective learning approaches that consider technological aspects of content area instruction, as put forth by Koehler and Mishra (2009) in the TPCK Framework. This requires teachers themselves to first become adept at learning in ways that incorporate technology effectively so that they can then utilize this knowledge to assist their student populations acquire these skills. Dede (2006) supports "helping teachers respond to the rapidly shifting needs and desires of increasingly diverse student populations" by pointing out that "teachers must themselves have experiences with media comparable to those their students have outside classroom walls, so that educators understand firsthand the strengths and challenges promoted by lifestyles infused with new media" (Dede, 2006, p. 239).

Online Professional Development

Online professional development is defined as using the Internet to provide activities, information, and interaction with mentors and colleagues and enables educators to improve their

knowledge and professional practices (Kleinman, 2004). Northrup and Rasmussen (2002) defined online professional development as "delivery of professional development where participants and instructors are separated by time and usually distance using the World Wide Web for instruction, communication and collaboration" (p. 2). For the purposes of this study, online professional development will be defined as professional development courses offered via the Internet for the purposes of enhancing job related skills or knowledge.

Delivery modes. Online professional development modes include synchronous, asynchronous or hybrid, which combines elements of both. In synchronous courses, participants engage at the same time, using real time interactions and tools such as instant messaging, chats or videoconferencing (Hrastinski, 2008; Moore, 1989). Conversely, asynchronous models, allow teachers to participate at any time to view content and interactions. Synchronous models more closely remember face-to-face learning experiences, by mimicking immediacy in responses and feedback, while asynchronous models have been reported to allow more time for reflection, experimentation, and thought processes around interactions and offer increased flexibility for learners to participate at their own pace (Hrastinski, 2008). Hybrid models incorporate aspects of face-to-face, traditional professional development and online models of delivery.

Research indicates hybrid models may be the most effective, promoting high levels of interaction while allowing for maximum flexibility (Brown & Green, 2003; Young, 2002). These hybrid models as a vehicle for delivering teacher online professional development, are gaining in popularity amongst educators, with over half of school districts offering this option for teachers seeking to extend professional knowledge (Young, 2002).

Rationale for Online Professional Development

The need for providing high quality professional development cannot be fully met with by relying on traditional, face-to-face models of professional development, with many districts continually relying of on brief, seminars or workshops, disconnected from actual teaching practice (Borko, 2004). However, the kind of sustained, meaningful participation outlined by researchers as necessary in designing quality professional development experiences (Garet et al., 2001; Guskey & Yoon, 2009; Lieberman & Pointer-Mace, 2008) remains absent in many traditional models, leaving teachers frustrated and without support as they attempt to implement new strategies, curricula or practices throughout the school year.

> The need for professional development that can fit with teachers' busy schedules, that draws on powerful resources often not available locally, and that can create an evolutionary path toward providing real-time, ongoing, work-embedded support has stimulated the creation of online teacher professional development (oTPD) programs. (Dede et al., 2009)

Gilbert (2004) further speaks to the need for preparing teachers to teach and learn in the 21st century by calling teacher one of the greatest challenges of the educational community, urging teachers and school districts to embrace to emergent technologies for professional development purposes, and engage in professional development activities that focus on collaboration and community. Online approaches could serve to address the problems posed by more traditional methods of delivery by promoting the type of interaction and collaboration suggested by experts in the field.

Experts agree that the following features are characteristics of effective professional development: (a) sustained time, (b) collaborative and active participation, (c) content- driven, and (d) situated activities. Online professional development can address the barriers outlined by imposing traditional face-to-face models by increasing opportunity and frequency to engage in

professional development activities that designate professional development activities as effective, and therefore, are more likely to impact teacher practices.

Sustained time. Online professional development can help to narrow the impact of professional isolation often experienced by teachers. Fullan and Hargreaves (1996), report that professional isolation of teachers frequently impedes opportunities to engage in professional learning opportunities, allowing bad practices to fester as well as exemplary teaching practices to go unnoticed. Research based, job-embedded professional development that offers anytime, anywhere access to resources and peers could serve as a catalyst for teachers to "attempt curricular-instructional innovations that they would probably not…[try] as individuals" (Fullan & Hargreaves, 1992, p. 56).

Similarly, The National Staff Development Council (NSDC) recommends at least "25% of educator's work time be devoted to learning and collaborating with others" (2001, p. 21), which can be difficult to accomplish within the confines of teachers' workdays. Although teachers have reported online professional development options desirable, many still prefer some face-to-face contact, making hybrid models optimal (Hiltz & Goldman, 2005). Online professional development "combined with several face-to-face sessions offers multiple advantages such as the ease of organization, low or no cost, opportunity to tailor individual pace, and potential to develop pedagogical effectiveness" (Samsonov & Beard, 2003, p. 1).

Increased opportunity for active participation and collaboration. Interaction has been found to be a key component in promoting learning experiences in both traditional and online models (Garrison, Anderson, & Archer, 2001; Holmberg, 1983; Moore, 1989; Vygotsky, 1978). Research on online models aimed at adult learning suggests a relationship between interactions and success of learning experiences (Hiltz, Coppola, Rotter & Turoff, & Benbunan-

Fich, 2000; Picciano, 2002). Although an agreed upon definition of interaction does not exist in the educational community (Soo & Bonk, 1998; Wagner, 1994), most researchers include dimensions such as collaboration, exchange of ideas, providing feedback and active learning (Chickering, Gamson, & Poulsen, 1987). Similarly, Vrasidas, and McIsaac (1999) and Hirumi (2002) focused on meaningful interaction, by pointing out that the mere presence of interaction in online learning environments did not necessarily equate to increased learning, but pointed to the need for interactions to be tied to instructional outcomes and promote intellectual thinking and conversations. Woo and Reeves (2007), in describing the purpose of interaction indicated,

> In an online learning environment designed on the principles of social constructivism, meaningful interaction should include responding, negotiating internally and socially, arguing against points, adding to evolving ideas, and offering alternative perspectives with one another while solving some real tasks. (p. 19)

Teachers actively engaged in professional development experiences online potentially benefit from increased levels of interactions. Online professional development environments can result in increased opportunities to interact with others teachers in ways not possible using face-to-face methods. These interactions can take many forms of collaborative engagements including questioning, creating content, discussing, sharing and observing others. While reform models discussed previously have shown promise by promoting collaborative, collegial relationships amongst teachers, these models can be difficult to implement during the regular school day. The "anytime, anywhere" access to others made possible by online professional development, can be effective in overcoming time constraints. Interaction can be done asynchronously, so teachers do not have to be available at the same time or even located in the same place to collaborate around professional issues.

Additionally, online professional development can allow teachers to connect with experts and colleagues who would not normally be available. The costs related to hiring consultants and

subject-area experts to provide follow-up and support to teachers can be a deterrent for schools districts seeking to implement job-embedded opportunities. Online professional development means teachers can potentially interact with experts virtually, making participation in coaching, mentoring and other collaborative activities more accessible (Kleinman, 2004).

Increased opportunity to engage with content. Online professional development presents opportunities to engage with content in ways not possible using traditional methods, enhancing the ability for codification of professional knowledge through technological tools.

> The multimedia online age has heralded new opportunities for individuals and communities to go public with their work. Since the advent of widespread access to multimedia tools, such tools have been used to capture teaching and learning. Many K-12 teachers now have daily access to cameras, computers, video editing software, and interactive whiteboards. More important, they are disposed to use these tools to connect with their students and their colleagues in new ways. (Lieberman & Pointer-Mace, 2009, p. 78)

By integrating technological tools into online professional development activities, teachers can engage in activities such as reflection, analysis of teaching strategies, discussions around various professional issues and collaborative creation of lessons. Employed strategically, online professional development can enhance reform models discussed previously such as lesson study and coaching by capturing documents, lessons, and discussions to inform future learning.

Situated in relevant context. Traditional forms of professional development fail to take into account teacher experience, knowledge, and goals by employing hierarchal approaches intended to transmit knowledge. Online professional development allows teachers to cater learning experiences by pursuing activities situated in teaching contexts. The range of activities now available to teachers online allow teachers to engage deeply with content, as well pursue other subjects of personal relevance. Teachers interested in a wide variety of activities from

experimenting with content area strategies to creating digital student portfolios can participate in activities they can, in turn, use in their own classrooms.

Online professional development can enhance teacher learning experiences by addressing the barriers posed by face-to-face models (a) time, (b) active and collaborative participation, (c) content-driven, and (d) situated participation. Online professional development can promote teacher engagement with others during times that are convenient to them, that addresses their needs as adults and learners, and interact with materials using a variety of multimedia formats, all while gaining valuable technological skills (Garrison & Cleveland-Innes, 2005; Ginsburg, Gray & Levin, 2004, Lieberman et al., 2009).

Although the advantages of providing these extended opportunities to interact with peers around teaching practice are well-documented in literature, teachers in the U.S. still report very little participation in activities that impact teacher practices such as sharing, observation, and designing instructional experiences (Darling-Hammond et al., 2009). In addition to previously discussed barriers such as time and lack of focus on situated, content relevant activities, a persistent culture of privacy is U.S. schools, where the practice of sharing is not widespread (Barab et al., 2001), and apprehension around school politics can impede the development of collaborative efforts (Pomson, 2005). For these reasons, Barab et al. (2001) assert, "we believe that new models for professional development are needed, models that foster a culture of sharing, and provide sustained support (i.e., knowledge networks) for teachers as threeey evaluate both their beliefs and practices" (p. 72).

Pointing out that professional development should be focused on the development and learning and community as opposed to instruction, Barab et al. (2001) touts a situated perspective, arguing that teachers are more likely to learn when relationship building is an

integral component of professional development. This community oriented, active and situated view of teacher professional development is consistent with to social-constructivist perspectives around the nature of learning.

Social Constructivism and Teacher Learning

Research highlights the critical role of content-driven, community participation amongst teachers that is situated in authentic teaching contexts in identifying features commonly found in effective professional development programs. These features align with social constructivist perspectives regarding the nature of learning. Social constructivism is a theory based on the premise that knowledge is a socially negotiated and constructed amongst groups (Ally, 2004; Bruner, 1990; Fosnot, 2005; Fosnot & Perry, 1996; Laferriere et al., 2006; Lave & Wenger, 1991; Vygotsky, 1978; Wenger, 2000). Social constructivist theory similarly highlights the role of culture, collaboration and distributed meaning construction amongst groups (Ally, 2004; Bruner, 1990; Fosnot & Perry, 1996; Laferriere, Lamon, & Chan, 2006; Lave & Wenger, 1991; Vygotsky, 1978; Wenger, 2000), and, thus, serves as a useful framework in examining quality teacher professional development experiences.

Derived from Vygotsky's (1978) ideas on social interaction as a key component in learning, social constructivism places great emphasis on the social nature of knowing, by focusing on culture, language, tools, norms and behaviors (Fosnot & Perry, 1996). Essentially, learners "come to know" (Fosnot & Perry, 1996) through actively participating in social practices in their environment. In essence, shifts in thinking and practice are a form enculturation, where community members engage with others over time around common practices and values. Vygotsky (1978) emphasized the role of language, culture in social interaction in the learning process. According to Vygotksy (1978), language, meaning and belief

systems are always situated in culture and, therefore, learning is always socially constructed as individuals are integrated into knowledge communities. “Therefore, learning is derived from rich conversation with other people who have similar or different perspectives based on their own life experiences” (Woo & Reeves, 2007, p. 18).

Vygotsky (1978) introduced the concept of Zone of Proximal Development (ZPD), “the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with peers” (p. 86). Vygotsky developed the concept of ZPD after discovering that students learned more when they collaborated with others and asserted that learning “awakens a variety of developmental processes that are able to operate only when…interacting with people in his environment and in cooperation with his peers” (Vygotsky, 1978, p. 90).

Dewey (1938) viewed learning as an active, social process assigning equal importance to learners’ personal values and experiences and environmental factors such as social norms. Learning, according to Dewey (1938), is the result of a transaction between the individual and the social environment- a term he defined as interaction. This interaction between internal and external factors is pivotal in creating true educational experiences. In further defining educational experiences, Dewey additionally addressed the importance of providing continuous, purpose-driven opportunities for learning in creating authentic educational experiences. Similar perspectives on the role of language and culture in meaning-construction are shared by proponents of other social constructivist frameworks, such as communities of practice (Fosnot & Perry, 1996; Lave & Wegner, 1991).

Social Learning theorists contend that knowledge construction occurs in social contexts. These contexts are described as situated, as they involve learning in settings in which they occur naturally, and are derived from the learner's need to function within those contexts (Lave & Wegner, 1991). Learning is a collaborative process resulting from individuals practicing together and developing shared understandings around cultural language, tools, and meanings (Bruner, 1990; Wenger, 1998). In discussing how teachers learn best, Barab et al. (2004) state, "an effective teacher is one that participates in a community of teachers by using tools and other meditational means to accomplish outcomes that are recognized as effective within that community. Knowing is a process of connecting, not acquiring" (p. 7).

Group collaboration and social negotiation of ideas, values and meanings has been found to be a key component in the Community of Practice Framework (Lave & Wenger, 1991; Wenger, 1998) and is reflective of Vygotsky's (1978) ideas around the zone of proximal development. A Community of Practice (CoP) is a social learning system, where knowledge is shared, negotiated co-constructed by members of the community (Wenger, 1998). There are specific characteristics of a CoP which are (a) practice, that the group continuously shares, (b) community, made up of members who share a common interest in practicing together, (c) meaning, the knowledge that is continuously co-constructed, circulated, and shared amongst community members, and (d) identity, the participants within the community who contribute to knowledge. These members have varying levels of expertise from novice to expert and move towards full participation as they acquire knowledge around community practices (Wenger, 1998).

Ultimately what teachers do in their everyday professional lives, as well as what they are attempting to do, must be the focal point of any professional development effort to encourage maximum participation in any learning community. Lieberman and Pointer-Mace (2009) write,

> these communities have within them three processes—learning, meaning, and identity—and learning happens through experience and practice. People learn in practice (by doing), through meaning (learning is intentional), through learning in participation with others, and through identity (learning and changing who we are). Described in this way, professional learning is rooted in the human need to belong, to make a contribution to a community, and to understand that experience and knowledge are part of community property. (Lieberman & Pointer-Mace, 2009, p. 5)

Teachers who are part of a CoP share a common interest in the act of teaching and come together to create knowledge, including shared language, best practice, norms of operation and curricula. There are 3 components integral to any CoP, which help members to create knowledge around common practice mutual engagement, shared repertoire and joint enterprise (Wenger, 1988). Mutual engagement means members are bound together by shared understanding and goals of their particular community. Mutual engagement involves members engaged in practice, which is "the source of coherence" (Wenger, 1998, p. 73) for the community. For teachers, mutual engagement means community members are engaged around the practice of teaching by constantly defining, questioning and creating understanding around what it means to teach is what drives sustained participation.

A second component, joint enterprise, means members are accountable for knowledge creation, norms and other expectations around participation, which hinges on community goals. From a CoP perspective, teachers create norms around participation such as expectations around sharing of work, observing and being observed and contributing to professional knowledge.

The third component is the development of a shared repertoire, which includes routines, norms stories, documents and other artifacts that have become part of community practice

(Wenger, 1998). Teachers who are members of a CoP share stories about their experiences, create lesson plans, develop shared language, share strategies and capture other artifacts representative of common practice. The capture of community knowledge is called reification, and refers to products or processes use to codify knowledge. Reification can take many forms for teachers in a CoP from creating simple documents like lesson plans, to using multimedia tools such as video to document teaching. Reification is a powerful way to aid in the creation, circulation and capture of knowledge and increase understanding of practice for teachers who are part of a Community of Practice.

Online Communities of Practice

In considering online communities such for professional development purposes, social negotiation of meanings and values typically comes in the form of interactions such as dialog, comments, reflection and feedback around issues ranging from instructional strategies to content-related matters. This very public practice of talking as meaning negotiation was is an important part of practice together, as it serves to engage members around emerging definitions and shared language. Simultaneously, it highlights the cultural importance of dialogue as a method of negotiating meaning as part of an ongoing social process. Studies in the field of professional development indicate factors such as collegiality, collaboration, and a sense of community, assist in the development of the types of interaction that ultimately positively impact teacher efficacy as well as classroom practice (Darling- Hammond, 2006a, 2006b; Diaz-Maggioli, 2004; Fullan & Hargreaves, 1996; Garet et al., 2001; Lieberman & Miller, 2004; Marzano, 2003).

Social practices, in essence, that engage teachers to dialog with others around job-specific issues such as instructional practices, is greatly enhanced by involvement in online communities of practice, where access is unrestricted by time and location, and allows teachers to practice at

their own pace, during times best suited to individual needs and encourages interactions with a variety of peers outside of their immediate school settings.

It is through these social interactions, that teachers began to question, analyze, debate and explore problems directly related to classroom settings. Membership in online communities such as social networks makes increased levels and types of interactions possible. Users may interact with small or large groups, post messages, openly engage in dialog and reflection and benefit from dialog and benefit from coaching and feedback in ways not possible in traditional learning environments. These varying possibilities of interactions, situated in teacher-specific contexts, align with social constructivist theories of learning and development, by presenting increased opportunities to engage in critical thinking, dialog and meaning making. The figure below (see Figure 1) represents the Online Social Learning (OSLN) being utilized for the study's alignment with social learning framework and best practices around implementing effective professional development models.

Merely providing a space for teachers to come together, physically or virtually, is insufficient in promoting that kinds of interactions needed to shift old ways of thinking and doing. Providing technology alone is unlikely to bring about learning and changes in teacher practice. Research indicates community is key in creating sustainable, collaborative professional learning experiences online (Laferriere et al., 2006; Russell & Schneiderheinz, 2005; Schlager & Fusco, 2003). Schlager and Fusco (2004) discussed "Tapped In", an online community of thousands of K-12 educators, and maintained nationwide membership was not successful in promoting communities of practice by providing technology alone. They suggested CoP's might be better suited for smaller, more localized communities of teachers where the possibility to meet and build trust and collaboration is possible.

Social Learning Element	Effective Professional Development	Online Professional Development	Online Social Learning Network
Culturally Situated in Community Goals	Culturally situated in teachers' goals, needs and problems of practice; is job-embedded & aligned with school or district (Garet et al., 2001; Guskey & Huberman, 1995).	Culturally situated around teachers' need to understand and implement content, best practices related to content(Barab et al., 2001; Cleveland-Inees, 2005).	Various features such as groups, portfolios and discussion forums exist to support individual as well a community needs as they practice (Martin, 2012)
Social Learning & Interaction	Provides increased opportunities to engage with others around teacher practice (Liberman & Miller, 2001; Little, 1993).	Provides increased opportunities to collaborate with other teaching professionals by extending network to include online teachers and other experts (Garrison & Anderson, 2000; Picciano, 2002; Woo & Reeves 2006).	OSLN provides multiple formats for communication including messaging, blogging, discussing and commenting; Provides increased opportunities for creating, sharing and viewing of various types of artifacts including text and digital media (Martin, 2012; Nacu, 2012).
Sustained Engagement	Job-Embedded; Allows teachers to engage over time around professional goals as opposed to fragmented, one-stop models (Borko, 2004; Darling-Hammond et al., 2009).	Encourages sustained engagement with teachers unlimited by time and physical location; Anytime, anywhere access and increased flexibility in participation is possible (Kleinman, 2004).	Engagement is online and face-to-face with researcher and other teachers (Nacu, 2012).
Reification	The capture of professional knowledge though conversations, and relevant documents, can be challenging without systems and supports in place to facilitate this process (Lieberman, Pointer & Mace, 2008).	Online models allow innovative ways to facilitate the capture of knowledge in visible way (Lieberman, Pointer & Mace, 2010; Wenger, White & Smith 2009).	Teacher discussion groups can house artifacts such a lesson plans, professional readings, rubrics and various resources around ELA instruction and instructional practices using an OSLN (Martin, 2012)
Active Participation	The capture of professional knowledge though conversations, and relevant documents, can be challenging without systems and supports in place to facilitate this process. Teachers are active in constructing their own experiences and positioned as experts as opposed to passive recipients of knowledge (Barab et al., 2001; Lieberman,	Online models allow innovative ways to facilitate the capture of knowledge in visible ways. Teachers actively create professional development experiences by connecting with others, sharing ideas, questioning and revising strategies to fit their needs(Dede, 2008; Kleinman, 2004).	OSLN's house varying methods for sharing, critique of work and receive per guidance and allow for participation by teachers, digital media as well as other curriculum experts. (Nacu, 2012).

Figure 1. Application of Social Learning Theory and professional development best practices.

Schlager and Fusco (2004) questioned the effectiveness of large-scale online CoP models by pointing out the possibility of isolating teachers from localized professional development efforts may actually hinder sustainable change. Pointing to the potential of creating powerful "home-grown" hybrid communities of practice, Schlager and Fusco warn against the divisive effects of completely removing professional development efforts into cyberspace, ignoring school-wide needs and common goals.

Hur and Hara (2007) examined what made online K12 professional development communities successful, providing additional insight into the value of providing hybrid experiences for teacher learning. For their study, Hur and Hara examined an online community called INDISCHOOL, created and maintained by teachers in Korea (2007), which grew to include over 87,000 members in just 5 years. Hur and Hara employed a single case study design

in order to examine the factors that made this online community sustainable since teachers continuously participated in INDISCHOOL, logging in approximately 15,000 times per day.

Using interviews, web postings, observations and transcripts, Hur and Hara (2007) identified both internal and external factors that contributed to community sustainability. Internal factors included, user autonomy and ownership of experiences, while external factors included peer interactions both online and offline and access to technology supports. Hur and Hara determined that extended support and interaction by providing both online and offline support was integral in creating community, noting that "the community had remained nearly inactive" (p. 256) until a face-to-face components were introduced.

These findings suggest that although online professional development activities offer the benefit of increased opportunities for interaction over extended periods of time around content are valuable, simply providing teachers with tools to participate in these communities is more beneficial when these online CoP's are supported by face-to-face components. True community building and trust appear to be enhanced by collaborations that extend beyond virtual participation in communities.

Similar findings were reported by Barab et al. (2004) in their examination of The Inquiry Learning Forum (ILF). This online learning community was designed for math, science and technology teachers to build their knowledge on inquiry based methods. The goal of ILF was to understand "the principles for fostering, sustaining, and scaling communities of practice in which the value of participants of sharing their practice and entering in the in the dialog outweighs the costs of participation" (Barab et al., 2004, p. 32). The researchers considered costs of participation to be technology access, time, and the public nature of sharing teaching practices. Barab et al. found that although teachers signed up and agreed to participate in the ILF, they did

not revisit the site on a regular basis, and building the environment alone was not sufficient in encouraging teacher participation. Barab et al. (2004) concluded that community building had several aspects and that online environment itself was not enough to encourage participation, and included a face-to-face component to the experience. Essentially, a true CoP failed to evolve using solely the online space, and ILF evolved into an online community supported by web-based interactions (Barab et al., 2004).

Increased, job-embedded, and sustained opportunities for collaboration and interaction around pedagogy and practice as potentially afforded by online communities of practice are not only aligned with social constructivist views, but are additionally touted by experts as best practices in regards to promoting teacher professional learning (Darling- Hammond 2006a, 2006b; Garet et al., 2001; Guskey, 1997; Sparks, 1994). Professional development that is (a) sustained over time, (b) promotes collaborative and active teacher interaction, (c) is content-driven, and (d) context-centered is commonly viewed as effective in impacting teacher practice (Darling- Hammond et al., 2009; Garet et al., 2001; Guskey, 2009; Lieberman & Miller, 2001).

Social Networking for Professional Development

Online communities such as social learning networks, both formal and informal, are rapidly gaining popularity amongst teachers seeking valuable professional development experiences that promote engagement and participation in active learning and problem solving that is derived from actual questions and challenges arising from classroom experiences (MMS Education, 2012). These online communities are potentially an effective way to overcome the challenges posed by utilizing traditional professional development models, promoting the kind of content, socially-driven, sustained practice with others as touted by social cultural theorists.

While heavily used by millions to facilitate strictly personal interactions increasingly popular social networks have rapidly evolved into places where users gather to exchange information, share common interests and learn from others for both formal and informal purposes (Boyd & Ellison, 2007). The highly collaborative nature of social networks and increased opportunity for varying levels of interaction makes them potentially valuable in facilitating professional development experiences amongst groups engaged in shared practices, such as teachers. According to the National Technology Plan (U.S. Department of Education, 2010), "social networks can be used to provide educators with career-long personal learning tools and resources that make professional learning timely and relevant as well as ongoing activity that continually improves practice and evolves their skills over time" (p. 49).

A relatively new phenomenon within the last 15 years, social networking sites (SNSs) are "online media tools that allow people to easily share ideas, opinions, knowledge and experience" (Merante, 2009, p. 21). SNSs such as Facebook, Twitter, Ning, and LinkedIn are growing in use and popularity for social, educational and professional use (Davis, 2010; MMS Education, 2012). By 2009, 11% of all time spent online was attributed to visiting social networks (comScore, 2010). According to Lenhart (2009), by 2005 8% of adults had used a SNS, with this percentage increasing to 16% by 2006 and to 35% by 2008. Madden and Zickhur (2011) reported that across all age groups, the use of SNSs in the United States continues to increase annually, with 83% falling between the ages of 18-29, 70% aged 30-49, 51% aged 50-64, and 33% are age 65 and above.

The first SNS was SixDegrees and was started in 1996 (Boyd & Ellison, 2007). Friendster, started in 2007 was the first SNS to experience rapid growth, reaching approximately 300,000 users in the United States during the first year (Boyd & Ellison; 2007). By 2003,

MySpace was founded and gained popularity by allowing users desire to customize pages and control privacy settings, and reached 75.9 million users in the United States by 2008.

Founded in 2004, Facebook was initially created strictly for Harvard students. By 2005, any student, high school, or college was allowed to join Facebook, with membership opening to the general public in 2006 (Boyd & Ellison, 2007; Eberhardt, 2007). Facebook is one of the most popular SNSs to date, allowing users to create personal profiles, connect and search for new friends, collaborate by email and instant messaging, upload multimedia, add applications, and form groups for various purposes. By 2009, Facebook became the most visited SNS in the United States with 112 million users, a 105% increase from the previous year (comScore, 2010).

Amongst educators, social networking continues to grow exponentially, providing ways for teachers to overcome isolation by connecting with others and gain access to valuable peers and resources outside of their individual school settings and subject area interests (Davis, 2010). The highly collaborative and interactive nature of SNSs makes them suitable for learning from a social constructivist standpoint (Yan, 2008). Users ability to collaborate around ideas, dialog around practice, share information and maintain networks of peers can help in facilitating the social construction of knowledge (Knoke & Yang, 2008; Van Harmelen, 2008). For teachers, they can be an invaluable tool for sharing information and connecting with peers, and many in the field of K-12 education are beginning to experiment with ways in which to utilize social networks in their professional practice.

In a survey conducted by MMS Education, educators' use of popular social networking sites such as Facebook, Twitter and Linked In mirrored that of the general population steadily increasing, from 61% to 82% from 2009 to 2012 (MMS Education, 2012). However, social networks tailored to education professions are gaining popularity as well, primarily because of

issues such as blocked access to social networking sites, teacher privacy, student safety, and restrictive policies regarding student-teacher connections on mainstream networks such as Facebook (MMS Education, 2012).

Companies such as EdModo and Edweb.Net are experiencing steady increases in membership and function as both social learning networks and learning management systems, allowing teachers to engage with students in a variety of ways from mass communication to assessment. Other networks such as Tioki, SmarterCookie, and Discovery Education Network are also being utilized by educators with increasing frequency providing a vast array of resources such as teaching materials, classroom tools, professional development, and teacher coaching (MMS Education, 2012). Social networking can assist in overcoming feelings of isolation often experienced by educators, allowing them to connect with peers in ways not restricted by physical location (Davis, 2010). The potential for increased interactions is vast, and therefore both appealing and beneficial to teachers seeking to engage with others around practice.

> By using social media tools such as *Twitter*, social bookmarking sites, and social networks, educators can participate in the new era of professional development—an era of idea exchange that is accessible anywhere, anytime and that connects the field's brightest minds. These tools are real-time, cost-effective, and accessible around the world, and they are driven by practitioners, not just consultants. Social media–facilitated idea sharing and online personal learning networks also bypass the challenges of traditional professional development, including time and money constraints, uninterested participants, and an overemphasis on irrelevant or boring content. (Fisher, 2012, p. 1)

The proliferation of social networks for professional use amongst teachers is driven by teachers' needs to connect with others in the field around content based issues in ways not possible by traditional workshop models. Teachers' needs to connect with peers in the field, unconstrained by physical location and time, make online social learning networks for teachers a viable option for those seeking to strengthen ties in the field and engage in sustained practice situated in everyday professional contexts. The various ways in which online social learning

networks allow teachers to engage around content, capture professional knowledge and experiment with novel ways to make practice visible are just a few of the benefits of utilizing social networks to meet the needs of teachers in the 21st century. As theorists tout interaction with peers as pivotal to practicing teachers (Dewey, 1938; Lave & Wegner, 1991; Vygotsky, 1978; Wenger, 1998), it is necessary to explore the unique features of the social learning network for the study in supporting ELA teachers in engaging in social practices around writing instruction. The Online Social Learning Network (OSLN) for the study serves as a tool for implementation of a writing curriculum and encompasses critical features need for social participation, interaction, and sharing of work products around job-embedded issues relevant to teacher practice.

Social Networking and Teacher Practice

The various features of the OSLN and how they are used to accomplish tasks are considered tools from a socio-cultural learning perspective. Analyzing community tools requires concurrently examining cultural implications as well as community needs and goals. Henry Jenkins (2006) suggests an ecological approach that takes into account the relationship between cultural context, purpose, and usage is necessary when examining technology tools. Jenkins states, "activities become widespread only if the culture also supports them, if they fill recurring needs at a particular historical juncture. It matters what tools are available to a culture, but it matters more what the culture chooses to do with those tools" (p. 8).

Similarly, Shirky (2008) defines an effective tool as one that is part of a larger system composed of social and cultural factors as well as community goals. Shirky (2008) views these tools as fundamentally connected to community participation and that the ways in which their use is negotiated helps in creating culture. Bruner (1990) asserts that meaning making is always

situated in practice and states, "it is always important to ask what people are trying to do" (p. 118) when examining community narratives. Tools are essentially forms of narratives and are part of the shared repertoire in which language, norms and meanings are publicly negotiated**.** In considering online communities, tools are particularly important vehicles for cultural transmission by helping community members think, speak and behave according to acceptable norms, crucial factors in supporting participation in practice.

Description of Online Social Learning Network (OSLN)

The OSLN being utilized for the research study functions as social network site (SNS), supporting a community of practicing educators, students, digital media experts, and others. By utilizing the features described, the OSLN can provide "new ways to [define] what matters about being together-to produce, store, share…artifacts whether they are collectively or individually created" (Wenger, White, & Smith, 2009, p. 58).

Community members can easily share, collaborate and work with others around both personal and curriculum-related interests, maintaining a balance of both formal and informal participatory learning opportunities (see Figure 2).

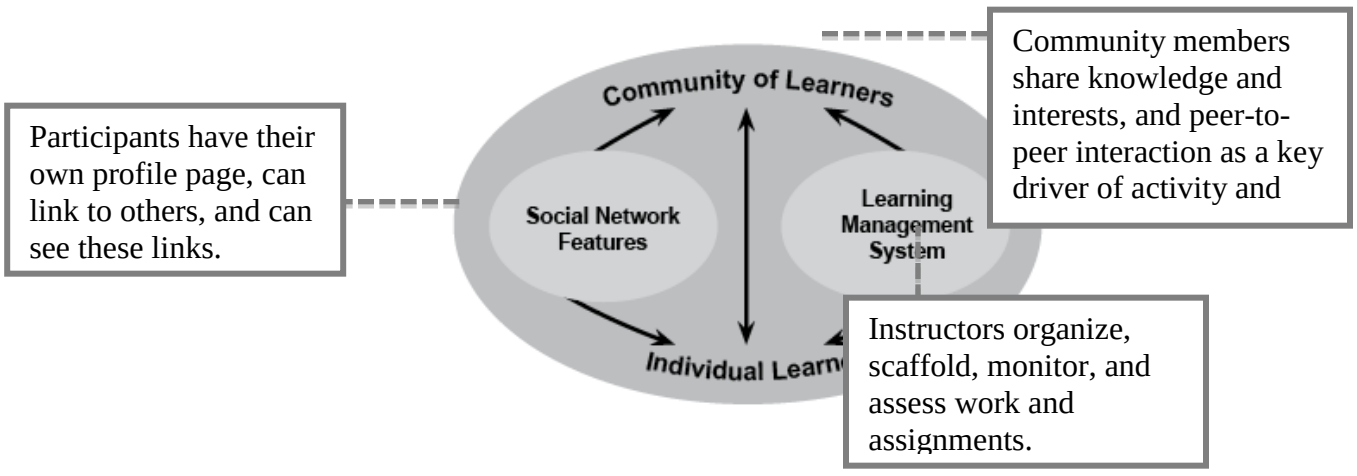

Figure 2. Components of OSLN. From Online Social Learning Networks, by The Gates Foundation. Copyright 2012 by The Gates Foundation. Reprinted with permission.

The highly public, and interactive nature of social engagement using the OSLN, presents a viable alternative to methods of professional development delivery. Lieberman and Pointer-Mace (2008),

> propose that the advent and ubiquity of new media tools and social networking web resources provide a means for networked learning to scale up. These important conceptual hooks present some new possibilities for thinking differently about the codification of professional knowledge, the conditions for its evolution, and the ways that professional development is organized. (p. 1)

Lave and Wegner (1991), explain that an integral concept of community of practice is legitimate peripheral participation which involves a dynamic process of learners performing various roles with the intention of becoming a full member of the community. Full membership, according to Lave and Wegner (1991), requires access to a wide variety of ongoing activities including access to experts, resources, information, and increased opportunities to participate. Utilizing the social network allows community members to practice in various ways, including lurking, posting and joining different groups as needs arise, which includes several forms of reification that ultimately became essential parts of a shared repertoire. Wenger (1998) defines shared repertoire as resources such as words, tools and norms a community develops to create meaning that become part of the way in which they practice.

For grading purposes, the OSLN also encompasses a Learning Management System (LMS), allowing teachers and administrators to view, assess, and display work. A unique feature of the LMS is the ability for teachers to privately provide narrative feedback to student writing, request multiple revisions and ultimately decide when to publish student work in the public community. Educators can also maintain private interactions by sending and receiving messages and utilizing the notebook feature, which functions as a private journal. This can be accomplished within a class space, mimicking traditional class structures where students and

teachers interact around curriculum without the option of sharing to the larger network at any time.

As the curriculum being implemented includes a combination of writing and digital media products, the OSLN is designed so that all users can easily view what others are doing via the activity feed upon login. At first glance, users can see a textual description and hyperlink to photos, video or other artifacts that have been created or uploaded. Users can also view recently created blogs, forums, and debates and see what groups have been recently active. Additionally, there are links to helpful resources and an announcements field, providing guidance around technical issues, writing resources and technical assistance.

The OSLN essentially functions as an educational and highly social online community, where sharing, sustained support, and opportunities to think about, discuss, and craft experiences with others is afforded. As teachers engage in practice around the writing curriculum during implementation, several features are helpful in facilitating the types of sustained, socially practice outlined by socio-cultural learning theorists such as Dewey (1938), Vygosky (1978), and Wegner (1998).

Identity

Identity refers to the participants within the community who actively contribute to the knowledge. Wenger (1998) posits,

> There is a profound connection between identity and practice. Developing a practice requires formation of a community whose members can engage with one another and thus acknowledge each other as participants As a consequence, practice entails the negation of ways of being a person in that context. (p. 149)

Membership in any community begins with identity, which becomes fully developed as members negotiate meanings, values, and belief systems within the larger community. The

OSLN allows individual members to create and personalize profile pages by adding text, multimedia, photos, and other components that assist in maintaining user identity. The profile page also shows the users' activity, allowing others to easily access what has been created, uploaded, and completed.

Each member of the OSLN has a portfolio accessible through the profile page that houses all creations created and uploaded by the user in the system. Textual creations like PDF or Word files, as well as multimedia products, are housed in users' portfolios. Once uploaded into the portfolio, users may easily access their work for insertion into other spaces such as blogs, debates, or notebooks. The portfolio serves as an individual's footprint in the OSLN community, providing a place to house, view, and socially interact with others around products.

Communities "exist because people are engaged in action whose meanings they negotiate with each other" (Wenger, 1998, p. 73). The OSLN in this context functions to support teachers engaged in practices specific to deepening professional knowledge around the teaching of writing. As interaction is key facilitating meaning negotiation amongst community members, the highly interactive nature of the OSLN makes it a viable solution to problems typically sited in traditional development models, where prolonged engagement is often absent or severely limited by time constraints and physical location.

Mutual Engagement and Reification

Mutual engagement involves members involved in practice. For teachers this can mean questioning, defining, and creating understanding around what it means to teach. This constant creation of knowledge is dynamic and active, and drives ongoing participation in the community. Reification refers to how this knowledge is codified and can include document creation,

multimedia formats, and other various ways to capture knowledge. The OSLN supports this process in various ways including groups, blogs and discussion forums.

Groups

Groups may be created by any member of the OSLN, and may be based on personal hobbies and interests such as video or sports, as well as curriculum resources. For the purposes of the study, groups are an integral part of professional development, as discussions, questions, and content-driven activities amongst teachers occur frequently in the designated group space. These activities are a form of mutual engagement and can assist teachers in analyzing values, roles, strengths, and weaknesses related to curriculum implementation. The group in this context is private in order to maintain teachers' personal and professional identities. Comprised of teachers, facilitators, and digital media professionals, the group space serves to house curriculum documents, professional readings, lesson plans, and other resources for ELA teachers to use, discuss, and revise as they engage in practice.

Blogs and Forums

Blogs functions much as they do outside educational contexts. Teachers may use this function for instructional purposes like posting lessons, modeling writing, or simply journaling based on personal reflections. The blog space allows insertion of pictures, video and audio and also allows users to insert hyperlinks to create a personalized experience or easy access to links, video, graphics and other resources for educational purposes. Blogs are potentially powerful in capturing reflections, instructional practices, and other forms of reification from a COP standpoint. The comment features encourages interaction around content in a public, visible format, allowing other community members to participate actively or legitimate peripheral participation (lurking).

Forums are threaded discussion spaces creatable by any user in the system. Teachers may use forums to house and track classroom discussions, or to hold peer-to-peer discussions in private. Forums offer a way for teachers to collaborate around a specific question or issue or problem of practice. Teachers may lurk, start new threads or actively participate in previously begun discussions. Forums offer an additional way to encourage participation and may be particularly helpful in conducting activities such as analyzing student writing or analyzing instructional tools such as rubrics.

Visualizing Practice: Big Data in Professional Development

Heavy reliance on qualitative methods is pervasive in the literature around the effectiveness of professional development programs, leaving a gap in quantitative methods that could be used to potentially support anecdotal results around what activities or features impact teacher practices. The need for reliable and valid data persists but is difficult to obtain when utilizing traditional face-to-face methods. Strategies such as long-term, frequent observations of classrooms would be needed to align professional development activities with actual teacher practices. Such alignment between perception and practice would be both costly and time-consuming, making it difficult to research on a large scale. This reality is further exacerbated by the persistence of teacher self-reports attempting to identify effective professional development and its relationship to classroom practice.

Online professional development makes the capture of teacher moves while engaging professional learning feasible. However, although growing exponentially, evidence of effectiveness of these programs is similarly lacking, relying heavily on teacher surveys of perceived impact on instruction (Dede, Ketelhut, Whitehouse, Breit, & McCloskey, 2009). Although these qualitative indicators of effectiveness are important, “they do not provide data

that can be used to assess teachers' knowledge or compare teachers' perception on his or her own practice to a standard or goals for improvement or to other characteristics that a researcher might wish to observe" (Dede et al., 2009, p. 15).

For these reasons, research that makes use of the distinct types of data readily available by utilizing online professional development models including the nature of teacher collaboration and patterns of participation are essential to investigate the efficacy of online professional development programs.

Data mining can be key in understanding learning as it occurs online and has been outlined by the National Education Technology Plan as integral in improving understanding and visualizing data in ways that have previously gone "unseen, unnoticed and therefore un-actionable" (U.S. Department of Education, 2010, p. ix). The potential for capturing teacher activity online while undergoing professional development and conducting instruction, using "big data" can serve to overcome the obstacles cited by policymakers in the current climate of teacher improvement and accountability, making it possible to track activity over extended amounts of time, detect patterns, analyze relationships between online users, and even predict future behaviors (Baker, 2011).

Online Social Learning Networks offer the unique opportunity to deeply examine large amounts of activity as a result of ongoing activity amongst teachers, students and other community members. The various types of interactions between community members can range from passive lurking to active production, sharing, and creation of artifacts. The enormous amount of data produced by these seemingly countless interactions, presents unique challenges in attempting to draw meaning, identify patterns, and make connections based on online activity. Data visualizations can serve to inform researchers, policymakers and other stakeholders

interested in the connections between teacher practice and professional development outcomes using online social learning networks by providing multiple lenses under which to examine numerous forms of activity.

In order to begin to promote the type of extended practice with others around issues embedded in everyday teaching practices, tools and structures must be put into place to facilitate teachers' active participation, reflection, and construction of their professional development experiences. The online social learning network provides the type of sustained access to other practicing educators while promoting interaction around pedagogical issues situated in teaching content, while affording individual teachers the flexibility to participate in various ways as they "come to know" (Fosnot & Perry, 1996) through connecting with others.

C21 Curriculum is a hybrid, ELA curriculum model that uniquely positions teachers as both teachers and constructors of professional development experiences, utilizing a social learning network to promote interactions with other teachers, curriculum experts and students. Thorough examination of the literature revealed that effective professional development is job-embedded, closely aligning with authentic everyday experiences, and building upon teacher professional knowledge, while promoting sustained interactions with peers around common practice. Employing a socio-cultural learning framework for analysis, the researcher will examine ways in which participation in professional development using the social learning network impacts teacher instructional practices, while identifying patterns and making interpretations of data around teachers' various types of activities throughout the study.

The OSLN for the study can serve as vehicle for learning and cultural transmission for adults, allowing them to practice in various ways. The public nature of meaning negotiation through community dialogue and sharing is a critical component of learning to practice together,

and it serves to engage teachers around emerging ideas, values and related to curriculum delivery. The OSLN highlights the cultural importance of interaction and can be a powerful way to encourage and engage practicing teachers. Taken together, the various features encompassed in the OSLN represent tools that allow teachers to practice in various ways including sharing of ideas and content, questioning, commenting or simply viewing information for classroom use.

Project Description: C21

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C21 Curriculum is a writing curriculum model that uniquely positions teachers as both teachers and constructors of professional development experiences, utilizing a social learning network to promote interactions with other teachers, curriculum experts, and students. The C21 curriculum was initially piloted by Digital Youth Network in 2012 at a Chicago International Charter School (CICS) campus. Results obtained from an external evaluation conducted by the National Writing Project (NWP), found that students experienced statistically significant growth in writing performance both narrative and expository writing assessments over a 4-month period (National Writing Project, 2012).

The professional development component of the curriculum model is key, as C21 is a new model of writing instruction being implemented by the 3 ELA teachers participating in the

study. Teachers are therefore tasked with learning to implement a new writing curriculum while simultaneously introducing it to students. Thorough examination of the literature revealed that effective professional development is job-embedded, closely aligning with authentic everyday experiences, and building upon teacher professional knowledge, while promoting sustained interactions with peers around common practice. Employing a socio-cultural learning framework for analysis, the researcher will examine ways in which participation in professional development using the online social learning network impacts teacher instructional practices, while identifying patterns and making interpretations by using data visualization tools.

The OSLN for the study can serve as vehicle for learning and cultural transmission for adults, allowing them to practice in various ways. The public nature of meaning negotiation through community dialogue and sharing is a critical component of learning to practice together, and it serves to engage teachers around emerging ideas, values and related to curriculum delivery. The OSLN highlights the cultural importance of interaction and can be a powerful way to encourage and engage practicing teachers. Taken together, the various features encompassed in the OSLN represent tools that allow teachers to practice in various ways including sharing of ideas and content, questioning, commenting or simply viewing information for classroom use.

The project is a demonstration of job-embedded, online professional development, and is the result of a collaboration between Digital Youth Network (DYN) and Chicago International Charter Schools (CICS). In an effort to strengthen students' writing and digital literacies C21, a writing curriculum, was developed in alignment with Common Core Standards and is contextualized using the online social learning network (OSLN) as the primary vehicle for delivery. C21, which stands for "Communicators of the 21st Century," focuses on the core

mechanics of the writing across genres, while simultaneously providing opportunities to "write" in non-traditional modes through the use of digital media.

The C21 Curriculum Model is hybrid, allowing teachers to utilize the various elements of the OSLN as well as face-to-face components as instructional strategies throughout implementation. The model contains both in-school and afterschool components, allowing for students wishing to deeply explore interest driven digital literacies with additional guidance from digital media mentors (see Figure 3). Student work is displayed using the OSLN and other performance spaces, such as e-zines and other public publications. Participant teachers are not responsible for obtaining or teaching needed digital media skills in the C21 curriculum model. Digital media mentors work with teachers twice a week during the regularly scheduled ELA block, to facilitate student learning of relevant digital media skills needed to create multimedia content.

C21 is a 6th grade writing curriculum, currently being implemented by 3 ELA teachers during the school day, and will require several hours of professional development delivered in

Figure 3. Components of C21 Curriculum Model.

both online and face-to-face contexts. Teachers participating in initial implementation attended a full day, hands-on workshop along with administrators and curriculum leads from their school sites, consisting of a curriculum explanation and introduction as well as technical aspects of using the OSLN. The introductory workshop will be followed by weekly contact using the online social network as well as individualized face-to-face coaching and classroom observations.

The C21 Curriculum Model includes 2 distinct components of implementation: (a) professional development, and (b) classroom instruction. As the C21 Model includes utilizing the OSLN for delivery of the ELA curriculum, it is prudent to facilitate implementation by taking into account the technologic-al features of the OSLN for ELA instructional purposes, as posited by Mishra and Koehler in their explanation of the TPCK Framework (2008). The TPCK Framework, holds the intersection between content, technological knowledge, and pedagogy as critical in facilitating teacher development, and promote "selecting and applying technologies only in service of …curriculum-based learning" (Harris, Mishra, & Koehler, 2009, p. 403). The C21 model of professional development includes ongoing modeling, coaching, and use of various instructional strategies focused on technological features of the OSLN as well as pedagogical issues related to the teaching of writing. The dual focus on content knowledge as well as technological knowledge during professional development is an integral component of facilitating teachers' use and understanding of the utility of the OSLN for instructional purposes in their own classrooms.

Professional development activities using the online social learning network are held in a private group where the researcher acts as a participant-observer, facilitating activities including posting suggested lesson plans and links to helpful resources for ELA instruction, posing

reflection questions, providing professional readings, posting samples of student work, and providing various models of instructional strategies using the OSLN specifically targeted at ELA teachers. The 3 teachers participating in the study will be expected to utilize the group space weekly during implementation of the curriculum to engage in various activities including reflection, professional readings and sharing helpful resources for curriculum implementation.

Online discussions as well as face-to-face sessions cover a variety of ELA specific content and pedagogical topics such as strategies associated with narrative, expository, and persuasive genres of writing, to strategies for providing narrative feedback to student writing. However, as delivery of the C21 curriculum includes utilizing the OSLN for classroom instruction and interaction with students and peers, it is necessary to deeply examine the relationship and role of content, instructional practice and technology. For this purpose, the researcher will facilitate professional development by modeling instructional strategies teachers can then use in their own classrooms through implementation such as blogging, using online notebooks, and utilizing the group space to interact with students.

Follow-up coaching sessions will specifically address teachers' experiences with utilizing the OSLN for ELA instruction, encouraging reflection and discussion with other members of the online community throughout implementation. As the C21 curriculum model is hybrid in nature, requiring teachers to use the OSLN as part of ongoing instruction, the connection between content, practice, and technology will be as an integral part of professional development. This attention to the use of OSLN for pedagogical purposes during professional development encourages teachers to use the tool extensively, facilitating the use of these practices in their own classrooms. This type of job-embedded practice grounded in day-to-day teaching experiences allows for immediate application of strategies, problem solving, and peer interactions touted by

experts as a critical part of effective professional development models (Darling-Hammond & McLaughlin, 1995; Hirsch, 2005; National Staff Development Council, 2001).

Participating ELA teachers are partnered with digital media mentors twice a week during the scheduled ELA block occurring in the regular school day, whose role is to facilitate creation of digital media products, using writing strategies taught by teachers using the C21 hybrid-learning model. Teachers' activities throughout the study will be observed by examining both online interactions using the social learning network and classroom practices in an effort to gain holistic view of the affordances of social networks for undergoing job-embedded professional development and delivering ELA instruction.

The combination of online and face-to-face interaction with curriculum developers, facilitators, digital media experts, and others community members online, represents an extended, job-embedded professional development experience with ubiquitous access to other practicing teachers and resources utilizing the OSLN.

Persistent research citing the lack of effectiveness of traditional, face-to-face models has lead to many school districts seeking reform models of professional development such as online modes of delivery that emphasize the role of community in engaging teachers around practice. This potential to provide real-time support in a way that overcomes barriers such as time, school organizational schedules, and lack of access to other experts represent a powerful way to connect teachers around practice. However, evidence regarding the effectiveness of these programs remains anecdotal, relying on teacher self-reports of learning and its relationship to actual practice. Further research employing both qualitative and quantitative methods are needed to inform the growing body of research around online professional development as a vehicle in promoting teacher professional learning and how this learning translate into practice.

Chapter 3: Methodology

The C21 model of professional development included several components of effective professional development as cited by research in the field: (a) sustained time, (b) collaborative and active participation, (c) content-driven, and (d) situated in everyday work of teachers. The model reflected social-cultural aspects of learning theory by providing for extended interactions with peers as they actively participated within a larger community online via the online social learning network (OSLN) around implementation of the writing curriculum. Various features of the OSLN enabled the capture of teacher participation such as discussions, lessons, feedback, blog posts, and group activity.

The purpose of the multiple case study research was to explore the experiences of a group of 3 ELA teachers as they participated in professional development using an online social learning network during implementation of a writing curriculum. Utilizing traditional case study methodology, the researcher examined how 3 teachers participating in professional development using a social learning network described its impact on instructional practices, and how this perceived impact aligned with actual patterns of activity.

Employing social constructivism as the dominant framework for analysis, the researcher explored how professional development delivered online combined with face-to-face supports functioned to impact teacher instructional practices. The researcher examined the impact of professional development delivered utilizing an online social learning network on teacher practices by examining 3 OSLN features covered in professional development aligned with writing instruction, (a) notebooks, (b) blogs, and (c) groups.

Research Questions

The study sought to add to the growing body of research on online professional development by specifically examining online social learning networks for professional development in K-12 settings and addressed the following questions:

1. To what extent did professional development delivered using an online social learning network (OSLN) impact teacher practice?
2. To what extent did teachers perceive professional development activities delivered utilizing an OSLN as impacting their instructional practices?

Rationale for Case Study Design

Within the framework of qualitative research approach, this study was most suited for a case study design. In terms of research methodology, the case study is defined as an in-depth description and analysis of an activity, event, or phenomenon bound by time, place, and activity (Creswell, 2008; Merriam, 1998). Merriam (1998) points to the value of interpreting educational phenomena using case studies by stating,

> The interest is in process rather than outcomes, in context rather than a specific variable, in discovery rather than confirmation. Insights gleaned from case studies can directly influence policy, practice, and future research. (p. 19)

The research questions put forth sought to describe the experiences of 3 ELA teachers participating in hybrid professional development using an OSLN and report its impact on their instructional practices, and how this impact can be compared to data capturing actual use. The researcher sought to develop understanding of how the use professional development using a social learning network affected teachers' instructional methods, classroom practices and technology use for ELA instruction. The researcher subsequently sought to derive meanings based on extended observation of online activities occurring

within the online social learning network. Hence, the researcher's goal was to analyze social interactions, discover patterns and derive interpretations as they occurred in the context of the online social learning network and subsequently impacted classroom practices. For these reasons case study methodology was selected as the primary tool of inquiry.

Study Site and Participants

Chicago International Charter Schools (CICS) was founded in 1997 and is currently the largest charter school operator in the state of Illinois. CICS is comprised of 16 different schools and serves over 9,000 students. CICS 86% of CICS students qualify for free or reduced lunch, and 96% of the student population is African-American or Latino. Three CICS schools participated in the project during the 2012-13 school year, implementing the C21 Curriculum at Grade 6. Information regarding the 3 school sites and participating teachers is presented in the following table (see Table 1).

Table 1

Study Site (Teacher and Student Information)

CICS Campus	Site A	Site B	Site C
Student Population	500	663	401
Low Income	95%	81.4%	94.5%
Special Education	15.4%	10.9%	11.2%
English Language Learners	35%	19.2%	21.9%

(continued)

CICS Campus	Site A	Site B	Site C
Student Ethnicity	91.2 %Hispanic 7.6% African-American	81.3% Hispanic 14% African-American	54.9% African-American 44.6% Hispanic
Teacher Information	Teacher A-New Teacher ELA classes Served as pullout support for 6th grade ELA during the previous year. Teaching 2 ELA Classes	Teacher B-Teaching experience: 6 years; 4 years as Physical Education Teacher & 2 years teaching ELA. Teaching 3 ELA Classes	Teacher C-Veteran Teacher; 14 years teaching a variety of subjects including ELA Teaching 2 ELA Classes

Teacher profiles. Teacher A was a first year teacher who had worked at his school site the previous year as a resource teacher for struggling students. As he was a first year teacher, he looked forward to implementation because he was not confident about his skill and ability to deliver instruction in writing. He was, however, hesitant about participating in the project because of the technology component, due to a lack of experience with technology.

Teacher B was entering his 6th year of teaching at the time of the study. He spent the first 4 years of his career as a Physical Education teacher. Hence this was only his 2nd year teaching English. He did not consider himself a new teacher, even with the limited experience in teaching English in the classroom. This was because had studied film in college and was the coordinator for the after school project where kids wrote and developed movie scripts for the past 4 years. He considered himself a fairly confident English teacher due to his combined background in film and education, and volunteered for the curriculum initiative because of its multimedia component.

Teacher C began the program later than the other participants. The original teacher participant left the school approximately 2 months after implementation had begun and was replaced by Teacher C. Teacher C had volunteered to take over 6th Grade English instruction and was informed about the C21 Curriculum Initiative by her department chair, and also had 2 face-to-face meetings with the researcher prior to getting involved with the study in order to address questions, concerns, and provide background information on the project.

Teacher C was the most experienced participant with 14 years of teaching experience, many of which were spent teaching math, science, and social science in addition to English. She was interested in taking over the 6th grade class due to her desire to only focus on English instruction, which was not possible in her previous assignment at grade 5. Teacher C described herself as comfortable with technology. She stated she was a heavy user of several social media sites and stated she had used technology and multimedia in her previous classes by using You Tube, CNN Student News and having students do Power point Presentations.

Online Professional Development Structure

The structure of the online component of the professional development was asynchronous, as teachers could log into the OSLN at varying times and locations. The content was placed inside of a group consisting of teachers, digital media mentors, and facilitators. The professional development group included links to writing resources, professional readings, lesson ideas, and a professional development module. Teachers were also provided with a series of informational online documents as well as digital "how-to" documents around using these features. These documents included screenshots and actual activities for teachers to try in order to build confidence around feature use.

The modules had a dual purpose (a) to provide support for teachers as they implemented the new curriculum into their own classrooms, and (b) to develop their skills and understanding around using the online social learning network as an instructional tool.

There was an initial whole group, face-to-face meeting with all participants before curriculum implementation, where teachers were introduced to each other and their assigned digital media mentors. Teachers were introduced to the system, shown how to access and utilize the discussion group, provided with curriculum materials, and introduced to the online professional development discussion topics. The topics were as follows:

- Introduction and Overview of Features
- Using the Notebook for Privacy
- Student Notebooks: Drafting, Revising and Editing
- Setting up Groups and Discussions for Your Classes
- Using Blogs: Getting Students to Write Publicly
- Feedback and Student Writing
- Commenting on Blogs: Using the System to Give Feedback
- Exploring Identity through Narrative Writing
- Narrative Writing Strategies and Tips for Student Journals
- Embedding Photos to Enhance Writing
- Modeling Good Feedback and Commenting
- Blogs: Posting Whole Group Lessons
- Posting and Embedding Links and Media
- Teaching Expository Writing
- Research Writing Tips and Resources

- Peer Editing Strategies
- Persuasive Writing Resources and Strategies
- Getting Students to Debate (Arguing 2 Sides of an Issue)

As the online component of professional development component was asynchronous, teachers had the flexibility of exploring the topics at their own pace, in any order and pose questions. There was a suggested timeline for curriculum implementation that included direct links lesson plans, novel suggestions and resources exploration.

Study Sample

Purposeful sampling was used to select participants for the study. Purposeful sampling is commonly used in case study methodology to yield rich information regarding the phenomenon under study (Berg, 2004; Silverman, 2000). The researcher's organization, DYN had established a previous relationship with CICS charter schools and previously conducted a pilot a study of the C21 curriculum using the OSLN being utilized for the current study.

The researcher sought participants who were 6th grade ELA teachers at CICS Charter Schools, wishing to implement a writing curriculum and willing to participate in professional development online. Three 6th grade ELA teachers at 3 CICS campuses volunteered for participation in the in the study. The project took place from mid-November until May of the 2012-2013 school year. Data for the study included existing, OSLN data documented and provided to the researcher by DYN, while data regarding teacher experiences and perception regarding professional development were captured in the form of post interviews and conducted by the researcher at the conclusion of the study.

Data Collection Methods

The use of various data collection methods and was required in order for the researcher to gain a deep understanding of the phenomenon of the study (Creswell, 2008; Denzin & Lincoln, 2000). The study employed three methods of data collection including back end server data around frequency of OSLN activities, front facing OSLN data captured by OSLN features regularly used by teachers and interviews conducted at the conclusion of the study.

The researcher acted as a participant observer for the purposes of the study, enabling the ability to gain a "nuanced understanding of the context that can only come from personal experiences" (Mack et al., 2005, p. 3), in an effort to identify patterns and emerging themes amongst teachers participating in professional development utilizing the OSLN.

Data Sources

Extent data. Extent data for the study included teacher responses to a survey administered by DYN prior to implementation around prior teaching experiences, professional development perceptions and demographic information. Extent data from the project also included OSLN activity such as:

- Online discussions: Online discussions were housed online and captured in the professional development group space inside of the OSLN. Discussions occurred approximately once every 2 weeks and are usually facilitated by the researcher or digital media experts directly involved in the project. Teachers were also capable of facilitating discussions throughout implementation. Discussions included a variety of topics such as responses to readings, issues around writing instructional strategies, questions around technology use or problems arising throughout the project.

- Teacher blog postings: Postings by teachers were in the form of blogs, where teachers shared ideas and elicited responses from students on a variety of topics related to the writing curriculum or actual instructions and lesson plans for students. These postings were housed in the OSLN, as well any responses to the postings in the form of comments or questions.
- Notebook contents: Utilizing the OSLN allowed for the capture of examination of teachers' private with interactions students. In the online space, interactions meant dialogue, comments on activity, questions or feedback.
- OSLN Server Data: The back end data captured by the OSLN activity included frequency of log-ins, teacher created documents and blog posts, public feedback on student writing , reading of student work and other documents and reading of group discussions. Various teacher activities were examined allowing for the examination of different levels of participation and use throughout the study.

Data collected by researcher. At the conclusion of the project, the researcher conducted a post-interview of the 3 ELA teachers participating in the project. The interview encouraged teachers to reflect on aspects of implementing the C21 curriculum, particularly the role of professional development and its perceived impact on classroom instruction. Teachers were also asked to offer their perceptions of participating in professional development online using the OSLN in comparison to other professional development experiences, as well as address any challenges experienced during the project.

Triangulation of data sources. As the researcher questions posed involved the impact of professional development on teachers' classroom practices, the researcher examined evidence in the form of teacher talk found in OSLN front facing features such as discussion groups,

conversations and comments in students' private notebooks and responses to post-interview questions (Appendix A). Examining teachers' use of 3 OSLN features in depth- notebooks, blogs, and groups- data collection included looking for evidence of impact by examining online behaviors as captured by OSLN data and comparing these to interview responses around perceived impact of professional development throughout the study. These were then compared to three primary categories of professional development topics: (a) OSLN features, (b) writing instruction, and (c) feedback. As a result, data analysis included a combination of existing and new data allowing for triangulation, as well as interpretations to be made around the impact of impact of professional development as evidenced by actual online practices, as well as alignment with teacher experiences and perceptions (see Table 2).

Phases and timeline of data collection. As the project involved participation in hybrid professional development using an online social learning network to identify possible impact in teacher practice it was prudent to examine the various data sources including both existing data extracted from the OSLN and new data in the form of interviews.. The researcher collected data

Table 2

Triangulation of Data Sources for Topics

	Existing Data (Captured by OSLN)		**New Data** (Collected by Researcher)
Professional Development Topics	Back end server data (frequency of viewing, commenting etc.)	Front–Facing Data (teacher discussions, lessons, comments etc.)	Teacher Interviews
OSLN Features (notebooks, blogs, groups)	X	X	X

(continued)

Professional Development Topics	**Existing Data** (Captured by OSLN)		**New Data** (Collected by Researcher)
	Back end server data (frequency of viewing, commenting etc.)	Front–Facing Data (teacher discussions, lessons, comments etc.)	Teacher Interviews
Writing Instruction (e.g.- drafting, imagery, journaling).	X	X	X
Feedback	X	X	X

in two phases: (a) OSLN data including contents of teacher activity captured by the various features of the OSLN, and (b) teacher interviews. The timeline used for data collection and analysis is outlined below (see Figure 4).

Extant data taken from the OSLN was used to provide detailed information regarding teacher online participation for professional development and instructional purposes. The researcher took detailed notes regarding online discussions, questions, teacher postings, comments and other interactions occurring on the OSLN. Information gathered from OSLN servers also provided the researcher with back end data such as frequency of log-ins, number of comments left and teacher viewing of student work. The second phase, the post-interviews was conducted at the conclusion of the study and was used to further strengthen and clarify interpretations drawn from OSLN extant data. Teacher perception of impact on instructional practice was then compared to existing OSLN data for the purposes of aligning perceived effect on instructional practices to actual patterns of activity captured by the OSLN. The researcher's conducted phases of data collection are outlined in detail below.

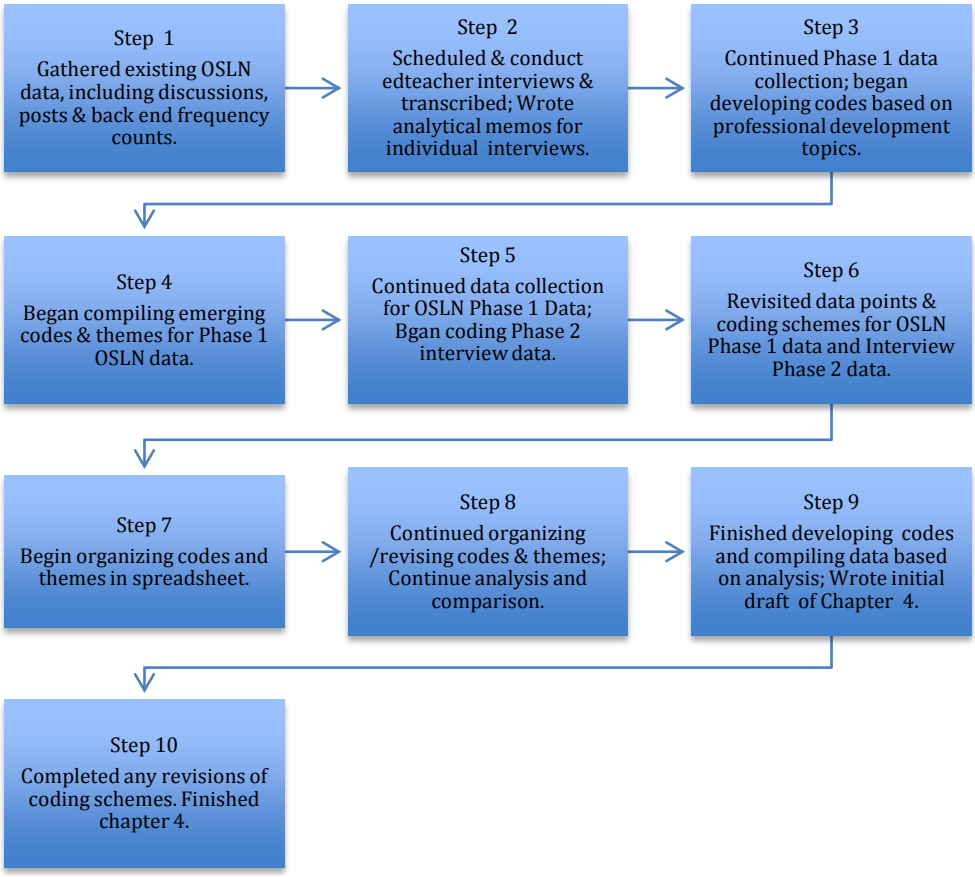

Figure 4. Data collection and analysis timeline.

Phase 1: Observation of OSLN Activity

The private groups space for teacher participants served various purposes. It housed lesson plans for the ELA curriculum being implemented, resources for teaching ELA content, and models of instructional strategies using the OSLN. Teachers were asked to participate in online discussions, student work analysis, professional readings and complete reflections around content using the teacher group space. Teachers' direct communications to the researcher around content and curriculum issues was also documented throughout the duration of the study.

The researcher's goal was to examine and document professional development activities occurring online, while subsequently looking for evidence that these activities actually impacted

teachers' instructional practices. Using the curriculum scope and sequence and posted lesson plans, the researcher noted content teachers covered in their classrooms each week, focusing on the concepts covered in professional development. For the purposes of the study, the researcher categorized the modules presented in professional development into 3 categories: (a) OSLN features, (b) writing instruction, and (c) feedback. The researcher kept detailed notes of teacher interactions in both the group space and larger network using the OSLN extant data provided by DYN. The researcher used a variety of methods to accurately collect needed information including annotated notes, memos and screenshots of online activity in order to capture teachers' online activities, including professional development discussions and classroom instructional practices utilizing features of the OSLN. Initial information gathered using OSLN extant data was used to guide interviews around the connections between teacher classroom practices, online activities and impact of professional development.

In addition to the previously mentioned qualitative techniques, the researcher also used back end statistical data gathered by the OSLN in order to further support interpretations drawn from qualitative data. It is the researcher's contention that utilizing merely qualitative methods did not adequately capture the complex dynamic of continual interaction between teacher, students and other members of the social learning network during curriculum implementation. The large amounts of information produced by use of OSLN including back end data collected by the servers, and front facing data extracted from teacher use of OSLN features such as blogs, were essential in understanding participant activity in multiple ways. Table 3 represents data that will be collected for the purposes of addressing Research Question 1 (see Table 3).

Table 3

Data Collection Grid for Research Question 1

RQ1: To what extent did professional development delivered using an online social learning network impact teacher practice?		
Professional Development Topics	Existing Data- OSLN	New Data- Interviews
OSLN Features	X	Interviews
Writing Instruction	X	
Feedback	X	

Phase 2: Interviews

Interviews are a fundamental tool widely used in qualitative research (Kvale, 1996; Merriam, 1998). Interviews provide the researcher an opportunity to clarify meanings and probe for additional information, offering the potential to capture individuals' perspectives of events or experiences (Creswell, 2008; Marshall & Rossman, 2006). Extant data for the study included a participant pre-course survey used to collect descriptive information regarding teacher demographics, measure interest, attitudes, and experiences with regards to technology, and collected information about experiences with social networks for personal and professional use.

Interviews were conducted at the conclusion of the study and recorded, transcribed, and analyzed for the purposes of discovering recurring themes and patterns in response to the research questions posed around professional development and its impact on teacher practices. Interview questions allowed participating teachers the opportunity to share perceptions, beliefs, and experiences about the professional development experience throughout curriculum implementation. After analyzing existing data captured by the OSLN during phase 1, including

front facing information such as teacher discussions as well as back end statistical data collected using the visualization tool, the researcher aligned teacher responses to interview questions with existing data in order to draw conclusions about the impact of professional development on actual instructional practices. The interview instrument was developed in collaboration with a member of the DYN research team and was piloted using 2 teachers not involved in the study. Table 4 represents data that was collected for the purposes of addressing Research Question 2 (see Table 4).

Interview questions were open-ended and included artifact-based techniques in order to gain rich information regarding teacher experiences utilizing the online social learning network for professional development and its perceived impact on classroom instructional practices. Table 5 represents the alignment with research questions 1 and 2 with data collection methods for the study (see Table 5).

Table 4

Data Collection Grid for Research Question #2

RQ2: To what extent did teachers perceive professional development activities delivered utilizing an OSLN as impacting their instructional practices?		
Professional Development Topics	Existing Data- OSLN	New Data- Interviews
OSLN Features		X
Writing Instruction		X
Feedback		X

Table 5

Mapping of Research Questions and Data Collection Techniques

Research Questions	Data Sources		
	OSLN Data	Interview Data	Professional Development Topics
1. To what extent did professional development delivered using an online social learning network impact teacher practice?	X		X
2. To what extent did teachers perceive professional development activities delivered utilizing an OSLN impacting their instructional practices?		X	X

Data Analysis

Merriam (1998) stresses the importance of collecting and analyzing data through the research process in order to reduce the risk of unfocused, repetition of large volumes of information and effectively identify significant patterns. The researcher attempted to identify and characterize patterns throughout the study through analysis of teacher online activities and post-interviews. The data was sorted according to teacher for the purposes of comparing, contrasting, and detecting patterns and themes that arose as a result of participation in the online social learning network.

Teacher activities online using the OSLN including notebooks comments, blog posts, and group discussions were initially coded based on topics from professional development.

According to Saldana, a code in qualitative inquiry is usually a word or short phrase that symbolically captures the summary, essence, and /or an evocative attribute for data that is language-based on visual (Saldana, 2012). Hesse-Biber and Leavy (2006) suggested that the goal of the researcher is to generate analytical concepts and suggested any of the following when coding data: assigning words to segments of text, condensing data into analyzable segments, sorting coded text segments that are similar, comparing and contrasting coded segments, and looking for patterns.

The coding process included a list of preset codes based on topics covered in professional development, as well as emergent codes from teacher online discussions, blog posts, and electronic notebooks, allowing the researcher to further analyze qualitative data for salient concepts and meaningful themes. For the purposes of the study, alphanumeric codes were assigned according to the pre-determined categories drawn from professional development topics. The researcher looked for commonalities and patterns assigned to potentially generate further understandings of key concepts or themes relating to teaching methods and professional development experiences of participating teachers.

The first level of coding involved teacher discussions in the professional development group space. After coding each teacher's discussions, the researcher then compared and analyzed results, and added to the pre-existing codes from professional development. A second level of coding occurred, involving teacher talk found in blogs and electronic notebooks, and analyzed each teachers' activity, further modifying the code list as prominent themes continued to emerge. Finally, interview data was coded, compared and analyzed, further highlighting and clarifying salient concepts and meaningful themes emerging from analysis of teacher discussions and online behaviors.

Finalized, thematic topics were representative of how teachers used the OSLN throughout the study, focusing on specific OSLN features that supported ELA instruction, as well as instructional skills and practices heavily utilized. Back end data captured regarding frequency of participation as documented by the system, was also captured, analyzed, and compared to teacher perceptions of professional development experiences using the OSLN, yielding insight into the research questions posed regarding the use of the OSLN, teacher practices and perceptions of effectiveness, in an attempt to address the research questions posed.

Reliability and Validity

Researchers must take precautions to address potential threats to validity, credibility, reliability, and bias throughout implementation of any study (Creswell, 2008). To enhance credibility in methodology, the researcher compared and analyzed data from three sources: (a) back end OSLN server data , (b) front facing data extracted from teacher use of OSLN features such as blogs and discussion groups, and (c) interviews. Gathering data from teachers' front facing online activities using the OSLN features, utilizing back end server data, and analyzing responses from teacher interviews yielded a rich view of teachers' use of the OSLN for professional development and teaching purposes, as well as potential impact on instructional practice.

While employing case study design, the researcher acted as a participant observer. The role of participant observer points to a need to address any researcher bias in addition to possible erroneous interpretations of observed interactions and phenomena, as the method is inherently subjective and requires diligence in recording observations objectively (Mack, Woodsong, Macqueen, Guest, & Namey, 2005). To guard against this, the researcher kept, detailed notes including screenshots and memos of observed online activity, refraining from detailed analysis

until all data had been collected at the conclusion of the study, enabling comparison and analysis of all sources.

Observing the activity of 3 different ELA teachers at separate research sites during curriculum implementation increased the validity and reliability of findings by providing the researcher with opportunity to observe different settings from which to draw conclusions, make connections, and identify patterns. Detailed descriptions and notes were used as well as recordings, screen-captures and transcripts in order to capture data accurately as documented by the OSLN. Employing statistical data regarding frequency of use, nature of participation and other pertinent information regarding OSLN activity also served to strengthen interpretation drawn from qualitative methods, resulting in a more accurate analysis of behavior and perceived impact on instructional practices.

The coding scheme was developed by the researcher and reviewed by a member of the DYN research team working collaboratively with the researcher for this purpose. The researcher will initially compare segments of coded text at the beginning of the study with the research team member for clarification purposes. The researcher maintained an ongoing code book, where pre-existing and emergent codes and their meanings, were kept as used throughout the study. Themes and codes were monitored and reviewed frequently to reduce the possibility of erroneous interpretation of data and maintain inter-rater reliability.

Limitations of Study

The small sample size for the research study may limit its generalizability to other populations. Additionally, the study involves 3 schools under the management of a single charter school management corporation who voluntarily participated in the online professional

development program, due to access to technology and interest in implementing a writing curriculum.

A second possible limitation of the study is the fact that teachers experienced a combination of online and face-to-face professional development sessions, facilitated by the researcher as a participant-observer. In addition to resources, modeling of strategies and suggested lesson plans being posted in the professional development group online, teachers also benefited from individualized, coaching sessions around implementation of the writing curriculum. Due to the hybrid nature of the professional development model, it may be difficult at times to discern which aspects of potential impact on teacher practice were the result of the professional development activities delivered through the online social network, face-to-face sessions, or the combination of both aspects of delivery. Another limitation is the lack of teacher observations during data collection. As teacher activities for the study will be limited to collecting data around online activities, it will only be possible to obtain a snapshot of all aspects of curriculum implementation.

Ethical Considerations

In research, ethical issues relating to the protection of participants must be addressed (Berg, 2004; Merriam, 1998). Prior to conducting the study, the researcher had the research plan reviewed by the Institutional Review Board at Pepperdine University, in order to address potential risks, anonymity, and confidentiality and other issues related to voluntary participation in the study (Appendix B). An informed consent form was obtained for all participants, stating the voluntary nature of participation. Purposes and procedures were made clear. Names and other significant identifying characteristics were kept confidential, and participants were offered a copy of the results.

Summary of Research Methods

This chapter described the data collection methods, instruments, and procedures the researcher will use to answer the research questions. Utilizing traditional case study methodology, the researcher examined how a social learning network can be used to impact instructional practices amongst ELA teachers participating hybrid professional development during implementation of a hybrid, writing curriculum. Employing social constructivism as the dominant framework for analysis, the researcher explored how professional development delivered online utilizing a social learning network, combined with face-to-face time, supports functions to impact 3 participating teachers' instructional practices, and examined the utility of specific features of the OSLN for both professional development and instructional purposes. The study seeks to add to the growing body of research on hybrid learning models by specifically examining implications for professional development in K-12 settings, as well as the potential for online, job-embedded professional development to impact teachers' instructional practices by providing the tools and supports for teachers to engage in sustained, meaningful interactions with others around pedagogy, content, and other embedded in teaching.

Chapter 4: Results

Background of the Study

The purpose of the research was to explore the experiences of a group of 3 teachers as they participated in professional development using an online social learning network during implementation of a writing curriculum, C21. The researcher examined how a social learning network was used to impact instructional practices amongst 3 ELA teachers participating in hybrid professional development during implementation of the C21 curriculum.

The C21 Curriculum Model was hybrid, allowing teachers to utilize the various elements of the OSLN as well as face-to-face components as instructional strategies throughout implementation. The professional development component of the curriculum model was key, as C21 was a new model of writing instruction being implemented by the 3 ELA teachers participating in the study. Teachers were therefore tasked with learning to implement a new writing curriculum while simultaneously introducing it to students. The project was a demonstration of job-embedded, online professional development, and was the result of collaboration between Digital Youth Network (DYN) and Chicago International Charter Schools (CICS). Each teacher was also assigned a digital media mentor that worked in their classrooms twice a week. Participants also had face-to-face sessions with the researcher once a month.

Professional Development and Teacher Practice

For the purposes of the study, the researcher has divided the professional development topics into the following primary categories: (a) OSLN features, (b) writing instruction, and (c) feedback.

OSLN features. Professional development topics around OSLN features were designed to encourage teacher use of three features: (a) notebooks, (b) blogs and (c) groups for writing

instruction. Teachers were provided with a series of informational documents as well as digital "how-to" books around using these features. These documents included screenshots and actual activities for teachers to try in order to build confidence around feature use.

Notebooks were explained as private spaces for students to brainstorm and take notes, as well as engage in the steps of the writing process, particularly drafting and editing. Teachers were asked to use the notebook themselves prior to introducing it to students in order to familiarize themselves with its features such as font and print options, as well as embedding photos, video and web links directly into the text.

Blogs were taught as a way to publicly showcase student finished writing products. Unlike notebooks, it was stressed that blog content, as well as comments, could be viewed by any user of the OSLN, including classes and teachers at other participating schools. Blogs were also taught as a way post assignments for students and view immediate student responses. Additionally, teachers were instructed on using the blog space as a way to either upload writing models, or model the process in real-time during class.

The groups feature was where teachers' discussions were held. One group, *CICS ThinkTank,* housed all group discussions throughout the study, as well as relevant curriculum documents such as suggested timelines, lesson plan ideas and recommended reading. During the initial and only, face-to-face meeting with other participating teachers and the researcher, the participants were shown how to access and utilize the professional development group space discussions and curriculum resources.

In addition to professional development purposes, teachers were also shown how to form student groups for various purposes included targeted instruction, student enrichment, interests and project-based learning opportunities.

Writing instruction. As the C21 Curriculum was a writing curriculum, the online professional development was heavily focused on various aspects of teaching writing. Teachers were provided with strategies and resources around how to utilize the OSLN for the teaching of narrative, expository, and persuasive genres. They were also provided with resources detailing how to use the OSLN to enhance specific skills such as drafting, editing, and writing for research purposes. Distinct writing skills such as teaching students to take notes and brainstorm were tightly coupled with the ongoing instruction around features of the OSLN. The presentation of specific writing skills in the context of OSLN features such as using the notebook to teach revision was done in order to make the connections between writing and OSLN features transparent for instructional purposes.

Feedback. As an integral part of improving student writing, feedback was an ongoing topic of professional development. It was also the source of numerous discussions as challenges around engaging in this practice using the OSLN resulted in frustration for participating teachers. As the OSLN was designed ultimately for the public display of work, teachers were encouraged to provide feedback using the public blog space in addition to private notebooks.

Research Questions

The study sought to add to the growing body of research on online professional development by specifically examining online social learning networks for professional development in K-12 settings. The study addressed the following research questions:

1. To what extent did professional development delivered using an online social learning network (OSLN) impact teacher practice?
2. To what extent did teachers perceive professional development activities delivered utilizing an OSLN as impacting their instructional practices?

The researcher examined the impact of professional development delivered utilizing an online social learning network on teacher practice by conducting an in-depth examination of featured most utilized by teachers for writing instruction: (a) notebooks, (b) blogs, and (c) groups.

Data Sources

For the purposes of the study, extant OSLN data, as well as new interview data, was analyzed. Extant data included backend counts collected by the OSLN server, such as frequency counts of various teacher activities throughout the study. Activities logged by the server included log-ins, status updates, assignments read, number of comments left, blogs posted and participation in groups housed on the OSLN. For the purposes of the study, the researcher also analyzed OSLN front facing data which included frequency counts of prevalent themes that emerged during the researcher's coding process of teacher talk in discussion forums, notebooks and blog posts. Data from teacher interviews conducted at the conclusion of the study was collected by the researcher and also coded and analyzed.

Descriptive Findings

Before analyzing the research questions, the researcher compiled and coded data from three sources: (a) back end server data, (b) front facing data, and (c) interview data. Back end sever data represented OSLN logs and included teachers' comments, creations and reading activities throughout the study. Front facing data was pulled from OSLN features used in the interface by teachers for instructional purposes. Interview data was generated by teacher interviews conducted at the conclusion of the study. The first two data sources, back-end and front facing data, were analyzed for the purposes of addressing Research Question 1, which looked for evidence of professional development impact on teachers behavior while using the

OSLN for writing instruction. The interview data compiled at the end of the study is used to answer the second question around teachers' thoughts, perceptions and experiences using the OSLN for instructional purposes.

OSLN log data. The following log data was collected by the OSLN server and provided an initial snapshot at the range of teacher activities captured by the system throughout the study. Back end data collection analyzed for the study consisted primarily of 3 types of activities (a) teachers' comments on student work, (b) teachers' creations of documents and other artifacts in the system, and (c) teachers' reading of OSLN content such as student blogs and private notebooks. The following charts present the findings of teacher activities captured by OSLN log data provided to researcher for analysis.

Table 6

Teacher Commenting Activity

	Teacher A	Teacher B	Teacher C	Totals
Comment / Debate	1			1
Comment /Document		1		1
Comment / Message	51	10	12	73
Comment / Visual Work		1		1

Commenting. As seen in Table 6 teachers' behavior in the commenting category was heavily concentrated around the "comment/message" category. When teachers commented on students' public blog posts, this was logged by the OSLN under this category. Student blog posts represented finished writing products and were uploaded for sharing and commenting, which is where the majority of the activity occurred. Teachers could also comment on visual work such as photos and videos, as well as student debates housed in the OSLN. Teachers commented

scarcely, if it all, to student debates, documents, and visual work, such as uploaded pictures, which were not directly related to writing assignments. Use of the commenting feature for finished writing uploaded to blogs varies, with Teacher A utilizing it with far more frequency than the other two participants throughout the study. Teachers' use of this feature overall was rather limited, given the amount of time dedicated to the discussion of feedback using this feature in professional development. Teachers' limited use of this feature for the purposes of providing feedback on student writing will be discussed in detail in the researcher's analysis of front facing and interview data.

Table 7

Teacher Creation Activity

	Teacher A	Teacher B	Teacher C	Totals
Create /Blog Post	10	8	5	23
Create /Group	2	7	0	3
Create /Note	2	1	5	8
Create /Photo	0	1	0	1

Creation. Throughout the study, teachers could create a range of artifacts that were captured by the OSLN including blog posts, student groups, and private notebooks. Blog posts were discussed in the professional development module as a way to upload lessons to use with students during class and as a place to capture brief student responses to writing prompts and modeling good writing. Teachers did use the blog feature to create assignments. Although Teacher A created more assignments using the blog feature than the other two participating teachers, activity did not differ widely in this category. However, the frequency was still rather low around usage of this particular feature, given the study took place over a 6-month period.

Teachers also had the ability to create notebooks in the OSLN for their own use and to model this feature for their students during writing instruction. Notebooks were introduced in professional development as private spaces for students to draft writing products, and teachers were encouraged to model initial use for instructional purposes. Teachers created their own new notebook entries infrequently, however, as seen in Table 7, with Teacher C using this feature slightly more than the other 2 participants.

The creation of groups was discussed in professional development as a way to engage students around specific areas of interests or writing topics. As seen in Table 8, teacher activity around group creation varied, with Teacher B creating 7 groups around writing topics while the remaining 2 spent very little time creating student groups for instructional purposes.

Table 8

Teacher Reading Activity

	Teacher A	Teacher B	Teacher C	Totals
Read / Blog Post	155	95	157	407
Read / Debate	3	0	0	3
Read / Document	14	5	20	39
Read / Group	142	158	2	300
Read / Music	0	2	0	2
Read / Note	150	10	280	440
Read /Photo	0	9	4	13
Read /Video	3	2	5	10

***Reading*.** Teachers' activity captured by the OSLN was heavily concentrated around reading of a range of artifacts including blog posts, group discussions and students' private notebooks. Teachers' activities captured by the OSLN log data showed that teachers primarily read, private student notebooks, public blog posts and group discussions, although teachers' individual activity widely varied in these categories.

Student notebooks were private and were discussed in detail during professional development as a place for students to privately brainstorm and develop multiple drafts of writing. It is important to note that privacy was an issue discussed as a grave concern amongst teachers, particularly at the beginning of the study. During professional development, teachers were guided around using feedback in private notebooks as well as the public blog feature. However, privacy concerns and teachers' resistance to the idea of giving feedback publicly resulted in the notebook feature as the primary vehicle for delivering feedback by the 3 teachers using the OSLN during the study.

It is also important to note that the Professional Development Group*, CICS Thinktank*, housed all discussions around professional development topics throughout the study. OSLN data shows that 2 out of the 3 participating teachers heavily visited and read group discussions, and also read the documents found in that section which included lesson plan ideas, suggested timelines and resources for classroom implementation. Teacher C, although not active in reading group discussions, did read 20 documents housed in the professional development space.

OSLN front facing data. In addition to back end OSLN data provided to the researcher, teachers' front facing activity was also analyzed. Front facing teacher activity examined included teacher discussions in the professional development group, teacher comments left in response to student writing in private notebooks and public blogs and, teacher talk found in the

professional development discussion group. This allowed the researcher to further examine the impact of professional development delivered utilizing an online social learning network by conducting an in-depth examination of featured most utilized by teachers for writing instruction: (a) notebooks, (b) blogs, and (c) groups.

The researcher found raw numbers captured above by the OSLN log data useful in beginning to analyze teacher patterns of use throughout the study. However, as OSLN data captured for the study was inclusive of not only counts of back end activity, but also front end data found in the notebooks, blogs, and group discussions, it was necessary to deeply examine findings captured by the coding process

Pre-set codes drawn from professional development topics, as well as emergent codes created in response to content found in (a) notebooks, (b) blogs, and (c) groups were analyzed resulting in the data as presented below.

Table 9

Coding Results for Front Facing Data

Themes	Teacher A	Teacher B	Teacher C	Total (Teacher A +B+C)	Professional Development Topics
	OSLN data	OSLN data	OSLN data	Total	
*Notebooks	220	10	315	545	Y
*Blogs	214	117	199	530	Y
*Groups	163	184	2	349	Y
*Feedback	122	63	21	206	Y
*Editing & revision	87	28	24	139	Y
*Drafting	93	16	24	133	Y
*Descriptive Writing & Imagery	62	38	13	113	Y
Writing mechanics (grammar, sentences etc.)	56	12	21	89	N

(continued)

Themes	Teacher A	Teacher B	Teacher C	Total (Teacher A +B+C)	Professional Development Topics
	OSLN data	OSLN data	OSLN data	Total	
*Narrative Writing	28	26	15	69	Y
Organization	29	18	22	69	N
*Expository writing	23	26	11	60	Y
*Research skills	13	21	8	42	Y
*Publishing	28	6	3	37	Y
Citing Sources	10	17	9	36	N
*Developing Students' Ideas	17	6	7	30	Y
*Privacy	16	8	2	26	Y
*Persuasive Writing	12	10	3	25	Y
OSLN Benefits	8	9	7	24	N
Online PD benefits	1	2	0	3	N
OSLN Challenges	1	0	0	1	N
*Note * were preset codes*					

Applying the combination of emergent and preset codes from professional development topics allowed the researcher to closely examine aspects of the OSLN most frequently used for the purposes of writing instruction throughout implementation: (a) notebooks, (b) blogs, and (c) groups. Analyzing these codes also revealed which skills and instructional practices such as providing feedback and drafting were actually addressed in professional development and subsequently used in teachers' classrooms. Applying the combination of codes drawn from teacher activities in the OSLN, as well as preset codes from professional development topics allowed the researcher to analyze teacher behaviors, discover patterns and derive interpretations as they occurred in the context of the OSLN for the purposes of addressing the Research

Question 1 which was: To what extent did professional development delivered using an online social learning network (OSLN) impact teacher practice?

Examination of OSLN front facing data revealed teachers used 3 features covered in professional development more prominently than others throughout the study: (a) notebooks, (b) blogs, and (c) groups**.** OSLN data revealed heavy use of these 3 aspects of the OSLN amongst all teachers. In the following section, the researcher will examine each teacher's use of these three features during the study for the purposes of writing instruction drawn from teacher activity on the OSLN.

Teacher A

Notebooks. Examination of OSLN data revealed all teachers heavily utilized the private notebooks for writing instruction during the study. All teachers heavily used the notebooks for reading student work, with Teacher A reading the notebooks 150 times (see, Table 8). In addition to reading student writing, examination of Teacher A's activity revealed his use of notebooks as a place for students to journal, hone the several phases of the writing process such as brainstorming and drafting and providing feedback privately.

Teacher A began his implementation of the curriculum by exploring student identity through journaling during the narrative unit. During an online discussion he wrote, "My kids are really enjoying the weekly journal prompts. I'm finding it easy to get them writing by starting with their own experiences" (discussion group, 2013).

He then poses a series of questions the next week:

> I like to post "quick writes" on Powerpoint and let the students jot down ideas in their paper notebooks then put them on the system. Is there a way I can post those questions on the system and have the answer in their digital notebooks. (Teacher A, discussion group, 2013)

He subsequently posed several questions in the discussion forums around the best ways to get students to open up about their homes, neighborhoods, and potentially sensitive topics such as race and gender. Examinations of student notebooks during the narrative writing unit, additionally revealed a dialog between Teacher A around what students experienced and shared about themselves using the private notebooks. Teacher A's comments during this phase were primarily brief and encouraging such as "thank you for sharing", "that's interesting, or "I can't wait to hear more." Additionally, Teacher A encouraged students to be open about their feelings and experiences using the notebooks, while simultaneously offering feedback around improvements. He wrote to a student in a notebook conversation,

> I like how you started in the middle. Your use of dialog is awesome, too! Remember to end your quotation marks after your dialogue is finished. Constantly re-read what you type to make sure it all makes sense. Keep working hard! (Teacher A, notebook, 2013).

Analysis of his comments revealed several instances during the early phase of the study where teacher A encourages students to talk openly about how they feel about certain topics. He writes in a student's journal, "I need you to tell me not just what happened, but how it makes you feel. This is what makes writing powerful" (Teacher A, notebook entry, 2013). He continues to prompt other students similarly by leaving simple responses to their writing. "How did that make you feel?" he asks a student during a notebook exchange "You should try to go beyond just telling me what happened, good narrative writing has heart," he explains to a different student. Many of Teacher A's early notebook comments are primarily focused on getting students to dig deeper into the meaning around their words, expressing feelings, and using imagery to convey their experiences. Teacher A writes,

> This is a good start. I would like to tell me about how you feel about living there. What makes it special and what does it have to do with who you are? Narrative writing becomes powerful when your reader can connect to your feelings so make sure you work on this. (Teacher A, notebook, 2013)

During a few dialogues with students, Teacher A also shared personal information about himself in response to their journal entries by mentioning his own home, family and experiences. In one notebook, he directs a student to his own blog, where he described his neighborhood growing up and encourages the student to "try a few similes and metaphors" and "play with the words a bit" (notebook entry, 2013) while journaling about his house. Teacher A stressed his desire for students to "have a safe place to take chances" (interview, 2013) and stressed the importance of having private dialogue with them during the writing process. Teacher A raised privacy concerns early in the study during group discussions and subsequently informed students in his directions for a journaling assignment that "no one could see" what they were writing except for their teachers. He wrote, "If you are not comfortable yet with posting your work and want me to look it over first for suggestions or comments, you can submit it to me here in the notebook" (Teacher A, notebook, 2013).

Teacher A wrote similar comments regarding notebook use in response to several students' writing, stressing using the notebook as a private place during the early phases of the study. This topic was one covered in the professional development module and also discussed at length during teacher discussions taking place in the OSLN. Teacher A's comments in student notebooks with regard to privacy demonstrate there was indeed a link between what was covered in professional development and Teacher A's use of this OSLN feature. As indicated in interview findings presented later in this chapter, Teacher A placed a high value on the notebooks for writing instruction, as they provided a private place for students to draft, as well as a space for him to give feedback designated for individual students.

Teacher A also used the notebooks as a space for engaging students in the different phases of the writing process including brainstorming, drafting, editing, and revising. As the

program progressed, he shifted from narrative writing to teaching expository writing, persuasive writing, and research skills. His use of the private notebooks shifted from merely journaling to a place to practice distinct skills such as brainstorming, note taking, drafting, editing, and revision of writing.

Teacher A commented during a discussion that the notebook was "an excellent place to get the kids thinking about their writing ideas" (discussion, 2013). He modeled strategies such as how to choose a topic for the upcoming research project, using his own notebook as an exemplar for students to view during class one day. He states, during a discussion, "I projected my one notebook and showed them how I wanted this to be done, (discussion, 2013). Using his own notebook entry, he instructed students to write in their notebooks, " 3-4 things you're interested in learning more about" (notebooks, 2013), and showed them how to use the notebooks to write down the questions they had about their research topic, and how to brainstorm ideas. The researcher noted that these topics were also covered in professional development where teachers were presented with varying uses for the notebooks. Teacher A also posed questions in discussion about alternative ways to get students to brainstorm in their notebooks, and mentions "maybe having them respond to You Tube videos or short articles" in their notebooks as additional ways to get them to think about their topics for research.

Teacher A also used the notebook feature to get students to draft during the writing process. In the discussion group, he specifically mentioned challenges he experienced getting students to write several drafts, He wrote, "I want them to write their papers more than but, once they've done it, they think they're finished. Examination of student notebooks, showed Teacher A eventually began to place instructional items such as links to online tools such as thesauruses and kid-friendly grammar sites, directly into the students' notebooks in order to help them revise

their work after initial drafts. He also stressed that students should use numbers or letters for each piece of writing to indicate which draft they were currently working on. One notebook comment reads, "please remember to title your project, Narrative 1, Narrative 2 … until you are ready to turn it in" (Teacher A, notebook, 2013).

Teacher A frequently utilized the notebooks as a tool for editing students' work for grammar and sentence structure. After initially allowing the students to journal freely and gather ideas, Teacher A's focus shifted to include not only positive feedback but heavier emphasis on punctuation, subject- verb agreement and strong sentence writing. He writes,

> I enjoy your use of descriptions. They help paint a picture of what your house looks like in my mind and I can also imagine what it sounds like. When abbreviating, such as "t.v.", remember that you capitalize. Examples: T.V., U.S.A, and C.P.R. Also moving forward, let's try dropping "mostly" from you sentences. Be sure to reread what you have typed to check from grammatical errors. (Teacher A, notebook, 2013)

Teacher A eventually began to use tools like color-coding, bold print, and embedded links directly into student notebooks in response to student drafts. He wrote to a student, "I appreciate that you are finally starting to use dialogue. Now you need to work on adding quotation marks so the reader knows whose talking" (notebook, 2013). He then directly placed links in the student's notebook, directing her to visit the website, examine how quotation are used, and edit her own use of dialog in her story.

Similar strategies were used to indicate where other students could go online for help in improve their writing. After reading another student's writing, he reminds him to "remember to read your work out loud to yourself or to a partner. Then you can figure out where your periods should go since some of your sentences are too long" (Teacher A, notebooks, 2013), and directed the student to an online grammar site previously discussed in class. The researcher found it interesting that this particular practice was not explicitly covered in professional development as

a strategy to be used with students. However, it was used frequently in the discussion space by the researcher as a way to help teachers to find online resources such as articles, sample lesson plans and other writing resources. This type of replication of strategies used to help facilitate teacher discussions was similarly observed by the remaining participant teachers, indicating a definite link between professional development and teachers' classroom practices, even in ways not foreseen or intended by the researcher.

Teacher A also posed questions and made suggestions around improving the notebook feature during interactions with the researcher online. He states, "It would be great if we could insert a comment like in Word so that the students would know exactly where the changes should be made. "Commenting at the end of their writing isn't quite as effective to me" (Teacher A, message, 2013). Later, he goes on to offer a solution to this to another teacher during a discussion by pointing out that he copies students' text, then pastes it with suggested revisions and edits. He states during this discussion, "it's a little cumbersome having to do it that way but it beats writing it down on the student's paper and they can always go back and look at it" (Teacher A, discussion group, 2013).

The private notebook was a place where Teacher A preferred to give student feedback. During his interview, he explained his hesitance around commenting on students' work in the blog space "because everyone could see it" (discussion group, 2013). He pointed out that as second language learners, most of his students were "super self-conscious about their writing especially their spelling and grammar" (discussion group, 2013), and offered this is a reason to provide feedback in the private space of the notebook. During his interview, Teacher A spoke in depth about the challenges around giving feedback to each student but shared his method of making it work for his class. As opposed to responding asynchronously to student writing, he

decided to hold individual conferences with students and type his comments directly into their notebooks while in their presence. He also created a system for peer feedback using the notebook feature in the OSLN, where students worked with a partner or small group and took turns typing feedback directly into each other's notebooks. He explained,

> students will rotate in groups and edit each others' articles so sometimes you might see a comment that looks like the students is commenting on his own work. Really it's the students rotating in their groups and making suggestions. They usually write their name before leaving a comment so the person knows whose making it. (Teacher A, discussion group, 2013)

"This worked well for me," he stated, "it was the only way I could make sure all the students had someone working with and talking to them about their writing. Since it was the notebooks, they could remember what they might want to change later" (Teacher A, interviews, 2013).

Blogs. Blogs were utilized heavily for reading student work by all teachers (see Table 8**),** with Teacher A reading 155 blog posts during the duration of the study. In addition to reading, Teacher A used blogs as a way to have students quickly respond to articles or discussions, although his use of the blogs for this purpose was minimal compared to his reading activities, with Teacher A creating his own blog posts 10 times throughout the study. In one blog post, Teacher A asks students, "Do you think more time in school will be beneficial? Explain your answer using reasons from the article" (Teacher A, blog post, 2012). Teacher then required students to respond during class time and discuss their thoughts with the group. His blog posts directly referenced many skills discussed during professional development, such as using evidence in writing, developing ideas and analyzing expository texts. In another blog post created by Teacher A, he writes,

> The announcement of 53 Chicago Public Schools being closed and relocated came as a shock to most people in the city. Mayor Rahm Emmanuel has taken criticism for his

> support of the school closings. What is your opinion on 53 Chicago Public Schools being closed? Support your answer with the pros and cons discussed in class. (blog post, 2013)

In this blog post, Teacher A brought current events into the classroom as a way to spark student dialogue. This also allowed him to use the OSLN to tie is Social Sciences, which he also taught, with the expository skills in the curriculum that were covered in the professional development module. Again, the researcher observed a type of unintended "crossover" of use, with Teacher A using the OSLN for writing instruction and teaching of social sciences content such as current events. Teacher A later stated that he "found it interesting" (discussion group, 2013) that several students chose school closings as their topic for research as well.

Teacher A also used the blogs feature to address a range of reading skills including comprehension, making inferences, and brainstorming ideas. In another blog post, he posted a series of questions students needed to answer in response to an article about texting while driving, and directed students to use a range of reading skills, as well as write evidence-based responses. Similar blog posts by Teacher A were seen in the OSLN, where he directed students to analyze topics such as video game addiction, homework policies and bullying. Many of these topics were discussed during online professional development as a way to engage students around the research process by presenting student-friendly options for exploration. During professional development teachers were presented with topic suggestions, as well as helpful website and strategies to encourage students to engage in the research process.

Groups. Teacher A was a member of 5 groups throughout the study. However, after examining his group activity, the researcher discovered he was only active in one group, the *CICS Thinktank*, where he read and posted throughout the study. This group featured a "documents" section that housed teacher resources such as lesson ideas, suggested timelines, and other professional development resources. This group was also where discussions occurred,

where teachers could pose questions, voice concerns, or just share experiences throughout the study.

Teacher A was an active participant in online discussions as evidenced by the OSLN front facing data. He was the first teacher of the 3 participants to begin using the discussion forum to ask questions and share his experiences during the early stages of implementation.

> Our Language Arts Class is very excited to be starting the new curriculum. Both classes are unique and offer different perspectives. (Teacher A, discussion group, November 2013).

> My goals for my class include having students use correct grammar… develop proofreading skills…write structured essays…use figurative language, voice and imagery in their writing. (Teacher, discussion group, 2013)

As previously stated, the OSLN housed topics for teacher exploration in discussion forums as well as links to lesson plan ideas and other resources they could use in their classes. Teachers were encouraged to start the program by having students simply write journal responses in the system to explore their identity. Teacher A wrote, posed a series of questions during the first few weeks of the study, "Is there a model for the suggested final project for the unit?" (discussion group, 2013). He later wrote, "I'm enjoying the resources but do you have any you can post to help with their grammar?" (Teacher A, discussion group, 2013).

As the program progressed, Teacher A shifted from narrative writing to expository writing. For this professional development unit, teachers were provided with a serious of short, non-fiction articles and additional lesson ideas and resources appropriate for the genre. Many of these resources were skill based and focused on developing students' ability to write clearly and thoroughly develop ideas. Teacher A commented in the discussion,

> I love the articles and the students enjoy them as well. They draw high interest and provide good topics for discussion. I love how they incorporate specific skills i.e. restating the question, making predictions…(discussion forum, 2013)

He later wrote, "the articles are great for demonstrating how a good expository essay is organized. The kids are really starting to get it" (Teacher A, discussion forum, 2013).

Teacher A's activity throughout the project demonstrates his use of three features of the OSLN: (a) notebooks, (b) blogs, and (c) groups for writing instruction. Analysis of his activities also revealed that he incorporated several skills and concepts discussed during the online professional development in his own instruction including providing feedback, narrative writing strategies, and research skills.

Teacher B

Notebooks. Teacher B's use of notebooks at the beginning was also primarily focused on journaling and getting students to simply write about their feelings and experiences. Examinations of his early lessons plans showed that Teacher B stressed that the notebooks should be used as a place to "share thoughts like a diary" (discussion, 2012). He subsequently posed a series of journal prompts for students to answer in their notebooks over the next few weeks. These topics included titles such as "What Makes You Happy," "Angry Moments," "My Home," and "Family Memories" (Teacher B, notebooks, 2012). In response to these early journal entries, Teacher B's comments appeared to be aimed encouraging students as well as connecting with them by sharing his own background and experiences. In one student's notebook, he writes,

> This is a good start. I would like you to tell me how you feel about living there. What makes it special and what does it have to do with who you are. Narrative writing becomes powerful when your reader can connect to your feelings, so make sure you think about this as you work on this. Maybe there's a story you could share that has special meaning for you. (Teacher B, notebook, 2012)

During the first few weeks of the study, Teacher B typed short, encouraging comments directly into the notebooks such as "awesome" and "fantastic. His feedback was generally

around relationship building, as he repeatedly shared things with students in response to their own narrative experiences such as "I was a shy kid too" and "I think this could end up being a great story when it's done, I like baseball too. Who is your favorite team?" (notebooks, 2012). As Teacher B progressed, he continued to encourage students and connect with them, but eventually began to suggest revisions and edits to their written work. He wrote,

> Great ideas here. I love the pride that you take in your neighborhood. I feel the same way about Humboldt Park, even though I think that you still need to be careful (but that goes for anywhere in Chicago nowadays). I think if you read your work out load, you might catch some of the sentences that sound a little awkward. I think if you get a little more specific in the line, "I only care what it is to me", it might be a little more powerful. (Teacher B, notebook, 2012)

Discussions in the professional development group revealed Teacher B's concerns over students having a place to "feel safe and openly talk" during the writing process in the beginning. He, like Teacher A, raised privacy concerns, noting some of his students were "extremely shy" and refused to force to them write publicly unless they made the decision to do so themselves. He stated during his interview, "I was perfectly fine if they never published the work for anyone else to see but me, as long as they're writing" (Teacher B, interview 2013).

In addition to using the notebooks as a place to students to explore identity through journaling and give positive feedback, Teacher B also heavily utilized the notebooks to teach research writing skills. Although, not a part of the writing curriculum, he began using the notebooks heavily during the student science fair. He posted lessons in the network about finding reliable Internet sources, completing an outline and how to develop a scientific hypothesis for research. Many of his students also began using the notebook feature to draft their science papers, writing several versions of their hypothesis, posting pictures of experiments, and writing about results they found. Teacher B commented during a discussion, "I'm supporting the science department in the research portion of the students' science fair projects.

It's been a challenge and some classes are responding more enthusiastically than others" He goes on to state, "I think their papers will be vastly improved over what's been the standard in the past" (discussion, 2012) in reference to using the OSLN. He added, " I know this isn't exactly what I'm supposed to be doing right now, but since they're writing in here for English class, I figure it was easier to let them use it for science, too."

Examination of Teacher B's students' notebooks revealed that he continued the practice of using this feature to teach students to brainstorm, take notes, gather interesting photos and statistics, and generate questions continued as he taught the expository unit of the curriculum. Teacher B, in response to a lesson about using statistics to support an argument wrote, "I like the fact that you found some statistics. Next time, you have to work on using them in the actual article" (notebooks, 2013).

Student notebooks for Teacher B contained numerous topic ideas, potential questions they had had about topics for their expository papers, as well as several drafts of papers. However, log data revealed he logged in and read the notebooks only 10 times throughout the study, which was confusing for the researcher after viewing comments in several student notebooks earlier in the study. The researcher also noted presence of an attempted dialogue between teacher and student with question aimed directly at the Teacher B, such as "what do you think of this" or "Mr. __ can we talk about this in class Monday?" (notebooks, 2013). Although, Teacher B's responses to these questions were not always visible to the researcher, he explained that he addressed student concerns and questions during individual writing conferences, which is where he read the students' work as part of ongoing, one-to-one discussions. He explained that for writing conferences, students,

> understood the expectation that they have their notebooks open at this time so that we could read it together and talk about it. I told them to use the notebooks to write down

> questions they had for me so that they wouldn't forget by the time we talked. Sometimes, I typed comments into notebooks, sometimes they just edited as we talked. I didn't always have time to read and comment on their notebook in advance because it was time-consuming and I knew I'd conference with them in class anyway. This was the only feasible way for me to try and give feedback to everyone with my schedule. (interview, 2013)

Teacher B commented during also discussion, "I love all the suggestions for giving feedback. I tried the 3-2-1 strategy during class. I agree that it's more meaningful when it's immediate and you give them at least 1 thing to improve" (discussion, 2013). He admitted that he often struggled with giving meaningful feedback to every student due to time constraints, but still regarded the notebooks as a "great way to start conversations about writing, even if they were brief conversations sometimes" (Teacher B, interview, 2013). Essentially, although initial examination of back end OSLN data logs (see Table 8) made it appear as though Teacher B was not utilizing the notebook for instructional purposes as to the extent the other two teachers were, he had devised a different method of incorporating notebook use into his classroom, opting to read the notebooks during student conferences and placing notebooks at the center of writing conferences and using content to engage in conversations around their work. The researcher found this modification of use quite fascinating, as it spoke to Teacher B's ability and desire to adapt the curriculum to fit his own hectic schedule by incorporating the this feature of the OSLN into a previously established routine. The researcher found this ability to use the OSLN in varying methods that fit with teachers' pre-established routines, behaviors and methods was crucial, as all teachers during the interview phase spoke highly of having autonomy during the study as highly beneficial throughout curriculum implementation.

Blogs. Teacher B primarily used blogs for reading of finished student writing. The professional development module dedicated to blogs highlighted their use to showcase student work in public spaces. Additionally, teachers were provided with information around how to

include blogs as an integral part of the drafting process by stressing them as a place to post completed writing assignments once students had decided to publish. The researcher noted that Teacher B's reading of blogs far surpassed his reading of notebooks, according to OSLN log data, possibly because while Teacher B used notebooks as a part of writing conferences and discussed editing and revision of drafts, the blogs were finished products and had to be read at this point for evaluation purposes. When asked about his reading of student blogs during the interview, Teacher B confirmed the researcher's conclusions by stating, in his interview "I liked to read the blogs because it was their best work. That's where I had to go grade the final drafts for some of them, although a few of them never posted there and just stuck to their notebooks" (Teacher B, interview, 2013).

In addition to reading students' finished work in blogs, Teacher B also used this feature at times to post directions for lessons, as well as encourage students to respond to journal prompts and articles in class. As demonstrated in Teacher B's blog posts, blogs were often posted with specific directions around using skills being covered in the curriculum. Students were often required to post an immediate response while in class and sometimes instructed to extend their writing in their private notebooks. He writes,

> Begin your descriptive paragraphs about your own neighborhoods. Use no more than 10 sentences to describe your own neighborhood, how people feel about those live there and how you see it. (Teacher B, blog post, 2012)

Here, Teacher B provided directions around a narrative piece, instructing students to use descriptive language, share their experiences and reflect on others' perceptions. The narrative "Those Who Don't" by Sandra Cisneros was suggested as an anchor text during professional development as a way to model use of imagery in conveying narrative experiences in writing, which all teachers used for the first unit during curriculum implementation.

Teacher B similarly posted other blogs for students to respond to in class during the narrative writing unit. In these blogs posts he stressed narrative skills such as incorporating the 5 sentences into their writing and reminding them to include their feelings into their products. In one blog post he writes, "What do the holidays mean to you? What traditions do you have? Describe it in detail. Tell the story of your holiday, including tons of thoughts and feelings. What do you see, smell, hear and taste?" (blog post 2012).

In addition to narrative writing, Teacher B also utilized the blog space during while teaching students to read and understand informational text. During the expository writing unit, he used a strategy suggested in professional development, using an infographic to engage students around relevant topics. Additionally, he used the space to provide direct links to articles, give directions about how the assignment should be completed, and directs students back to their private notebooks for further exploration of the topic.

Groups. Teacher B was the most active in terms of his use of the "groups" feature. He was a participant in 19 student groups throughout the study. Further analysis of his activity revealed that not only was he a participant, but that he actually created 7 groups for his classes to engage with peers during the study. In professional development teachers were instructed on various ways to use the "groups" feature, including working on special projects, engaging students around interest based topics, providing enrichment activities, and providing additional skills practice for students.

At first glance, Teacher B's group activity appeared to be simply a way to **engage** with his students around fun topics like football, cartoon characters and movies. For instance "Animal Lovers" and "Twinkie Kings" and "Bears Fans" were places where students frequently posted pictures and other multimedia about topics of interest and subsequently engaged in

informal conversations. In the "Twinkie Kings" groups, for example, Teacher B posted a picture of an animated Twinkie character and wrote,

> Long live the King. You Will Never Be Forgotten. We believe the Twinkie King is not dead. He is still with us no matter what! Twinkies…Forever. Students, please pay your respects here. (Group post, 2013).

The group description for one of Teacher B's groups indicates that it is an informal place to post pictures and have conversations for those students who joined. The subsequent discussions by students were in response to the news that the Twinkie would no longer be manufactured. Over 20 students posted pictures, multimedia, and newspaper articles in this particular group. One student eventually chose to research food manufacturers in Chicago for her research project and used some of the articles posted in the group as references. The researcher noted that Teacher B's unconventional way of getting students to read, write, and discuss topics continued with other groups he formed, observing similar informal styles and fun topics such as anime characters, mustache lovers, and weird animals that were eventually chosen by many of his students as research topics. When questioned about this during is interview, Teacher B commented,

> I learned from those science papers that research can be like pulling teeth. Although kids loved using the system to write, they were still resistant and definitely were not enjoying it. I wanted them to have fun by choosing stuff they were interested in writing about. The writing was much better in the end. Who really wants to write pages and pages about a topic they don't like anyway? (interview, 2013)

Closer examination of content within his groups revealed that in addition to using the groups for fun and exploration of topics, Teacher B also formed a few groups where students were asked to respond to journal prompts for the narrative writing unit, construct responses to articles read in class and post information about research projects. In one group, Teacher B's description read,

> Your task is to find 3-5 quality articles about your topic. Post each as link in the comments section and write summary. You should tell what each article is about, what information you learned and it should be at least 5 sentences. (groups, 2013)

Teacher B's use of the groups both as informal space to engage around topics of interest as well as an additional instructional tool for understanding research, resulted in his students producing "massive amounts of writing" (interview, 2013). He explains kids notebooks and blogs began "exploding with kids talking and writing about all kinds of stuff they were interested in" and that he had a " a hard time keeping track of it all" (interview, 2013). Interestingly, the researcher noted that outside of creating the groups, Teacher B's voice was largely absent in these spaces, with no comments, probing questions or follow up activity. When asked about this during the interview, he stated,

> I set them up as kind of kid zones so I didn't really read what was there. I wanted them to talk to each other and push each other. Plus, they knew that when they were ready for me to read whatever they wrote, they should copy and paste it into the notebook or blog. There was no way I could keep up with all of it, so the groups were more for them. That's why I used cartoons and things I knew they liked. I just wanted to get them started. (interview, 2013)

In addition to starting the groups for his students, Teacher B also utilized it to access teacher discussions housed in the *CICS Think Tank* professional development group.

During the informational text unit, Teacher B shared his experiences using the curriculum materials in his class. He stated in an online discussion, "The short articles given to us are great. I've actually been using them in my other classes to practice writing extended responses" (discussion forums, 2013). He goes on to explain, "The articles are high interest, but simple enough that students can understand them in meaningful ways" (discussion forums, 2013).

In a later discussion where teachers were invited to shares the benefits and challenges of implementing the new curriculum, he states,

> I love the technological components of the curriculum. The students respond in ways they are comfortable with and I feel like we're preparing them for the world in which they will live, not the world they live in now if that makes any sense. (discussion forums, 2013)

As Teacher B continued to contribute to the teachers' online discussions, he similarly offered advice in the teacher group around his use of the informal, interested-based groups as a tool for motivating students to write. His kids, he explained, were "buzzing with excitement" (interview, 2013), with students posting a combination of multimedia and written responses into their notebooks as a result of group discussions. Teacher B shared these successes with the other teachers in the teacher discussion group and offered advice on the best ways to engage students with high-interest topics as a way to get them to write better essays and stories. He explained that his groups were "a fun way to get students writing" (discussion, 2013) and explained his belief that motivation and engagement were so high because they had several opportunities to read, write, and discuss topics that were personally relevant for them without teachers interruptions.

Teacher C

Notebooks. The data logs showed that Teacher C was using the notebook feature to primarily to read her students' work, engaging in this activity 280 times. Teacher C's students had already been previously introduced to the OSLN by their first teacher and "literally took off" (interview, 2013) once they were reintroduced to the system. Their notebooks were heavily used for journaling about themselves and the world around them. Examination of this feature revealed that Teacher C began her implementation by having students respond to articles read in class, many of which were directly related to pressing issues in their communities such as gangs, drugs and violence. Teacher C's comments could be seen in these early notebooks, where she questioned students to expound on their written responses and "go back to the article" (notebook, 2013), make connections and find evidence to support their ideas.

Student written responses in the notebooks were subsequently used as topics for student research, with Teacher C leaving brief comments directing them to add, revise or think more deeply about their drafts. On one occasion she wrote, “Is this your research topic? If so, your information should be organized into paragraphs” (notebook, 2013). She also can be seen higlighting specific parts of some students’ texts and instructing them around potential revisions, such as “this is a great place to include some statistics” or “you forgot your title, remember what we talked about in class” (Teacher C, notebook, 2013).

Examination of student notebooks revealed that brief comments as shown above were present but appeared infrequently, even though log data indicates that Teacher C read logged into the OSLN to read student notebooks 280 times. Students’ notebooks were used for many of the same drafting purposes as other participating teachers in the study, with students posing questions, outlining, and taking notes about topics for research, as well as responding to journal prompts assigned in class. When asked about her limited comments in students notebooks during the interview, Teacher C was admittedly resistant to the idea of typing feedback into the OSLN as suggested, stating the “old-fashioned” way worked better for her and took less time.

Blogs. Similar to Teacher A and B, Teacher C primarily used the blog feature to read students’ finished drafts. She also used them as part of writing instruction requiring students to respond to different prompts posted during class. The prompts were in response to articles shared in class as well as general journal style questions asking students to address issues in their communities and the larger world around them. As previously stated, blogs were introduced during professional development as a way to potentially enhance writing instruction throughout curriculum implementation. In one blog post, Teacher C wrote “Is Chicago a Safe City? Explain

your thoughts" (blog post, 2013). In a different post, Teacher C again attempts to engage students by posting question relevant to their personal experience. She wrote,

> Last week, President Obama visited Hyde Park High School to discuss the violence that is happening on the streets of Chicago. Do you think there is anything that the president can do that would keep young adults from picking up guns and shooting people? How do you think we could reduce gun violence in Chicago? (blog post, 2013)

The researcher noted that there were over 60 responses to this post, with many of the students choosing safety issues, particularly in regards to Chicago as topics for their research papers.

Teacher C appeared to use the blog feature to spark immediate conversations and get students thinking and eventually writing about topics of their choosing. On a different occasion, she posted, "I was wondering if you guys think that Facebook is the source of many problems kids are having at school? Please explain. "

The researcher noted that over 50 of Teacher C's students responded to this blog post, sharing personal stories around the impact of Facebook on their lives and offering thoughtful solutions around what can be done to ensure that students post responsibly and refrain from bullying online. Like, the other participants, students in Teacher C's class completed research topics on a range of issues including gun violence, cyber-bullying, and other topics Teacher C had initially posted as conversation starters during class.

During her interviews, the researcher asked Teacher C why she didn't use the blog feature more often, noting the high number of thoughtful responses, conversations, and topics that arose from them. Teacher C, although agreeing that seeing so many responses was powerful in inspiring writing, cited issues such as slow Internet connectivity as a huge barrier to continuing the process during class time.

Groups. Teacher C's OSLN log data indicated minimal use of the feature, with Teacher C reading no group discussions throughout the study, although joining the teacher discussion group soon after implementation. OSLN data revealed she did read 20 documents housed in the *CICS ThinkTank* group, however, and the researcher will later discuss additional evidence of Teacher C's lurking behavior after presenting interview findings.

Answering Research Question 1

For the purposes of answering the Research Question 1, the researcher conducted an in depth analysis of the 3 participating teacher activities and behaviors occurring within the OSLN and their use of three primary features used for writing instruction: (a) notebooks, (b) blogs, and (c) groups. Their uses of these features were compared to topics presented in professional development for the purposes of answering Research Question 1 which was, "To what extent did professional development delivered using an online social learning network (OSLN) impact teacher practice?"

OSLN data collected and analyzed included back end log data from the server as well as front facing data collected from teachers' online activities, such as discussion group conversations, comments in notebooks, and blog entries.

OSLN back end data collected by the server, allowed the researcher to initially examine teacher behaviors around commenting, creation and reading of artifacts housed on the system (see Tables 6-8**)**. Results of analysis showed that all teachers' activity captured by the OSLN was heavily concentrated around the reading of a range of artifacts, including student blog posts, student private notebooks and discussions housed in the group space.

OSLN log data also revealed the 3 teacher participants primarily utilized 3 features throughout the study: (a) notebooks, (b) blogs, and (c) groups for the purposes of writing

instruction. Although participating teachers used all three features to some extent, individual use did vary widely amongst them.

Teacher A, for example read student work housed in the private notebooks and public blog spaces in almost equal amounts, and was also an avid reader of reading discussions housed in the groups space, while Teacher B's activities were largely concentrated to the groups and blog feature. Teacher C, also utilized the notebooks and blog spaces heavily for reading student work, but utilized the groups feature minimally.

Although server data provided to the researcher was helpful in initially analyzing teacher activities within the OSLN, data collected by closely examining teacher talk as found in discussions, notebooks, and blogs provided a more accurate perspective on the actual nature of each teacher's activity for instructional purposes throughout the study.

Utilizing both back end and log data and front end data obtained through OSLN content, the researcher determined there was evidence that content presented in professional development did appear in teachers' classroom instruction. The researcher divided the professional development topics into three broad categories: (a) OSLN features, (b) writing instruction, and (c) feedback. These topics were then compared0 to teachers' online behaviors and use of the OSLN for instructional purposes throughout the study for the purposes for addressing Research Question 1.

Examination of Teacher A's notebooks revealed that he primarily used 3 features of the OSLN throughout the study: (a) notebooks, (b) blogs, and (c) groups. Private notebooks were not only used for reading of student work, but also to teach distinct writing skills such as brainstorming, editing, revision, and research. Upon analysis of his students' notebooks, the researcher discovered that Teacher A was able to provide specific directions and repeatedly

addressed topics presented in professional development, such as numbering different drafts of writing in the notebooks, maintaining privacy, and using journal prompts to familiarize students with narrative writing.

Teacher A used the blogs primarily as a way to students' finished writing products. Additionally, while teaching the expository writing unit, Teacher A created blogs to introduce students to concepts such as using statistics, and also engage them in conversations around topics related to potential research topics. Teacher A used articles and topics from documents housed in the OSLN centered around student issues such as uniforms, longer school days, and homework policies; all of which were discussed in professional development as possibly to enhance students' understanding of expository texts and introduce them to possible research topics.

Analysis of Teacher A's activity also revealed that he was an active member of ongoing discussions housed in the group space of the OSLN. He was the first teacher to begin commenting on his experiences in the program and remained active throughout the study.

There was also evidence that Teacher A utilized the OSLN notebook and blog features for providing feedback as suggested in professional development. Much of Teacher A's early activity in notebooks was around engaging, encouraging, and connecting with students around developing their writing. Expressing concern over the public nature of providing feedback using blogs, Teacher A's feedback was heavily concentrated within student notebooks, although he eventually developed his own systems for honing the practice for his own purposes.

Analysis of Teacher B's notebooks revealed he was also primarily focused on initially journaling to get students to explore their identity, a strategy suggested in professional development. Teacher B posed a series of journal prompts for students to answer in their

notebooks over the next few and used the notebooks to leave comments such as “fantastic” or “awesome job” as a way of encouraging students to continue to develop. His feedback during early phases was not evaluative, but instead Teacher B focused only on one or aspects of the student writing that were positive, a strategy provided and discussed at length in online professional development.

Teacher B also used the notebook for student drafting and gathering of students’ ideas for expository writing and research purposes. Teacher B’s students’ notebooks housed questions to be answered, pictures, links, part of articles and even quotes students intended to use for their final research projects. Many of these notebook entries contained content taken directly from documents provided in professional development such as student-friendly articles, websites and methods around note taking.

Teacher B primarily used blogs for reading of finished student writing. Teachers were provided with information around how to include blogs as an integral part of the drafting process by stressing them as a place to post completed writing assignments during professional development. The researcher noted that Teacher B’s reading of blogs appeared to surpass his reading of notebooks, according to OSLN log data. This may be because while Teacher B used notebooks as a part of writing conferences and discussed editing and revision of drafts, the blogs were finished products and had to be read at this point for grading.

Teacher B was extremely active in terms of his use of the “groups” feature. He was a participant in 19 student groups throughout the study and created 7 of them for students based around common interests such as movies, games, and animation. In professional development teachers were instructed on various ways to use the “groups” feature, including working on special projects, engaging students around interest based topics and providing additional

enrichment. Teacher B was the only teacher to use this feature as suggested in professional development, and utilized it is a student-friendly space where students could engage openly and talk and write about things that interested them, with little teacher invention. Additionally, like Teacher A, Teacher B also utilized the groups feature to participate in professional development discussions throughout the study.

Like the other 2 participants, Teacher C utilized the notebooks heavily for writing instruction. Not only did she read her students' drafts in this space, but also initially used it to get her students to explore identity and the world around them. Examination of her student notebooks revealed writing about a range of topics impacting them, including violence plaguing their communities, bullying, and social media issues. During the expository unit, Teacher C also used the notebooks to get students to develop questions about topics, outline, and cite sources, all of which were suggested uses for the notebooks in documents housed in the online professional development space. Teacher C utilized blogs primarily for reading students' finished work, but also to post thought-provoking questions during class around topics being explored in class. Teacher C utilized the groups minimally. She was not active in teacher discussions, nor did she form any student groups for instructional purposes, but instead remained largely a lurker, garnering her information from blogs and curriculum documents found in documents section of the OSLN.

Looking across the 3 teachers, there was evidence of impact of professional development on all teachers' practice as posed by Research Question 1, although the impact varied depending on the topic and teacher. Analysis of OSLN back end data as well as front facing data sources indicated that all teachers utilized the notebook and blog features of the OSLN for writing instruction. Teachers A and C used both the notebooks and blog features for reading of student

drafts and finished writing products, while Teacher B primarily used blogs to read finished student writing. Two out of the three teachers used the groups feature to access professional development discussions. One teacher never accessed group discussions, but instead strictly read the curriculum documents housed in the professional development group. Only 1 teacher, Teacher B actually created student groups to enhance writing instruction, as discussed in professional development. All 3 teachers used the notebooks feature for providing feedback to varying extents, while only one teacher, Teacher A, used the public blog feature for this purpose.

Analysis of the data extracted from back end data collected by the server, as well as front facing features utilized by teachers throughout the study for instructional purposes, reveal that professional development topics were used by the 3 teachers participating in the study. Each of the outlined uses of OSLN features, although varied amongst individual teachers, were all professional development topics that did, impact teachers' behaviors and instructional practices throughout the study, answering, "To what extent did professional development delivered using an online social learning network impact teacher practice?"

Interview data. Interview data collected allowed the researcher to examine teachers' self-reported beliefs about their experiences using the OSLN for writing instruction, as well as the perceived impact of professional development on their instructional practices. Professional development topics were categorized into 3 sections by the researcher: (a) OSLN features, (b) writing instruction, and (c) feedback. Analysis and coding of the following interview data allowed the researcher to compare teachers' perceived experiences during professional development with actual online behaviors while using the OSLN. Table 10 demonstrates the researcher's findings and prevalent themes that appeared during analysis of teacher interviews.

Table 10

Coding Results for Interview Data

Themes	Teacher A	Teacher B	Teacher C	Total (Teacher A +B+C)	Professional Development Topic
	interview	interview	interview	Total	
*Feedback	38	31	21	90	Y
*Notebooks	42	26	21	89	Y
*Blogs	36	31	13	80	Y
*Privacy	24	22	29	75	Y
*Drafting	25	34	12	71	Y
*Editing & Revision	29	21	18	68	Y
Online PD Benefits	28	17	19	64	N
*Groups	19	23	8	50	Y
*Descriptive Writing & Imagery	24	14	8	46	Y
*Narrative Writing	13	17	10	40	Y
OSLN Benefits	16	10	13	39	N
Writing Mechanics (grammar, sentences etc.)	18	14	6	38	N
*Developing Students' Ideas	22	9	4	35	Y
*Research Skills	9	15	11	35	Y
*Persuasive	0	0	0	25	Y
Organization	12	9	4	25	N
*Publishing	13	11	0	24	Y
OSLN Challenges	8	6	9	23	N
*Expository Writing	4	8	4	16	Y
Citing Sources	2	6	1	9	N
*Note * were preset codes*					

Analysis of interview data revealed that teachers spoke in depth about their use of OSLN features for writing instruction, particularly notebooks, blogs and groups. Additionally, teachers

mentioned other issues they believed impacted their implementation such as feedback mechanisms and privacy concerns. Teachers' interview data revealed their thoughts and experiences around using the OSLN for instructional purposes, beliefs around the value of online professional development, as well as challenges experienced throughout the study. Data drawn from teacher interviews was analyzed for the purposes of answering Research Question 2, "To what extent did teachers perceive professional development activities delivered utilizing an OSLN as impacting their instructional practices"? Interview data for the 3 teacher participants is discussed in detail in the next section. The section begins with a discussion of each teacher's self-reported experiences using the features of the OSLN for writing instruction. This is followed by a discussion of additional prevalent themes, teachers' perceptions of professional development and overall impact on their classroom practices.

Teacher A. As stated previously, Teacher A was new to the profession and was not very confident in his ability to teach writing effectively. His interview data revealed that he valued his participation in the curriculum implementation and used the ideas presented in the online professional data space in his classroom. He stated that prior to using the curriculum, he was primarily focused on journal writing, grammar, and spelling. He commented on the difficulties he had encountered in getting his students to write more than one draft, and instead correct and revise their writing. During his interview, he spent several minutes speaking about the notebook feature in the OSLN and how it helped in teaching his students to write several drafts, a topic that was touched upon heavily in the online discussions. He stated, "It was easy to maintain several drafts of student writing using the notebooks. I would just have them title each draft followed by a number or letter" (Teacher A, interview, 2014).

He went on to comment on how being asked to keep his own notebook by the researcher made it very simple to teach his own students this technique. He also talked about how actually using this OSLN feature increased his awareness of possible challenges students would face.

> I noticed right away that the notebook didn't alert students when they had spelling errors. It also didn't save their work if they forgot to press update. This is something I needed to know so I could include these points in my lesson. (Teacher A, interview, 2013)

During professional development, both online and face-to-face, Teacher A had raised concerns about student privacy. He explained that many of his students were self-conscious about spelling and grammar and was concerned about the public nature of the writing using the OSLN. After voicing his concerns in the online space, he was told that the notebook space was a private one and that his students could publish work when they were ready. He, however was hesitant and admitted during the interview,

> I still wasn't convinced that nobody could see what I was writing besides you. Experimenting with the notebook before my kids used it made me more comfortable that their privacy would be protected. Once they started using the notebooks to write and realized no one could see it but me, they started to take more chances in their writing. Attempts at creative writing went through the roof. (Teacher A, interview, 2013)

He made similar observations about when he was asked to blog as part of the professional development. Blogs were discussed during the early phases of implementation as a way to model narrative writing. As the curriculum model suggested, teachers started with an identity theme to get students comfortable with writing in this genre, and teachers were asked to share several blog posts where they explored different aspects of their own identity. This technique was valuable for Teacher A, as it created a space where he could experience what his students were asked to do. He stated,

> Writing my first blog was more difficult than I thought. It was hard because I'm shy by nature and didn't necessarily want to talk about myself. When I shared it with my students, it sparked good conversations and made it easier for them to start blogging on their own. It wasn't long before they started writing blog posts before they were

> assigned. Some still hesitated to share and kept using the notebooks, but all of them were writing. They were writing a lot. (Teacher A, interview, 2013)

It was at that point Teacher A realized how powerful the act of modeling really was for his students. He stated, "it wasn't just the ideas I but also important skills like sentence structure, imagery and figurative language (interview, 2014). As previously noted, although Teacher A touted a strong belief in the act of modeling, he used the blog space only 10 times for this purpose throughout the study. When asked about his blog use during his interview, Teacher A mentioned trouble connecting to the Internet at times, particularly when all students were logged in simultaneously. He also recalled instances when the system was "moving slowly or just freezing up" during instruction, and found it easier to give students handouts which they could keep and annotate, or just present writing models using the projector in the classroom, where he could discuss and highlight specific portions of the writing.

Teacher A also commented on how students' interest in publishing their finished writing was, in his opinion, enhanced by what he had experienced by discussions and topics in the online space. For example, he reflected on how one week, the teachers were all challenged to use photos to help develop students' develop the skill of using imagery. They were each asked to examine a blog post with several embedded images and simply describe what they saw. Teacher A recalled being challenged to come up with words to accurately describe the images, and included a word bank when he presented a similar lesson to his own class. He stated, "I couldn't remember that last time the kids actually thought writing was that much fun. They didn't even want to stop when the dismissal bell rang" (Teacher A, interview, 2014).

Teacher A similarly reflected on a series of short lessons ideas and discussions on how to teach figurative language that were posted in the discussion forum OSLN. The thread was actually started by another teacher that was having trouble getting students to actually use simile

and metaphor in their writing, even though she was teaching it every day. It was suggested by the researcher that the teachers use the blogs posts and or status updates to post powerful examples of both simile and metaphor, followed by a brief discussion with students. This could be done as a series of bell ringer activities for a week or more if needed. Teacher A decided to use this strategy "a couple of times," and before long, stated his students, "took more chances with simile and metaphor and began using them in their writing without necessarily being told" (Teacher A, interview, 2014).

Teacher B. Teacher B's background in film and media made him an interesting candidate for the study. He had only been teaching English for 2 years and was adamant about the curriculum's focus on writing, combined with the technological component, as the reason for the students' excitement and amount of writing produced. He firmly believed that combining technology with writing was instrumental in getting students to write more about topics they were authentically interested in. He stated,

> Many of them just wouldn't write before we starting using the DYN Curriculum. I had some who just weren't interested. This brought in an exciting aspect. Once they started using it, I couldn't keep up. They were writing all the time". I think the technology literally drove engagement through the roof. (Teacher B, interview, 2014)

When asked specifically about how he implemented the curriculum, he admitted to being hesitant to participate in the discussions at first. Explaining that he was not entirely confident in his teaching methods using the system early on, he simply preferred to read the provided resources, experiment with different techniques in class and reflect on his lessons prior to discussing the process with others. He explained,

> I read everything that was posted. I read looked through every resource, every link, every topic that was posted. I wasn't always talking but I was definitely listening. I took what I needed, tweaked it and came back often when I got off track. (Teacher B, interview, 2014)

Teacher B spoke in depth about how the topics in the online space informed how he taught his class. He admittedly loosely followed the timeline for the suggested curriculum, but used the discussion topics to inform how he modified his instruction. When asked how he modified and delivered the curriculum, he explained that after reading through the recommended topics, he "started with the components he felt were more necessary, such as engaging students with photos and things they were already talking about" (Teacher B, interview, 2014).

He explained, this is why he initially spent time setting up topics using the group spaces, as opposed teaching students about the notebook and other curriculum features right away. His desire was to get students excited and writing in volumes as opposed to starting with skills he wanted them to develop. He did, however, use many of the resource posted on how to get students to write more descriptively and organize their thoughts after they had responded to discussion questions and written first drafts. He explained,

> After they had a few ideas down, I had them write these in their notebooks. We just called these, Draft 1, Draft 2 and so on. It was easier to get them to revise once they already had ideas. I just used some of the lessons posted in our space like avoiding using over-used words and show don't tell. This combined with the fact that they could add multi-media was the winning combination. (Teacher B, interview, 2014)

Teacher C. The interview data for Teacher C revealed that although she was largely absent in online discussions, she was using the resources and found value in reading the weekly discussions between the other teachers and facilitators in the professional development space. She admitted that when she took over the class mid-year, the idea of "jumping into a new curriculum" was overwhelming and that she still used her English textbook during the initial weeks of English instruction. Teacher C revealed that the constant pushing from the students ultimately peaked her curiosity and interest in using the curriculum. She commented,

> It was the kids that pushed me to actually start using it. Since they had been using it with Ms. X, they kept asking when they were going to get a chance to write with the laptops.

> Even with the Ms. J in the room [her assigned digital media mentor] I still didn't feel comfortable. (Teacher C, interview, 2014)

When questioned further about what made her decision to use it, she simply explained that the "kids broke me down" (Teacher C, interview, 2014). She elaborated by pointing out that her digital media mentor walked her through the technology components of the first lessons and that the ability to message both the researcher and the mentor directly and receive timely responses made her feel comfortable with starting slowly. She also directly referenced the online lesson ideas and other resources she found useful in the online professional development space. These accessible resources made transitioning from her solely text book based program to one that integrated technology much smoother since she could find answers to her questions and lesson ideas easily. She explained,

> I'm not really that social in new situations and I didn't know the other teachers. I didn't feel like I had anything to contribute since I was new to the program but I logged on every week to look at discussion notes, any new resources, review the pacing charts and download anything I needed that was there. (Teacher C, interview, 2014)

Teacher C stated that since she had been a user of YouTube and other multi-media tools in the classroom before, it was easier for her to start with using these activities as conversation starters or warm ups in class. She commented on how the flexibility of using what she considered helpful for her class, combined with the functioning within her own comfort level made this a valuable learning experience. Teacher C noted that the combination of resources, access to her mentor and the researcher and the comfort level she experienced once she realized she could move at a pace comfortable for her, all contributed to her implementing the curriculum. She explained how she started slowly by using videos to spark conversation and written responses. She explained,

> Once I learned how to embed the videos, I would just post them in a blog and ask students probing questions about things I wanted them to notice like the video

> introduction, what kinds of topics were covered and their reactions to what they saw. (Teacher C, interview, 2014)

When asked to further explain the writing skills she was attempting to teach through curriculum implementation, she was able to reference articles and other resources she used uploaded to the professional development "documents" section that demonstrated how to introduce and conclude writing, how to use statistics and evidence, and how to appeal to a reader's emotions. She spoke about a gang violence article she had posted and pointed out,

> I was trying to get the student to understand how certain words have power. We went through that article line-by-line and talked about which words, phrases and pictures evoked a real emotional response. Some of the words and content were difficult for the kids to grasp but overall they got the point of the lesson. I referenced that article over and over again whenever I felt their writing was too flat. (Teacher C, interview, 2014)

She went on to explain that having links embedded in the OSLN made them easily accessible for both her and the students, and recalled instructions she read in the online space about ways to place links to them directly inside students' notebooks, along with pictures and other methods to engage them in the writing process. She felt that the best thing about the online professional development space was that it challenged her to make writing instruction more engaging since other teachers were clearly getting students the produce large amounts of writing. When asked how she knew what the students at the other sites were doing, she laughed and explained, "I could see it. I could see everything. It was intimidating. Some of their writing was really sophisticated" (Teacher C, interview, 2013. She explained that many of her students struggled with writing and her desire to help them to improve was somewhat driven by the fact that their work would be seen by others. She explained,

> My kids' writing needed improvement badly and I wanted them to write just as much as the other kids were because they needed the practice. Plus I wanted some of their work to appear in the magazine at the end of the year so it had to be good. That would only come with lots of practice and revision and more writing. (Teacher C, interview, 2014)

Teacher C felt by the end of the school year, her kids were writing producing large amounts of writing, similar to what other teachers' students were doing at the other school sites. "Between the blogs, notebooks and assignments, there was a lot of writing happening. It was overwhelming but they were definitely writing all the time" (Teacher C, interview, 2014). She again referenced the transparent nature of the program as an influencing both her and her students participation. She commented,

> Being able to see all the writing across the board made it clear to me and my students what everybody else was doing. This was probably the biggest motivator to get it right. I'm competitive. I didn't want to be the only teacher with no writing or worse, bad writing posted for everyone to see. (Teacher C, interview, 2014)

The researcher noted that despite the large amounts of writing her students produced, Teacher C was the only participant who didn't log in to participate and in group discussions very often. However she appeared to be the most aware of what students at other school sites were producing. Additionally, it was evident that from her students' completed private notebooks and public blog posts that Teacher C was, indeed, using the curriculum resources provided in the OSLN via the professional development space. When asked during her interview what she thought about the online professional development experience, she stated,

> The resources, posted made it easier to get started but even more important was that I could see what the other teachers were doing in their classes. I saw a few of their blogs and used the ideas in my class. I definitely was motivated by seeing their kids' writing. It made me raise the bar for mine. (Teacher C, interview, 2014)

Analysis of teacher interview data revealed that teachers did value professional development topics around OSLN features and writing instruction, and subsequently used many of the strategies and concepts in their classrooms. In the following section, the researcher will further discuss other professional development topics, as well as prevalent themes drawn from teacher interviews.

Additional prevalent themes from interview data. In this section, the researcher will present findings around the additional prevalent themes that arose during the interview process. These themes were (a) feedback, (b) OSLN benefits, (c) online professional development, and (d) challenges encountered during the study. These themes were critical as they spoke to the researcher's questions around teachers' perceptions and experiences around the curriculum, online professional development, and the impact on actual practices in the classroom.

Teacher A: Feedback. During the interview, Teacher A was vocal about his experiences using the OSLN for feedback purposes. He described it as "time-consuming and difficult at times." He pointed out that he did value the process of feedback as an integral part of improving student writing and getting them to revise their work. He stated, however, that for him using the system alone was just not a feasible option since it required him to log in and type over 50 comments at any given time. When asked about choosing a few students at a time for feedback, Teacher A responded,

> I tried that but never got around to giving all of them feedback, which had to happen. I would get through maybe half of one class but never developed a system for looking at their writing in groups. In theory it sounds good but just didn't work for me. (Teacher A, interview, 2013)

When reflecting on the differences between giving feedback online or delivering it in a more traditional way, like writing comments on papers, he concluded that giving feedback is always a challenge with large numbers of students. He explained,

> It's never easy. I guess this [using the OSLN] wasn't much more difficult than writing comments on papers, and at least the comments are saved so I can look at the later. I really can't say that I had records of my comments on their writing before so that part is helpful. (Teacher A, interview, 2013)

He also expressed concern over the lack of a personal connection with students when delivering feedback online. "I preferred to give it in class," he stated (interview, 2013).

> That way I have a better chance of getting my point across. The personal touch is extremely important to me. Things get lost in translation and my students are second language learners. Some still struggle with comprehension so I need to make sure they understand when I'm talking to them about their writing (Teacher A, interview, 2013*).*

He admitted that although he viewed feedback as a necessary part of improving student writing in the classroom, he had always struggled with doing it effectively. During one discussion he wrote, "I feel that the immediate feedback is the most effective and meaningful…I'm not the best at commenting online. It's tough to get through 75 students' work" (Teacher A, discussion forum, 2013). He also suggested "taking a few a week is a great strategy" (discussion forum, 2013) during a problem-solving discussion around feedback and its challenges. He states during another online discussion the importance of teaching students what to do once they get feedback. He concluded, "I think we'll really have to train them to make changes and revisions based on the feedback. They don't do this on their own" (discussion forum, 2013).

***Teacher B: Feedback*.** When questioned about his methods of delivering feedback during the interview, Teacher B also expressed preference for face-to-face during class time. He explained,

> It's easier and feels more on-demand and relevant than leaving comments in the system. I like the immediacy of talking to students while they're in front of me. For me the system was a little overwhelming in this aspect. I felt pressured to type hundreds of comments every time they wrote something. I couldn't keep up with the amount of work they were producing after awhile. (Teacher B, interview 2013)

Similar to Teacher A, Teacher B also devised ways to work around the system challenges. In one discussion he stated, "I try to give one on one feedback during class too although time constraints sometimes prevent me from meeting with every student in every class" (discussion forum, 2013).

Teacher B, did at one point, begin to follow and closely document small groups of student writing at a time. He explained,

> feedback is important for all of them but since I struggled with leaving comments online, I chose 15 or so of them to really focus on. I wanted to really push the ones that were struggling and I wanted to encourage the ones who really took a liking to the program. Some of them were writing tons of stuff by the time the school year ended so I wanted to read the things they were coming up with. (Teacher B, interview, 2013)

Teacher B noticed that once he was explicit about what was supposed to happen after feedback, "students revised more and would seek out comments from me or other writers in the class" (interview, 2013). He admitted, "I didn't give nearly as much feedback as I needed to each student," but pointed out that using the OSLN made it

> much easier to get feedback from someone else besides me and I was okay with that. They had other kids and other adults they could talk to online about what they wrote. It didn't have to be me all the time. It kind of took the pressure off honestly. I was still responsible for their grades of course but I didn't feel like I had to comment on everything they did. They had other students and Mr. J. to help out. That part was awesome. (interview, 2013)

Teacher C: Feedback. Teacher C was a self-described lurker as described in the profile section. Her presence in the discussion groups was minimal and evidence of her using feedback using the system was not present. When asked about her use of feedback using the OSLN, Teacher C stated, "it just didn't work for me" (interview, 2013). Although she said she left a comment on a "couple of blogs and notebooks". She found certain aspects of the feedback challenging and time consuming, and raised concerns around privacy. She explained,

> It was just too much. It was cumbersome and not teacher friendly enough. It took too long to leave comments in all their notebooks even though I read them. I never really liked the idea of commenting in the blogs either because I didn't want the other students seeing my evaluations of the work. I stuck to the old-fashioned way. (Teacher C, interview, 2013)

When prompted to explain her preference to the "old-fashioned way", Teacher C staunchly defended her beliefs around why feedback is a personal experience. She explains,

> Everything cannot and should not be done for other eyes to see. I liked the setup
>
> of the curriculum overall and the kids' loved using the program for writing. It was good in that way. But when it comes to grades, I'm not comfortable with people seeing what I have to say. I think that should be between me and my students. If they want to share, they can but I'm not putting it out there for everybody else to see. Plus, doing it one on one makes it more personal. (Teacher C, interview, 2013)

Teacher C then goes on to explain why the concept of feedback being private is important to her. She states,

> I'm a student in a graduate program and at my age, I'm still sensitive about what I write. A lot of my students struggle with reading and writing. I need to make sure what I'm saying to them is clear. I can't tell that if I'm just writing comments online. I think it's cool that they liked to give each other feedback, but even that took me awhile to get used to because they didn't know how to do it at first. Some of the things they were saying at first made me uncomfortable. (Teacher C, interview, 2013)

Upon being asked to clarify what made her uncomfortable, Teacher C recalled looking at students' comments to each other when she initially arrived and felt that some of students comments were not positive or helpful. She said, "Some of them were just not very nice. I remember a student, mocking another student for spelling words wrong. I'm surprised that student ever posted again (Teacher C, interview, 2013). When asked about what she thought could be done to address how students are given feedback in public spaces she reflected on the importance of setting expectations and teaching students how to engage in this practice. She stated,

> I'm sure part of the problem is that I never really talked about how feedback should be given. That's probably because I was never comfortable with it, even as a teacher. I've always hated that part of grading writing anyway. I like to have more of a conversation with the students about what they can improve, but I still don't actually write it down like I should. (Interview 2013)

Since Teacher C pointed out that she rarely provided written by feedback even prior to using the OSLN, she was asked if she saw any value to using an OSLN for this reason. She admitted that

although it appeared to be valuable for students, she remained uncomfortable with the practice. She stated,

> My feelings haven't changed much. I still think it's hard. I still think it's too much for one person. But I think the kids are more open to the idea than me. They didn't seem to mind writing for everybody to see, even when other kids jumped in and pointed out mistakes. Maybe it's me, I just like doing it my way. (Teacher C, interviews, 2013)

For all participating teachers, feedback using the OSLN was an ongoing challenge. Although all 3 teachers valued the practice as essential in improving student writing, the method for implementation as suggested in professional development was problematic for teachers. Interestingly, each teacher developed systems for making feedback both useful and purposeful for their own individual needs. All 3 teachers placed the notebooks at the center of writing conferences, using student work as a conversation starter for oral or written feedback. Some teachers, like Teacher A typed directly into students' open notebooks or had other students provide feedback by creating a peer feedback system. Teacher B and C, seemed to prefer reading the notebooks, while simultaneously suggesting improvements, letting students edit and/or revise during the actual conference. All teachers strongly preferred delivering feedback privately, allowing them to engage in conversations with students about writing, without others viewing the content. Teachers' sweeping rejection of delivering public feedback, however, did not deter them from engaging in the practice, with all 3 still using the OSLN to in some modified manner to accomplish the task.

OSLN benefits. The benefits of using the OSLN were a prominent theme that arose during the interview phase. The benefits fell into three major categories (a) community, (b) student engagement, and (c) transparency in practice. Although being placed in the position as both teacher and learner was at times overwhelming, according to teachers, all 3 participants using the OSLN beneficial in enhancing their instructional practices.

Community. All 3 teachers involved in the study felt using the OSLN for instructional purposes, particularly in terms of access to a community of other educators. Teacher A, in recalling his anxiety during curriculum launch, toted the value in essentially being able to see what others were doing with the curriculum as a positive aspect of the experience. He stated,

> I was nervous at first because I wasn't heavily into tech. It helped being able to see what the other teachers were doing in their classes. It felt like I was on track. Sometimes I would be thinking about posting a question for a discussion but before I could, somebody else had already done it. (Teacher A, interview, 2013)

He went on to state,

> When I was struggling, especially in the beginning, I would read the discussions in our group and get ideas. It helped knowing I wasn't alone. I could reach out to you and Mr. J when issues came up. There was always someone there. (interview, 2013)

Teacher B expressed similar sentiments around the value of using the OSLN and having regular access to the community online. He stated, "the single most valuable thing was the ability to read other teachers' responses to discussions" (interview, 2013). He was also the only teacher in the study who mentioned the initial face-to-face meeting held prior to implementation. This was the only time participating teachers met. Teacher B explained this initial meeting was "probably the reason I was so comfortable posting in the system. They felt like real people so I was comfortable talking with them online" (interview, 2013). He also expressed,

> I liked being able to see how the others were posting the lessons. We were all implementing the curriculum, but in our ways. I got some great ideas by discussing this with them in the forums. (interview, 2013)

Surprisingly, Teacher B revealed that a few weeks into the study, the participants were all required to attend a district wide meeting held by their school organization. Teacher B pointed out, that "we made it a point to sit down and meet again about how the curriculum was going in our classes and exchanged some cool ideas over lunch" (interview, 2013). The interviewer was not aware that this meeting had occurred and found it interesting that the teachers sought each

other out after talking online for only a few short weeks. This speaks not only to the critical aspect of the community during any learning process, but also to the importance of the considering hybrid models when designing learning experiences as suggested by researchers (Barab et al., 2004; Hur & Hara, 2007).

Teacher C was a late to the study and admittedly a lurker. She also spoke to the importance of having a community of teachers implementing the curriculum simultaneously as integral in her own implementation. She explained,

> I didn't contribute to the discussions but I knew where to go when I needed something. I could see what the others were teaching when they posted blogs. Plus, I could see what their students were doing. Between that and the resources, it was easy to figure out what was going on. (interview, 2013)

She also stated,

> I read every single resource posted though. It really did help to see what everybody else was doing since I started later. I'm not a social media person so I only jumped in when I had a question no one else had already answered. Plus I had you Ms. A an Ms. J. I knew I could send a message, ask a question and get a quick answer (interview, 2013)

Initial examination of the log data, initially led the researcher to conclude that Teacher C was relatively unengaged with the other 2 teachers, as she only read the teacher group discussions twice according to back end data (see Table 8). However, as Lave and Wenger **(**1991), posit, lurking, is indeed, a form of engagement and a critical part of the learning process. This level of engagement was actually present with all teachers initially, with the 3 teachers moving towards participation at different times as the study progressed.

Student engagement. Student engagement arose frequently during the interviews as a major benefit to housing the writing curriculum in the OSLN. Teacher A observed "creativity went through the roof" (interviews, 2013) and that "motivation was the highest he'd ever seen" (interviews 2013. When asked why he thought this was the case he replied, "kids just seemed to

love writing time once we started using the program in class. It was fun for them (interviews 213).

Teacher B's had similar stories to share about using the OSLN for instruction and how students seemed to be highly engaged throughout implementation. He stated,

> I think my students found the experience meaningful. Having the technology aspect as such a big part of the curriculum made the kids want to write for some reason. They really liked what they were doing in English class. This made it easier to teach. Getting some of these students to write before this was a struggle. (Teacher B, interview, 2013)

Teacher C also spoke to student engagement during the interview. She explained the curriculum, "seemed to grab their attention because they could visualize what they wrote in a different way" (interview, 2013). She recalled taking over the class and feeling slightly hesitant and overwhelmed about using the OSLN for instruction, pointing out that she,

> eventually caved to the pressure because of them. They wouldn't stop asking about the program. They wanted to finish some things they started. They were hyped when we finally started using it again. I had never seen anything like it. They were actually asking me when they were going to be able to write- not on paper, on the computers (Teacher C, interview, 2013)

Transparency. All teachers spoke to the theme of transparency when asked about their experiences using the OSLN for instructional purposes and viewed it is hugely beneficial. Teacher A stated, "there was something powerful about seeing their peers post. I think they got inspired" (interview, 2013). He stated,

> my class uses the system as a tool to share ideas because they can see what their classmates are thinking which leads to some great discussions. Also when they know their work is being posted their level of focus steps us. They know their peers will see their work. (Teacher A, interview, 2013)

For instruction he also stated using the OSLN allowed for "more opportunities to model good writing" (Teacher A, interviews 2013). He referred a blog he had created where he posted a sample of writing and had the students critique it for strengths and weaknesses. He pointed out,

> I had used models before but never could I have it stored anywhere where all my students could have access to it whenever they needed it. I referred back to a few models I had uploaded to the site several times during one-to-one conferences with students. (interview, 2013)

He also stated,

> Some of their writing was amazing to me. The really wanted their work to be seen. Comments were definitely important, especially the ones left by their friends. (interview, 2013)

Similarly, Teacher B expressed, "if a student posted a blog it could be seen by anyone. The same thing for the comments; everyone's viewpoint was visible" (Teacher B, interviews, 2013). When asked why he felt this was beneficial he responded, "they became more thoughtful about what they posted and shared. Having an audience of their peers definitely made a difference in my opinion" (Teacher B, interviews 2013). Teacher C also regarded transparency as beneficial. She stated,

> Even though I didn't post as much as the other teachers, I thought about the things I did post because I knew everyone would see it, not just my kids. It sort of made me more thoughtful about what I used for class. I think the same thing was true for the kids. They seemed to take their work very seriously since I wasn't going to be the only one seeing it. (Teacher C, interviews, 2013)

She recalled meeting with a student who was in the process of writing her persuasive essay who drilled her about whether the paper was "good enough to post yet" (Teacher C, interview, 2013). She explained that the student "was still in the notebook phase [which is private] but wanted it to be perfect before she posted it for everybody else" (interview, 2013).

Online professional development. Online professional development, particularly the benefits, is a theme that emerged repeatedly during teacher interviews. All 3 participating teachers mentioned these factors as beneficial throughout implementation: (a) access to resources, (b) convenience, (c) autonomy and (d) continuity.

Access to resources. Teacher participants touted the benefits of having constant access to resources needed throughout implementation. Materials including suggested pacing, writing models, short journal articles, and links to websites were all housed in the teacher professional development group. "Everything was all in one place," stated Teacher A, "that made actually using this very convenient" (interviews, 2013). "I could download whatever I needed and didn't have to spend extra time looking for it. That was a time-saver, especially when I needed to do something quick like glance at the pacing charts" (Teacher A, interview, 2013). Teacher A also observed, "even having all my student work in one place was something I grew to depend on" (interviews, 2013).

Similarly, Teacher B noted, "it was important to me to be able to pull it up from anywhere" (Teacher B, interviews, 2013). He recalled the time he went on a short vacation and wanted to respond to an ongoing group discussion about feedback. He stated, "I mean, I could even pull up the discussions while I was on vacation" (Teacher B, interview, 2013). When asked if he could recall any other instances where constant access was particularly helpful he replied, "I'm not always the most organized person so the last minute is a norm for me. If I was planning for a class, I could glance at the suggested lesson ideas and readings you had posted, modify and use them all in about 15 minutes and be ready to go" (Teacher B, interviews, 2013). Teacher C expressed similar thoughts about access. She stated, "I did read and use the documents that were posted. Some of the lesson ideas were good so I took what I needed and it didn't take long to plan" (Teacher C, interview, 2013). She also mentioned the modules and lesson ideas housed in the OSLN were "very important to me. I was a latecomer and seeing how you and the other teachers were using blogs and other parts of the curriculum probably saved me from going completely nuts" (Teacher C, interview, 2013). She specifically referred to the video examples

posted in the space by digital media experts around how to do things like how to tag lessons and embed links into her own blogs for teaching purposes. She stated, "I ended up using lots of the lessons plans and suggested resources just because it was already there. Finding materials I could was never an issue" (Teacher C, interview, 2013).

Convenience. Convenience was also mentioned several times throughout the interviews. Teachers were placed in the position as both learner and teacher throughout the study, and all mentioned convenience as a positive aspect of implementing the writing curriculum. Teacher A stated, "I could log on at home if I didn't get to it at school" (interview, 2013). He also commented, "it was important to me having the choice of when and where to log on. Once I figured out I could even log in from my phone, I was ecstatic, not that I actually used my phone for it much, but the fact that I could was pretty amazing" (Teacher A, interview, 2013). I also got used to having my students' papers right there all the time" (Teacher A, interview, 2013).

When asked about the one aspect of having professional development online, Teacher B replied, "the flexibility hands down. It was super easy to get what I needed and fast. That makes a difference when you're juggling a bunch of classes" (Teacher B, interview, 2013). He stated, "I could make this fit into my own schedule. If I didn't have time to look at it during the day I could do it in the evening or early in the morning before students got there" (Teacher B, interviews, 2013). Teacher C also mentioned flexibility as a definite benefit to having professional development online. She stated, "I could glance at the pacing charts and materials for the week when I had the time. That kind of immediate access is something I've never had" (Teacher C, interview, 2013). She went on to say, "I could get what I needed from anywhere- no lugging hundreds of papers and books around. (Teacher C, interview, 2013).

Autonomy. Autonomy over how the curriculum was implemented in their settings was also a theme that recurred throughout teacher interviews. Teacher A stated, "It was important to me that I had a choice of if and when I wanted to share my thoughts. If I just wanted you to see them, I would just message you or jot down something in the notebook. If wanted everybody else to I could do a blog post or respond to the discussion group. He elaborated on the importance of autonomy for him by explaining,

> My biggest fear when this started was that I would have to do exactly what you said. I didn't want that. I was relieved when I was encouraged to make this my own. Once I got comfortable using the system, I tweaked things, left parts out, and added things I thought were important for my students. I'm tired of being told what to do in my own class. This was not that and it was much more useful. (Teacher A, interview, 2013)

He added, " I actually looked forward to class, and gained confidence in my ability to make good decisions about what was best for my students and learned some useful tech skills along the way" (Teacher A, interview 2013). Teacher B also mentioned autonomy as plus for him during the study. He stated, "for me it was meaningful because I could take it and use it as I saw fit. There were times I was doing something different than what was suggested and it was okay. I knew as long as I was covering the skills it was totally cool to take creative license with the curriculum (Teacher B, interview, 2013). He added, "I know I tend to be a bit of a rule-breaker so "it was a relief to find out this was not directive or scripted". Teacher C expressed similar thoughts about the benefits of having some autonomy during her own implementation. She stated,

> I've been teaching for a long time. I've had plenty useless PD. This was something I could use but I didn't feel like I had to do it in a certain way. I had to modify some of the readings to fit my kids and sometimes I didn't use them at all. (interview, 2013)

She added that as a latecomer, the benefit of moving at her own pace and using what she deemed valuable was critical to her using the OSLN for curriculum delivery. She stated,

> I wasn't exactly enthusiastic about this especially since I took this class later in the semester. It felt better once I knew that I could start when I was ready and use it in a way that made sense for me and my classes. (interview, 2013)

Continuity. Two out of three teachers mentioned continuity as a huge factor in terms of professional development experiences using the OSLN. Teacher C was vocal in expressing her beliefs around the benefits ongoing professional development throughout curriculum implementation. "I felt lucky that ours was continuous not a one-shot deal" (Teacher C, interview, 2013). She stated,

> Most of the PD I've had is a meeting that's not useful. It's the same old thing. You go somewhere listen to somebody talk about something that has nothing to do with your class and you never see them again. That's how it usually goes. (Teacher C, interview 2013).

She also explained,

> My biggest fear was that this thing was going to be dropped in my lap and I was going to have to be accountable all by myself. I was relieved when I found out I would have someone in my classroom every week and I would have round-the clock access to what I needed online too. (Teacher C, interview, 2013)

When asked to elaborate between the difference between this professional development experience and others she explained, "not only was this relevant, but there was constant follow-up. Most PD I've had was neither of those" (Teacher C, interview, 2013). Teacher B expressed similar feelings when discussing his experiences with using the OSLN for professional development. When asked about his experience with online professional development for the study he stated, "conversations were centered around what I was actually doing and teaching. Other PD I've had has been boring and a flat out waste of time" (Teacher B, interview, 2013). He added,

> At first I thought this was going to be a pain since we were asked to log in and look at what was going on all the time. I actually came to depend on it. It helped me stay on top of things. (interview, 2013)

Similar to Teacher C, Teacher B recalled previous professional development experiences, nothing that they were not valuable, since they were essentially brief and disconnected from his ongoing work in the classroom. He added that in terms of his goals for his students, the ongoing access to resources and conversations to which he had access actually made his experience using the OSLN for writing pleasurable and something he actually looked forward to using on a regular basis.

Challenges to implementation. The new curriculum and expectations around implementation were not without challenges for the 3 teachers participating in the study. Although challenges were not mentioned as frequently as the positive aspects, they are worth noting here. Challenges are defined as possible barriers to implementation throughout the study. The challenges mentioned most frequently were (a) mechanism for giving feedback, (b) technology difficulties, and (c) students background knowledge in technology.

Technology difficulties. The three participating teachers all mentioned some form of technology difficulty as a barrier to implementation at times throughout the study. Teacher B mentioned the site itself being down or experiencing difficulties when students were logged in simultaneously and trying to post their work. “If all the students were trying to upload videos or podcasts it could be a nightmare” (Teacher B, interview, 2013). He also mentioned laptops not working at times and being frustrated if the machines had not been charged properly. Teacher C experienced similar challenge and recalled a few times that “the site just was not working for some reason” and she had “switch gears at the last minute” (Teacher C, interview, 2013). Teacher C also stated,

> The site was okay but it needs to be more teacher-friendly. Teachers are constantly juggling. I would suggest a faster way to access all your classes, their grades and everything else. I had to click a lot to sometimes get to my kids work. (Teacher C, interview, 2013).

Teacher A was more detailed about his challenging experiences using the system for the purposes of writing instruction, noting specific barriers he encountered. He explained,

> As a writing teacher, I would have found it more helpful if the notebook feature worked more like Microsoft Word. My students are second language learners. They need things like spell check and word suggestions. I would like to see the ability to comment to a specific part of the text instead of just at the end of it. Not having these made it a little harder for my students when they were drafting and definitely made it harder for me when I wanted to give good feedback. (Teacher A, interview, 2013)

Student background knowledge. All 3 teachers mentioned assumptions about students' skills in technology as challenging throughout the period of the study. Teacher A, during the first few weeks of implementation asked, "is there a way to work typing skills into the curriculum? My students are spending way too long trying to type their drafts. I worry that this may affect the content" (Teacher A, discussion forum, 2013). He also suggests in a later discussion, "maybe a quick manual around the steps to searching the Internet for research would help. My students don't seem to know where to go to find the right kind of information" (Teacher A, discussion forum, 2013). Teacher B also mentions these issues in his interviews. He stated, " I think next time you should think about including a unit on typing skills, even if it's only 3 or 4 weeks. I think they wasted a lot of time trying to type and fix their mistakes at the same time" (Teacher B, interview, 2013). He also observed,

> I thought they knew more about the searching the internet than they really did. I ended up doing a few lessons on how to search the internet for reliable information. I also had to show them things like bookmarking, uploading, creating and saving documents-even creating and naming a file was something they didn't know how to do. They needed all of this before I could even jump into the research unit. (Teacher B, interview, 2013)

Teacher C agreed and stated during her interview, "I think we assumed they knew this stuff, at least I did. That wasn't the case, they needed scaffolding when it came to using technology for their school work" (Teacher C, interview, 2013).

In all three cases, teachers made similar observations around preparing students for the curriculum by intentionally addressing the basic skills required to use technology for academic purposes such as word processing, research skills and the ability to find and use reliable sources online.

Answering Research Question 2

Research Question 2 was, "To what extent did teachers perceive professional development activities delivered utilizing an OSLN as impacting their instructional practices"? Teacher responses to interviews revealed that teachers valued the use of (a) notebooks, (b2) blogs, and (c) groups for instructional purposes. Answers to interview questions also provided further insight into which skills and practices from professional development were used throughout the study for the purposes of writing instruction. Triangulation of data from interviews, OSLN data and professional development topics allowed the researcher to discover themes, patters of use and draw conclusions regarding both what teachers did online, as well as their perceptions of impact.

Teachers were provided with instruction around using notebooks as a private way to engage with students around brainstorming, and engaged in writing and revising multiple drafts across genres during professional development. The researcher found that all 3 teachers used this feature to read students work. Teachers also utilized the private notebooks to engage in dialog and provide feedback around drafts and other writing ideas contained in the notebooks. The researcher noted that although all 3 teachers' self-reports indicated strong preferences for conversing with students privately around their work.

Blogs were originally introduced in professional development as a place for students to upload public work and also an additional place for teachers to give feedback and post lessons

for whole class use and place writing models for students to access. However, the researcher found that teachers found the public commenting on students' writing problematic and, instead, reserved comments for private notebooks and face-to-face writing conferences. Additionally, although all teachers posted a small number of lessons using the blog feature (see Table 7) as suggested in professional development, the researcher discovered that teachers used this feature minimally. Interviews revealed issues such as school connectivity issues, planning time, and teacher preferences as possible reasons for this.

Blogs were also stressed in professional development as ways to model exemplar writing, which teachers were engaging in by using resources already available to them such as the smartboards and, in some cases, written handouts. During interviews, two teachers cited preferences for printed copies of writing models, pointing out the need for students to highlight, write and circle important features; this level of annotation was not available through the OSLN at the time of the study. All teachers did, however, use the blog feature as a place to encourage students to publish and display students' finished writing products, and regarded this as a valuable way for both themselves and their students to see the work that was being done.

Groups were presented in professional development as a way to engage with the other teachers, digital media mentors and the researcher around questions, challenges and celebrations throughout the study. Two of the three participating teachers were active in reading and commenting on teacher discussions housed inside the professional development group space. Groups were also presented as a way to divide students around similar interests or as a way to provide extra support or enrichment for small groups. Only one teacher, Teacher A, actually utilized this feature for this purpose, using the space as a way to encourage students to collectively discuss and share ideas around movies, anime, sports, and other topics. The

researcher believes this may be the result of several variables. As teachers were taking the roles as both teacher and learner, they were, in fact, learning and teaching the curriculum as well as the various aspect of the OSLN simultaneously. This was in addition to their normal teaching loads and responsibilities, which meant features they did not perceive to be as valuable to the teaching of writing, such as forming online groups, were not utilized as much during curriculum implementation, an assessment supported by the TPACK framework (citation).

The participating teachers were instructed on how to give feedback using the OSLN using both the notebooks and blog features. Additionally, several online discussions and professional readings were dedicated to the topic of feedback as an integral part of improving students' writing. Teachers were quite comfortable with giving feedback privately using the notebooks, as this was a private way to engage in dialogue around writing, even though they all reported feeling overwhelmed at times. However, using the public blog feature was a constant area of concern and resistance, with only one teacher, Teacher A eventually engaging in the practice of public feedback using this feature (see Table 6). Ultimately the topic of feedback was an ongoing one, with teachers modifying their use of OSLN in various ways to address the challenges and frustrations encountered throughout the study.

Teacher perceptions of their professional development experiences were overall positive. Citing factors such as the benefits of a learning community, having flexibility and autonomy around concepts directly relevant to their classrooms, the 3 participating teachers each valued the online professional development experience as one that was not only beneficial, but also crucial in terms of how they actually implemented the curriculum in their own classes. This directly addresses Research Question 2, "To what extent do teachers perceive professional development activities delivered utilizing an OSLN impact their instructional practices?"

It is the belief of the researcher, that providing teachers the opportunity to connect through the OSLN and engage in sustained conversation and reflection around concepts grounded in their everyday teaching lives, contributed to their willingness to use the topics from professional development in their classrooms. Examining their online behavior, it was evident that teachers used, experimented with, and modified the topics presented in professional development. Although not without challenges, teachers valued the experience and felt the professional development greatly enhanced their experiences with using the OSLN, making it easier to incorporate its use into their own classrooms.

Chapter 5: Discussion

Revisiting the Research Problem

Various teacher reform models have permeated the educational landscape in the United States over the past 40 years, and yet continue to yield dismal results in student performance nationwide, with America continuing to fall behind other nations in terms of student achievement (Darling-Hammond, 2010). Recent reform movements such as NCLB (2002) and Common Core Standards Initiative (2010) have placed teacher professional development at the forefront of reform efforts in this country, resulting in increased demands on teachers stay abreast of issues around pedagogy and practice, all while dealing with a range of other issues such as high rates of student poverty, increased class sizes, longer school days and heavier workloads than their international counterparts (Darling-Hammond & Bransford, 2005**)**. This complex combination of issues is compounded by the fact that American teachers have less time for planning and collaboration with peers and receive less professional development than their global peers (Lieberman & Miller, 2001).

Yet, the pressure for teachers to improve student achievement remains, with teachers continually being expected to teach and learn in a rapidly changing technological environment. The ways in which teachers learn, communicate, and utilize instructional strategies not only must incorporate traditional issues such as strategy and subject-area expertise, but also must address the increasingly technological world in which both they and their students live, work and communicate.

As nationwide pressure by educational reformers and policymakers increases, the push to develop teachers' pedagogical as well as technological skills has resulted in proliferation of web-based options to addressing teacher development needs. Online learning communities and

learning management systems have resulted in thousands of online opportunities for teachers to learn and connect around issues directly impacting their own classroom practices. These, anytime, anywhere access to models of professional development, potentially serve to address the needs of teachers seeking to deepen their professional knowledge and connect with peers and education experts ubiquitously, all while strengthening their technological savvy.

However, the proliferation of these various web-based models of professional development should be addressed carefully, as simply providing teachers with technology and numerous online platforms will not necessarily address the complex needs of diverse learners. Instead professional development experiences, particularly those delivered online, must take into account the interplay of needed content knowledge and pedagogical skills, and consider how technology can be used to enhance teacher learning in a way that truly impacts the way teachers' behaviors and classroom practices. Ultimately, teacher professional development requires creating extended, teacher support systems through "meaningful pedagogical intervention" (Jenkins, 2006, p. 18), that consider issues of work and collaboration in the 21st century while expanding traditional pedagogical skills such as reading, writing and research.

Online Professional Development as a Possible Solution

Persistent research citing the lack of effectiveness of traditional, face-to-face models has lead to school districts across the country to seek alternative models of professional development, such as online modes of delivery that emphasize the role of community in engaging teachers around practice. The potential to provide, real-time support in a way that overcomes barriers such as time, school organizational schedules and lack of access to other educators represent a powerful way to connect teachers around practice, all while allowing

innovative ways to capture teachers' learning experiences in ways not possible by traditional modes.

The study conducted included various aspects of reform models of professional development touted by researchers as effective in promoting teacher knowledge and skills. Professional development experiences categorized as reform models are those that are job-embedded, extended over time, and designed to actively engage teachers in collaborative participation around issues of professional knowledge.

In analyzing teacher interview data, the researcher discovered that the extended time was perhaps one of the most critical components mentioned by teachers as contributing to their continued use of the C21 curriculum in their classrooms. Time to practice, experiment, and collaborate was valued by all 3 teachers participating in the study, as each of them mentioned it is critical in their understanding and eventual use of various technological aspects of the curriculum. As teachers were also engaged with others both virtually and face-to-face around issues of content and pedagogy, the C21 project was a demonstration of job-embedded professional development, situating activities in teachers' authentic, day-to-day contexts as they implemented the curriculum. Job-embedded professional development can come in various forms including coaching, lesson study, professional learning communities and analysis of student work, all of which teachers experienced throughout the study.

TPACK in Practice

The purpose of the research was to explore the experiences of a group of 3 ELA teachers as they participated in professional development using an online social learning network during implementation of a hybrid, writing curriculum, C21. The researcher explored the extent to which professional development delivered online impacted teacher instructional practices in the

classroom. The findings around teachers' online behaviors as well as their own perceptions about their experiences speak to what professional development practices, particularly those online, are most beneficial in shaping teachers' behaviors in their classrooms.

As the curriculum model studied was a writing curriculum at its core, the chosen professional development topics were specifically designed to enhance writing pedagogy and practice, with the thoughtful use of technology as suggested by Mishra and Koehler's TPACK Framework (2008), which posits the intersection between content, technological knowledge, and pedagogy as critical in facilitating teacher development. The OSLN used to house the curriculum, contained various features for writing, communicating and connecting with peers, students and other curriculum and digital media experts utilizing the site. Pedagogical issues related to writing instruction, therefore, were placed at the core of professional development experience. Ongoing modeling, discussion, and demonstrations of strategies around technological features of the OSLN related to writing instruction were equally important and always presented in context of ongoing classroom instruction.

The electronic notebook feature, for example, was not introduced discretely, but instead presented as another way of journal writing for the narrative writing unit at the beginning of the study. As the 3 teachers were already familiar with and had been using journal prompts, teaching this feature in connection to already established classroom practice resulted in a seamless integration and ongoing use of this feature throughout the study. Perhaps the most interesting aspect of teachers' use of this feature was the staunch defense of students' rights to privacy and choice by the 3 teachers. Each teacher indicated a strong by preference for using this space not only for student drafting, but also for engaging in dialogue about improving writing products, a critical step in the writing process. All teachers agreed that although they

would like the students to share finished work, that they absolutely not require this final step unless students were comfortable with it. In essence, the notebook became "a place for students to feel safe" (Teacher A, interview, 2013), was the primary concern, even in a social network where the transparency of work was an expectation discussed in professional development and teacher discussions.

Other features highlighted in professional development, were also thoughtfully chosen because of their potential to enhance writing instruction in various ways, but were similarly met with a certain level of objection and hesitation by teachers initially if they were uncomfortable with suggested practices. Blogs, for example, were presented as a natural part of the finished writing process and eventually used by all teachers to celebrate finished writing by making it public to a larger audience. Interestingly, all teachers during the interview process commented on this type of public display as crucial in increasing student motivation. Publication, which was already part of teachers' current writing practices, ultimately took on a new look and meaning, as students and teachers sought to have the best work seen by other users in the network. However, although teachers appeared to value the public nature of this feature, they resisted offering feedback in this space. Citing reasons such as "my students are shy" (Teacher B, interview, 2013) and "they are self-conscience about spelling and grammar" (Teacher A, interview, 2013), teachers pushed back heavily on the idea of leaving feedback publicly for all to see. One teacher, Teacher A, did begin using the practice by the end of the study, but overall feedback was reserved for the more private spaces of the notebook or one-to-one conferences in the classroom.

The researcher noted that not all features housed in the OSLN were used as heavily as the electronic notebooks and blogs. The groups features although utilized for discussion purposes by 2 out 3 teachers, was only utilized by one teacher to instruct students as presented in

professional development. The debate feature, although introduced as part of the persuasive writing unit, was minimally utilized, as were features allowing teachers to create their own documents and upload photographs and video.

Teacher interview data revealed that teachers simply did not value certain aspects of the OSLN for writing instruction as much as other features, and, hence, used them very little. Interview data also revealed other factors, such as heavy teaching schedules and decisions on how to use precious class time also played a part in what features were incorporated into instruction. Teacher A, felt for example that the debate feature "sounded like a good idea but didn't quite pan out when he tried it with his students, maybe because they never got to the point where they wanted to present their arguments in front of everyone" (interview, 2013). Teacher C pointed out that the persuasive unit, as the last portion of the writing curriculum, was taught at the end of the year, making it difficult to introduce and utilize new features, as there were several interruptions in the school calendar at that time. Additionally, all teachers had additional responsibilities as well as subject areas they were responsible for teaching outside of the C21 curriculum implementation. Teacher B, revealed he had begun attending graduate school during the study, which impacted his time to engage in feedback and sometimes participate in online discussions. Ultimately, while the OSLN was deemed valuable and was indeed, used for writing instruction, it was a small part of only one subject they were responsible for teaching. The realities of factors such as teaching loads, other professional responsibilities and even work-life balance, all affected to what extent teachers used the OSLN for professional development purposes and instruction, making the fact that it had on online component critical in its adoption and continued use.

As ELA teachers, all 3 participants ultimately used the OSLN features they deemed more valuable for the purposes of teaching writing, a stance that is supported by Mishra and Koehler's TPACK framework, indicating that the use of technological tools should not be separated from the content, and therefore, should always be situated in what is being learned or taught. Teachers use of the notebooks to dialogue with students around journaling, the writing process from drafting to publication, and even discrete skill such as note-taking and brainstorming, all parts of already established practices, were further enhanced by incorporating the OSLN into writing instruction.

Teacher Learning and Community

The OSLN used for the study provided an interesting look at the dynamics of teacher learning and practice from a community of practice perspective. Although the researcher only examined the experiences of 3 teachers, the OSLN included other users whose participation was visible at all times, including educators, digital media mentors, students, and other researchers. An integral concept of community of practice is legitimate peripheral participation, which involves a dynamic process of learners performing various roles with the intention of becoming a full member of the community **(**Lave & Wegner, 1991**)**. From a curriculum perspective, both teachers and students could constantly share work, collaborate, discuss, capture and create knowledge by using the various features of the OSLN. All teachers commented on the highly transparent nature of sharing work in the public blog space as a motivation for many students, who worked on making their work publishable in the space. Teachers themselves could easily see the work of other students and teachers, as well as discuss challenges and celebrations in the discussion space, practices that ultimately influenced their own ideas around curriculum implementation.

Teacher B, when asked about his feedback practices, commented on the fact that there were "so many others giving feedback" at times that he felt less pressured to engage in the practice, preferring to initially look at how feedback was delivered by students' peer editing partners and his own curriculum coach. Similarly, Teacher C, during her interview commented on how he began to get various ideas about using the blog space by looking a few of Teacher A's posts and posts uploaded by her digital media experts in the space. Looking at others' examples, Teacher C stated, gave her ideas on how to use blogs to garner short, student responses to questions for the purposes of getting students' opinions on a wide range of issues, as well as check for understanding of readings discussed in class.

Perhaps most interesting was the different roles, even amongst the small number of teachers who participated in the study. Teacher C was unapologetically anti-social, refusing to participate in group discussions and preferring to message the researcher or her assigned digital media mentor privately with questions. However, her lurking behavior was present throughout the study, as she downloaded several curriculum documents and used many of the ideas, terms and resources in her own classroom as evidenced by her students' notebooks and her blog entries. Although far away from full participation, Teacher C's lurking was still beneficial, as she was able to easily follow the curriculum from reading through the various documents, looking at what other teachers posted and viewing public student work as it appeared in the blog space.

Teacher B was closer to full participation, as he was extremely active in group discussions and also utilized many of the professional development resources and curriculum materials in is own classroom. Interestingly, Teacher C revealed his excitement around enhancing his technological skills during his interview, casually mentioning that he had learned

to make and edit podcasts by watching his digital media mentor in class and reading the "how-to" documents in the group space. Although he did not necessarily consider this is curriculum related, he valued being able to learn a "new 21st century skill that [I] can use for the rest of my life" (Teacher C, interview, 2013).

Teacher A was the closest to full participation of the 3 participants, actively participating in discussions, reading and sharing blogs and even commenting in the public blog space, a practice he adamantly opposed at the beginning of the study. Additionally, as Teacher A admitted being very uncomfortable with technology in the beginning, and was the most vocal in his reservations around this aspect of the curriculum, his movement towards participation over a 6-month period was the most notable. To the surprise of the researcher, Teacher A even mentioned using the OSLN to help his students create a series of digital book talks for presentation at parent night, and was especially proud of the fact that he accomplished this task without the help of his digital media mentor. Similar to Teacher B, he mentioned how "cool it was" (interview, 2013), to pick up some technology skills throughout the study, even though his bigger concern was always the writing portion of the curriculum. When asked how he learned to make videos, Teacher A revealed that he paid close attention to the his assigned digital media mentor during class visits, watched the demos housed in the OSLN and even messaged his highly skilled students a few times with questions. Teacher A's development is a fascinating demonstration of Vygotsky's Zone of Proximal Development (1978), as he clearly developed as a result of a combination of both guidance and collaboration with others. This type of constant access to others he considered experts, allowed him to move beyond his admitted fear of technology to the most active participant in the study, perhaps contributing to the fact that he continues to use the OSLN in his classes at present, 2 years after introduction.

Teacher B, when asked about his feedback practices, commented on the fact that there were "so many others giving feedback" at times that he felt less pressured to engage in the practice, preferring to look at how feedback was delivered by students' peer editing partners and his own curriculum coach. Similarly, Teacher C, during her interview commented on how he began to get various ideas about using the blog space by looking a few of Teacher A's posts and posts uploaded by her digital media experts in the space. Looking at others' example, Teacher C stated gave her ideas on how to garner short, student responses to questions for the purposes of getting students' opinions on a wide range of issues, as well as check for understanding of readings discussed in class.

The researcher would like to again point out, the hybrid nature of the community that comprised the study. Although the OSLN was an integral part of the teachers' learning experiences, physical access to the researcher and digital media mentors undoubtedly contributed to the teachers' use of the curriculum and OSLN. As suggested by researchers (Barab et al., 2004; Hur and Hara, 2007), although online communities can be beneficial, the most valuable learning experiences appear to be those that include an offline component. This important aspect was evident in teacher interview responses about their classroom practices during the study.

All teachers commented on the benefit of having a digital media mentor onsite in order to make the technical aspect easier to implement, and noted that the monthly onsite meetings with the researcher, although sometimes brief, were important in enhancing their understanding of curriculum implementation since they didn't feel like they were left alone to figure out any challenges that arose. They valued the ability to ask questions, push back when concepts didn't make sense, and being able to ask for demonstration lessons as needed. Although teachers experienced the online component of professional development more frequently, the fact that

there was a face-to-face component did impact their adoption and continued use of the curriculum into their classrooms. This suggests that although online professional development activities offer the benefit of increased opportunities for interaction over extended periods of time, simply providing teachers with tools to participate in these communities is more beneficial when these online Communities of Practice are supported by face-to-face components as suggested by research (Barab et al., 2004; Hur & Hara, 2007).

The OSLN utilized for curriculum delivery, offered an opportunity to examine the many aspects of a Community of Practice when participating in an online community. The researcher was able to examine various aspects of teachers' behavior, reaffirming the potential value of online social networks in enhancing teachers' sustained learning and professional development. Social practices that engage teachers to dialog with others around job-specific issues such as instructional issues were greatly enhanced by involvement in this online communities of practice, allowing teachers to practice at their own pace, during times best suited to individual needs and encourages interactions with a variety of experts outside of their immediate school settings.

What Data Reveals and What It Does Not

The usage of teacher data to accurately track activity was a complex process for various reasons. When considering the raw, back end data from the server, the numbers themselves failed to paint an accurate picture of teacher usage of the OSLN (see Tables 6-8). Although this data served as a starting point for analysis, gaining a more holistic view of actual teacher behaviors required digging deeply into front facing features being utilized by teacher regularly for instruction. It was only after reading through student notebooks, teacher discussions, and

blogs, and following up with interviews, was the researcher able to gain a deeper understanding of the impact of the OSLN on teachers' implementing the curriculum.

On the surface, it was not apparent that Teacher B was reading student notebooks, as the log data only reflected a small number of readings in this category **(**see Table 8**).** However, examination of his students' notebooks revealed a much different reality, as Teacher B student's were extremely active in using this feature to repeatedly revise their drafts, and even jotted down questions in preparation for individual writing conferences to follow. It was clear, that this teacher was using this feature to hold important conversations about the writing process, an assessment confirmed by his responses during the interview. Similarly, the researcher was not certain that any of the teachers were using feedback since it was not apparent in examining the initial log data gathered by the OSLN server. As designed, the OSLN was designed to capture feedback provided on blogs and other public artifacts such as photos and media. Since the teachers largely rejected the practice of giving public feedback, their comments left in the notebooks were not captured and logged by the OSLN servers. These critical conversations, could only be captured by reading through the notebooks, but were important in examining how teachers' were using them for writing instruction.

In context, the researcher's findings during the study echo the sentiments of education advocates, who caution against using only raw numbers to truly assess teacher effectiveness, instead stressing the need to consider other factors such as ongoing observations and students' demographics. As recently as 2012, New York City's Education Department, in publishing the data of approximately 18,000 teachers, was widely criticized for publishing and subsequently using value-added assessments to rank teachers and make decisions about retention and tenure **(**Otterman & Gebeloff, 2012). Although the data was criticized for being full of mistakes such as

bad sample sizes and flawed measurement tools, these scores were published and ultimately used to make decisions about teacher tenure and pay (Otterman & Gebeloff, 2012). Similar value-added measures were adopted by the city of Houston, which rewarded financial bonuses to high-ranking teachers, and Washington where thousands of teachers lost their jobs as a result of ranking systems (Santos & Gebeloff, 2012).

Interestingly, Bill Gates, previously a ferocious advocate for using these types of big data tools for evaluation purposes, cautioned against using these numbers in isolation (Goldstein, 2013). Formerly advocating for using big data to link teacher evaluation pay to evidence of student achievement, a policy later utilized by the Federal Government in the Race to the Top Grant Initiative, Gates later shifted his view to point out the need for inclusion of other factors such as teacher observations when making this critical decisions (Goldstein, 2013). The researcher's experience in looking at data to closely examine teacher behavior revealed the complexity of gaining a true sense of activity beyond a snapshot offered by examining data exclusively. Raw data, such as what was captured by the OSLN server, was certainly helpful in beginning to understand patterns of usage for the 3 participating teachers, and contributed the researcher's analysis of behaviors throughout the study. The complex of nature of teaching required a much deeper examination and, ultimately revealed the varied ways in which these 3 teachers utilized the OSLN to fit the needs of their own instructional styles, preferences and individual classroom settings. From Teacher B being the sole user of student groups, to Teacher C learning by lurking, the numbers revealed only part of each teacher's larger learning process throughout the study, which was critical in answering the research questions.

Teachers as Problem Solvers

As teachers were simultaneously placed in the role of teacher and learner, the 3 participating teachers were tasked with learning a new curriculum, the use of a new technology tool, and ensuring curriculum goals were being met simultaneously. Naturally, challenges arose during the study, ranging from teachers' preferences to pedagogical and philosophical beliefs about best practices. As previously stated, the 3 teachers, although valuing feedback as a practice, overwhelmingly rejected the idea of engaging in this process in public. The large amounts of student writing being produced throughout the project further exacerbated frustrations about how to give feedback, resulting in several modifications of the process.

All teachers, while still engaging in one-to-one conversations with students about writing, still utilized the OSLN as an integral part of getting students to revise. These revisions ranged from typing directly into students' open electronic notebooks during class to creating peer editing systems where students rotated in groups, taking turns typing into their partners' notebooks. Other modifications during the study included teachers changing the order of suggested timelines, adding their own ideas to the writing units or deleting lessons, resources, and recommended student readings. When asked about changes made, all teachers indicated that they changed and/or deleted things according to their own students' needs and valued the autonomy to do so. The idea of "making it [their] own" (Teacher A, interview, 2013), empowered them to problem solve, modify and essentially contributed to continued use of the OSLN until the end of study, with one teacher, Teacher A repeatedly requesting to use it for instruction the following summer, and continues to do so currently.

Final Thoughts

Having a community to assist during various aspects of the curriculum was critical, as teachers felt supported throughout the process. The benefit of seeing and interacting with others both online and offline solidified the feeling of being connected with others with similar goals. As one teacher put it, they knew they were not alone while experiencing the process. Content centered professional development was another critical factor in teachers' actual use of various concepts, strategies and materials during the study. Teachers overwhelmingly felt the topics were useable, relevant, and easy to integrate with their own goals for writing. This was evident in their both their students' artifacts and their own responses to interview questions. Additionally, the convenience of logging on, downloading, and reading materials contributed to teachers actually utilizing ideas from professional development in their classrooms. Teachers' need to have a voice was clearly important as indicated by study, and resulted in teachers' reports of positive experiences and perceptions of not only the professional development, but the total experience of using the OSLN for the curriculum implementation. Teachers expressed relief in having the freedom of changing the curriculum as they saw fit and did so without hesitation. Problems that arose were met with suggestions and experimentation until a workable solution was found. The solution was not the same for each teacher and should not be expected. Teachers are learners engaging in the same processes that all learners inevitably experience. From socio-cultural standpoint, this experience is one always based on the process of connecting with others, yet is one that is still highly individualized, as seen in the analysis of the 3 teachers participating in the study.

Online professional development using social networks holds great potential in helping to address the needs of teachers in the 21st century. When properly implemented, they can function

as a true learning communities situated in the everyday work that occurs in the classrooms. The possibility to engage, discuss and tackle problems of practice is a process that can be captured in new and dynamic ways when using an online social learning network, offering the potential to capture and circulate knowledge, all while overcoming many of the issues encountered by traditional models of professional development.

While helping overcome barriers such as location and time constraints, online professional development can help to reduce feelings of teacher isolation, while allowing teachers to engage in professional learning continuously. As teachers are expected to prepare their students for an increasingly global and technological world, they themselves must also be comfortable with engaging with others in ways that utilize curriculum expertise, problems-solving abilities, communication, and technology. Social networks have become an integral part of both professional and personal life and leveraging these tools can be potentially transformative in seeking ways to encourage and support teachers in sustained professional learning.

However, social networks, when implemented for professional learning should emphasize the learning of content, pedagogy and how technology can enhance instructional practices teachers are attempting to hone. Merely providing teachers with technological tools is not sufficient. As these ubiquitous models of professional development continue to emerge, consideration to hybrid models of delivery may be an effective and powerful way to connect teachers with their peers and other experts, potentially transforming the ways in which teachers connect around content in ways not possible by traditional workshop models.

REFERENCES

Alliance for Excellent Education. (2010). *High school dropouts in America.* Washington, DC: Alliance for Excellent Education. Retrieved from http://all4ed.org/reports-factsheets/high-school-dropouts-in-america-updated/

Ally, M. (2004). Foundations of educational theory for online learning. In T. Anderson & F. Elloumi (Eds.), *The theory and practice of online learning* (2nd ed., online), Athabasca, Edmonton: Athabasca University. Retrieved from http://cde.athabascau.ca/online_book/ch1.html

Archibald, S., Coggshall, J. G., Croft, A., & Goe, L. (2011). *High-quality professional development for all teachers: Effectively allocating resources.* Washington, DC: National Comprehensive Center for Teacher Quality. Retrieved from http://www.gtlcenter.org/sites/default/files/docs/HighQualityProfessional Development.pdf

Ash, K. (2011, October 24). *Education Week: Common Core accelerates interest in online PD.* Retrieved from http://www.edweek.org/ew/articles/2011/10/26/09edtech-commoncore.h31.html

Atay, D. (2008). Teacher research for professional development. *ELT Journal*, *62*(2), 139-147. doi:10.1093/elt/ccl053

Baker, R. S. J. D. (2011). Data mining for education. In P. McGraw, E. Peterson, & B. Baker (Eds.) *International Encyclopedia of Education* (3rd ed., pp. 112-118). Oxford, England: Elsevier.

Ball, D. L., & Cohen, D. K. (1999). Developing practice, developing practitioners: Toward a practice-based theory of professional education. In G. Sykes & L. Darling-Hammond (Eds.), *Teaching as the learning profession: Handbook of policy and practice* (pp. 3-32). San Francisco, CA: Jossey-Bass.

Barab, S. A., Kling, R., & Gray, J. H. (Eds.). (2004). *Designing for virtual communities in the service of learning*. Cambridge, England: Press Syndicate of the University of Cambridge.

Barab, S. A., MaKinster, J. G., Moore, J. A., & Cunningham, D. J. (2001). Designing and building an on-line community: The struggle to support sociability in the inquiry learning forum. *Educational Technology Research and Development*, *49*(4), 71-96. doi:10.1007/BF02504948

Berg, B. L. (2004). *Qualitative research methods for the social sciences* (Vol. 5). Boston, MA: Pearson.

Berman, P., & McLaughlin, M. (1977). *Federal programs supporting educational change: Factors affecting implementation and continuation* (Vol. 7). Santa Monica, CA: Rand.

Birman, B. F., Desimone, L., Porter, A. C., & Garet, M. S. (2000). Designing professional development that works. *Educational leadership*, *57*(8), 28-33. Retrieved from http://www.ascd.org/ASCD/pdf/journals/ed_lead/el200005_birman.pdf

Blank, R. K., de las Alas, N., & Smith, C. (2007). *Analysis of the quality of professional development programs for mathematics and science teachers*. Washington, DC: Council of Chief State School Officers.

Borko, H. (2004). Professional development and teacher learning: Mapping the terrain. *Educational Researcher, 33*(8), 3-15. doi:10.3102/0013189X033008003

Borko, H., & Putnam, R. T. (1995). Expanding a teacher's knowledge base: A cognitive psychological perspective on professional development. In T. R. Guskey & M. Huberman (Eds), *Professional development in education: New paradigms and practices* (pp. 35-36). New York, NY: Teachers College Press.

Boyd, D. (2010). Social network sites as networked publics: Affordances, dynamics, and implications." In Z. Papacharissi (Ed.), *Networked self: Identity, community and culture on social network sites* (pp. 39-58). New York, NY: Routledge.

Boyd, D., & Ellison, N. (2007). Social network sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication*, *13*(1), article 11.

Brown, A., & Green, T. (2003). Showing up to class in pajamas (or less!): The fantasies and realities of on-line professional development courses for teachers. *Clearing House, 76*(3), 148-151. doi:10.1080/00098650309601992

Bruner, J. E. (1990). *Acts of meaning*. Cambridge, MA: Harvard University Press.

Bunker, V. (2008). *Professional Learning Communities, teacher collaboration, and student achievement in an era of standards-based reform* Retrieved from: http://proquest.umi.com/pqdweb?did=1495951541

Campbell, A., McNamara, O., & Gilroy, P. (2004). *Practitioner research and professional development in education.* London, England: Paul Chapman.

Carpenter, T. P., Fennema, E., Franke, M. L., Levi, L., & Empson, S. B. (2000). Cognitively guided instruction: A research-based teacher professional development program for elementary school mathematics. *National Center for Improving Student Learning and Achievement in Mathematics and Science, Report,* 003. Retrieved from http://ncisla.wceruw.org/publications/reports/RR00-3.PDF

Chickering, A. W., Gamson, Z. F., & Poulsen, S. J. (1987). Seven principles for good practice in undergraduate education. *AAHE Bulletin, (March),* 3-7. Retrieved from https://www.flinders.edu.au/Teaching_and_Learning_Files/Documents/7%20Principles%20of%20Good%20Practice%20in%20Undergrad%20Ed-ChickeringGamson.pdf

Choy, S. P., Chen, X., & Bugarin, R. (2006). *Teacher professional development in 1999-2000: What teachers, principals, and district staff report.* Statistical Analysis Report. NCES 2006-305. Washington, DC: National Center for Education Statistics. Retrieved from http://nces.ed.gov/pubs2006/2006305.pdf

Cohen, D. K., & Hill, H. (2001). *Learning policy: When state education reform works*. New Haven, CT: Yale University Press.

Collins, A. M. (2008, January). Rethinking education in the age of technology. In B. P. Woolf, E. Aimeur, R. Nkambou, & S. Lajoie's *Intelligent Tutoring Systems* (pp. 1-2). Montreal, Canada: Springer Berlin Heidelberg.

Common Core State Standards Initiative. (2010). *Common Core State Standards for English language arts & literacy in history/social studies, science, and technical subjects.* Retrieved from http://www.corestandards.org/assets/CCSSI_ELA%20Standards.pdf

comScore, Inc. (2010, February 9). c*omScore Releases "The 2009 U.S. Digital Year in Review."* Retrieved from http://www.comscore.com/Insights/Press-Releases/2010/2/comScore-Releases-2009-U.S.-Digital-Year-in-Review

Conway, C. M., Hibbard, S., Albert, D., & Hourigan, R. (2005). Professional development for arts teachers. *Arts Education Policy Review*, *107*(1), 3-10. doi:10.3200/AEPR.107.1.3-10

Creswell, J. W. (2008). *Research design: Qualitative, quantitative, and mixed methods approaches.* Thousand Oaks, CA: Sage.

Croft, A., Coggshall, J. G., Dolan, M., & Powers, E. (2010). *Job-embedded professional development: What it is, who's responsible, and how to get it done well.* Washington, DC: National Comprehensive Center for Teacher Quality. Retrieved from http://www.tqsource.org/publications/JEPD%20Issue%20Brief.pdf

Cullen, R. (1998). Teacher talk and the classroom context. *ELT Journal*, *52*(3), 179-187. doi:10.1093/elt/52.3.179

Curry, M., & Killion, J. (2009). Slicing the layers of learning. *Journal of Staff Development, 30*(1), 56-62. Retrieved from http://www.learningforward.org/publications/jsd#.UD1ePaNox8E

Darling-Hammond, L. (1997). *Doing what matters most: Investing in quality teaching.* New York: National Commission on Teaching and America's Future. Retrieved from http://files.eric.ed.gov/fulltext/ED415183.pdf

Darling-Hammond, L. (2006). Constructing 21st-century teacher education. *Journal of Teacher Education*, *57*, 300-314. doi:10.1177/0022487105285962

Darling-Hammond, L. (2006). *Powerful teacher education: Lessons from exemplary programs.* San Francisco, CA: Jossey-Bass.

Darling-Hammond, L. (2010). *The flat world and education: How America's commitment to equity will determine our future.* New York, NY: Teacher's College Press.

Darling-Hammond, L., & Bransford, J. (2005). *Preparing teachers for a changing world: What teachers should learn and be able to do*. San Francisco, CA: Jossey-Bass.

Darling-Hammond, L., French, J., & Garcia-Lopez, G. P. (2002). *Learning to teach for social justice.* New York, NY: Teachers College Press.

Darling-Hammond, L., & McLaughlin, M. W. (1995). Policies that support professional development in an era of reform. *Phi Delta Kappan, 76*(8), 597–604. doi:10.1177/003172171109200622

Darling-Hammond, L., Wei, R. C., Andree, A., Richardson, N., & Orphanos, S. (2009). *Professional learning in the learning profession: A status report on teacher development in the U.S. and abroad.* Washington, DC: National Staff Development Council. Retrieved from https://edpolicy.stanford.edu/publications/pubs/187

Davis, M. (2010, June 13). *Education week: Social networking goes to school.* Retrieved from http://www.edweek.org/dd/articles/2010/06/16/03networking.h03.html/&cmp=clp-sb-ascd

Dede, C. (2006). *Online professional development for teachers–Emerging models*. Cambridge, MA: Harvard Education Press.

Dede, C., Ketelhut, D. J., Whitehouse, P., Breit, L., & McCloskey, E. M. (2009). A research agenda for online teacher professional development. *Journal of Teacher Education*, *60*(1), 8-19. doi:10.1177/0022487108327554

Denzin, N. K., & Lincoln, Y. S. (2000). The discipline and practice of qualitative research. *Handbook of qualitative research*. Retrieved from http://www.sagepub.com/upm-data/40425_Chapter1.pdf

Desimone, L. M., Porter, A. C., Garet, M. S., Yoon, K., & Birman, B. F. (2002). Effects of professional development on teachers' instruction: Results from a three-year longitudinal study. *Educational Analysis and Policy Evaluation, 24(2)*, 81-112. doi:10.3102/01623737024002081

Dewey, J. (1938/1997). *Experience and education*. Indianapolis, IN: Kappa Delta.

Diaz-Maggioli, G. (2004). *Teacher-centered professional development*. Alexandria, VA: ASCD.

DuFour, R. (2004). What is a "professional learning community?"*Educational Leadership*, *61*(8). Retrieved from http://www.ascd.org/publications/educational-leadership/may04/vol61/num08/What-Is-a-Professional-Learning-Community%C2%A2.aspx

Eberhardt, D. M. (2007). Facing up to Facebook. *About Campus, 12*(4), 18-26. doi: 10.1002/abc.219

Elmore, R. F. (2002). *Bridging the gap between standards and achievement: The imperative for professional development in education.* Paper for the Albert Shanker Institute. Retrieved from http://www.shankerinstitute.org/resource/bridging-gap-between-standards-and-achievement

Fahey, L., & Prusak, L. (1998). The eleven deadliest sins of knowledge management. *California Management Review*, *40*(3), 265. doi:0.2307/41165954

Fernandez, C. (2002). Learning from Japanese approaches to professional development. *Journal of Teacher Education, 53*(5), 393-405. doi:10.1177/002248702237394

Fisher, C. (2012, March 24). *Social networking transforms professional development*. Paper presented at the ASCD Annual Conference. Philadelphia, PA: ASCD. Retrieved from http://www.ascd.org/conferences/conference-daily/ac12/social-media.aspx

Fosnot, C. T. (2005). *Constructivism: Theory, perspectives, and practice* (2nd ed). New York, NY: Teachers College Press.

Fosnot, C. T., & Perry, R. S. (1996). Constructivism: A psychological theory of learning. *Constructivism: Theory, Perspectives, and Practice*, 8-33. Retrieved from http://www.randallsperry.com/fosnotandperry.pdf

Fullan, M., & Hargreaves, A. (1996). *What's worth fighting for in schools?* New York, NY: Teachers Press.

Fullan, M., & Hargreaves, A. (Eds). (1992). *Teacher development and educational change.* London, England: Falmer.

Futernick, K. (2007). *A possible dream: Retaining California teachers so all students learn.* Sacramento, CA: California State University.

Garet, M. S., Cronen, S., Eaton, M., Kurki, A., Ludwig, M., Jones, W., ... Sjtejnbert, L. (2008). *The impact of two professional development interventions on early reading instruction and achievement*. National Center for Education Evaluation and Regional Assistance. Retrieved from http://eric.ed.gov/?id=ED502700

Garet, M. S., Birman, B. F., Porter, A. C., Desimone, L., & Herman, R. (1999). *Designing effective professional development: Lessons from the Eisenhower Program [and] technical appendices.* Retrieved from http://eric.ed.gov/?id=ED442634

Garet, M. S., Porter, A. C., Desimone, A. C., Binnan, 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.

Garrison, D. R., Anderson, T., & Archer, W. (2001). Critical thinking, cognitive presence, and computer conferencing in distance education. *American Journal of Distance Education*, *15*(1), 7-23. doi:10.1080/08923640109527071

Garrison, R., & Cleveland-Innes, M. (2005). Facilitating cognitive presence in online learning: Interaction is not enough. *American Journal of Distance Education, 19*(3), 133-148. doi:10.1207/s15389286ajde1903_2

Ginsburg, A., Gray, T., & Levin, D. *Online professional development for mathematics teachers: A strategic analysis.* Washington, DC: National Center for Technology Innovation, American Institutes for Research. Retrieved from http://files.eric.ed.gov/fulltext/ED492927.pdf

Goldstein, D. (2013, January 31). Can big data save American schools? Bill Gates is Betting on Yes —. *The Atlantic.* Retrieved from http://www.theatlantic.com/business/archive/2013/01/can-big-data-save-american-schools-bill-gates-is-betting-on-yes/272719/

Grant, P. A., Young, E. E., & Montbriand, C. (2001). *Professional development for teachers of reading*. Naperville, IL: North Central Regional Educational Laboratory. Retrieved from http://www.gpo.gov/fdsys/pkg/ERIC-ED464074/pdf/ERIC-ED464074.pdf

Grierson, A. L., & Gallagher, T. L. (2009). Seeing is believing: Creating a catalyst for teacher change through a demonstration classroom professional development initiative. *Professional Development in Education*, *35*(4), 567-584. doi: 10.1080/19415250902930726

Guskey, T. R. (1997). Research needs to link professional development and student learning. *Journal of Staff Development, 18*(2), 36–40. Retrieved from http://www.nsdc.org/library/isd/isdgusk.html.

Guskey, T. R. (2009). Closing the knowledge gap on effective professional development. *Educational Horizons, 87*(4), 224-233. Retrieved from http://files.eric.ed.gov/fulltext/EJ849021.pdf

Guskey, T. R., & Huberman, M. (Eds.). (1995). *Professional development in education: New paradigms and practices.* New York, NY: Teacher College Press.

Guskey, T. R., & Yoon, K. S. (2009). What works in professional development*? Phi Delta Kappan*, *90*(7), 495-500. doi:10.1177/003172170909000709

Hall, G., & Hord, S. (2006). *Implementing change.* Boston, MA: Pearson.

Harris, J., Mishra, P., & Koehler, M. (2009). Teachers' technological pedagogical content knowledge and learning activity types: Curriculum-based technology integration reframed. *Journal of Research on Technology in Education*, *41*(4), 393-416. doi: 10.1080/15391523.2009.10782536

Harwell, S. H. (2003). *Teacher professional development: It's not an event, it's a process.* Waco, TX: Council for Occupational Research and Development (CORD). Retrieved from http://www.cord.org/teacher-professional-development/

Hesse-Biber, S. N., & Leavy, P. (2006). *The practice of qualitative research*. Thousand Oaks, CA: Sage.

Hill, D., Stumbo, C., Paliokas, K., Hansen, D., & McWalters, P. (2010). State policy implications of the model core teaching standards. *Council of Chief State School Officers, Washington, DC*. Retrieved from http://www.ccsso.org/Resources/Publications/ State_Policy_Implications_Model_Core_Teaching.html

Hill, H. C. (2009). Fixing teacher professional development. *Phi Delta Kappan*, *90*(7), 470-476. doi:10.1177/003172170909000705

Hill, H. C., & Ball, D. L. (2004). Learning mathematics for teaching: Results from California's mathematics professional development institutes. *Journal for Research in Mathematics Education*, 330-351. Retrieved from http://sitemaker.umich.edu/lmt/files/hillball.pdf

Hiltz, S. R., Coppola, N., Rotter, N., Turoff, M., & Benbunan-Fich, R. (2000). Measuring the importance of collaborative learning for the effectiveness of ALN: A multi-measure, multi-method approach. *Journal of Asynchronous Learning Networks*, *4*(2), 103-125. doi:10.1.1.105.4825

Hiltz, S. R., & Goldman, R. (2005). *Learning together online: Research on asynchronous learning networks*. London, England: Routledge.

Hirsch, S. (2005). Professional development and closing the achievement gap. *Theory Into Practice, 44*(1), 38-44. doi:10.1207/s15430421tip4401_6

Hirumi, A. (2002). A framework for analyzing, designing, and sequencing planned elearning interactions. *Quarterly Review of Distance Education*, *3*(2), 141-160. Retrieved from http://bama.ua.edu/~abenson/ail604/hirumiQRDE.pdf

Hooper, S., & Rieber, L. P. (1995). Teaching with technology. *Teaching: Theory into practice*, 157-170. Needham Heights, MA: Allyn and Bacon.

Holmberg, B. (1983). Guided didactic conversation in distance education. *Distance education: International perspectives.* London, England: Croom Helm.

Hord, S. (1998). *Creating professional community: Cottonwood Creek School.* Washington, DC: Office of Education Research and Improvement. Retrieved from http://www.sedl.org/change/issues/issues62/

Hrastinski, S. (2008). A study of asynchronous and synchronous e-learning methods discovered that each supports different purposes. *EduCase Quarterly, 31*(4). Retrieved from http://www.educause.edu/ero/article/asynchronous-and-synchronous-e-learning

Hur, J. W., & Hara, N. (2007). Factors cultivating sustainable online communities for K- 12 teacher professional development. *Journal of Educational Computing Research, 36*(3), 245-268. doi:10.2190/37H8-7GU7-5704-K470

INACOL. (2008). *Fast facts about online learning*. Retrieved from http://www.inacol.org/press/docs/nacol_

Jenkins, H. (2006). *Convergence culture: Where old and new media collide*. New York, NY: New York University Press.

Jonassen, H. D. (2006). *Modeling with technology: Mind tools for conceptual change*. Columbus, OH: Pearson Prentice Hall.

Joyce, B. R., & Showers, B. (2002). *Student achievement through staff development*. Alexandria, VA: ASCD.

Kane, T. J., Rockoff, J. E., & Staiger, D. O. (2008). What does certification tell us about teacher effectiveness? Evidence from New York City. *Economics of Education Review*, *27*(6), 615-631. Retrieved from https://www0.gsb.columbia.edu/faculty/jrockoff/certification-final.pdf

Kedzior, M., & Fifield, S. (2004). Teacher professional development. *Education Policy Brief*, *15*(21), 76-97. Retrieved from http://biohealth.deanza.edu/dare/resources/professional%20development.pdf

Kennedy, M. M. (1998). Education reform and subject matter knowledge. *Journal of Research in Science Teaching*, *35*(3), 249-263. doi:10.1002/(SICI)1098-2736(199803)35:3<249::AID-TEA2>3.0.CO;2-R

Killion, J. (1999). *What works in the middle: Results-based staff development.* Oxford, OH: National Staff Development Council. Retrieved from http://files.eric.ed.gov/fulltext/ED430939.pdf

Killion, J., & Roy, P. (2009). *Becoming a learning school.* Oxford, OH: National Staff Development Council.

Kleinman, G. (2004). *Meeting the need for high-quality teachers: E-learning solutions*. Education Development Center. Paper presented at U.S. Department of Education Secretary's No Child Left Behind Leadership Summit, Newton, MA. Retrieved from http://www.edtechleaders.org/learn-more/our-research/meeting-need-high-quality-teachers-e-learning-solutions

Klingner, J. K., Ahwee, S., Pilonieta, P., & Menendez, R. (2003). Barriers and facilitators in scaling up research-based practices. *Exceptional Children*, 69, 411–429. doi:10.1177/001440290306900402

Knoke, D., & Yang, S. (2008). *Social network analysis*. Thousand Oaks, CA: Sage.

Koehler, M., & Mishra, P. (2008). What is technological pedagogical content knowledge (TPACK)? *Contemporary Issues in Technology and Teacher Education*, *9*(1), 60-70. Retrieved http://www.citejournal.org/articles/v9i1general1.pdf

Kvale, S. (1996). *Interviews: An introduction to qualitative interviewing*. London, England: Sage.

Laferriere, T., Lamon, M., & Chan, C. K. (2006). Emerging e-trends and models in teacher education and professional development. *Teaching Education, 17*(1), 75- 90. doi:10.1080/10476210500528087

Lave, J., & Wenger, E. (1991*). Situated learning: Legitimate peripheral participation*. Cambridge, England: Cambridge University Press.

Lenhart, A. (2009). *Adults and social network websites.* Washington, DC: Pew Internet & American Life Project. Retrieved from http://www.pewinternet.org/Reports/2009/Adults-and-Social-Network- Websites/2-Main-Findings/3-Personal-use-of-social-networks-is-more-prevalent- than-professional-use.aspx?r=1

Lewis, C., Perry, R., & Hurd, J. (2004). A deeper look at lesson study. *Educational Leadership, 61*(5), 18-22. Retrieved from http://www.ascd.org/publications/educational-leadership/feb04/vol61/num05/A-Deeper-Look-at-Lesson-Study.aspx

Lieberman, A. (1996). Creating Intentional Learning Communities. *Educational Leadership*, *54*(3), 51-55. Retrieved from http://www.ascd.org/publications/educational-leadership/nov96/vol54/num03/Creating-Intentional-Learning-Communities.aspx

Lieberman, A., & Miller, L. (Eds.). (2001). *Teachers caught in the action: Professional development that matters.* New York, NY: Teachers College Press.

Lieberman, A., & Miller, L. (2004). *Teacher leadership*. San Francisco, CA: Wiley & Sons.

Lieberman, A., & Pointer-Mace, D. (2008). Teacher learning: The key to education reform. *Journal of Teacher Education, 59*(3), 226-234. doi:10.1177/0022487108317020

Lieberman, A., & Pointer-Mace, D. H. (2009). The role of 'accomplished teachers' in professional learning communities: Uncovering practice and enabling leadership. *Teachers and Teaching: Theory and Practice*, *15*(4), 459-470. doi:10.1080/13540600903057237

Lieberman, A., & Pointer-Mace, D. P. (2010). Making practice public: Teacher learning in the 21st century. *Journal of Teacher Education*, *61*(1-2), 77-88. doi: 10.1177/0022487109347319

Little, J. W. (1993). Teachers' professional development in a climate of educational reform. *Educational evaluation and policy analysis*, *15*(2), 129-151. doi:10.3102/01623737015002129

Louis, K., & Marks, H. (1998). Does professional community affect the classroom? Teachers' work and teachers experiences in restructuring schools. *American Journal of Education, 106*(4), pp. 532-575. doi:10.1086/444197

Loucks-Horsley, S., Hewson, P., Love, N., & Stiles, K. (1997). *Designing professional Development for teachers of mathematics and science.* Thousand Oaks, CA: Corwin Press.

Mack, N., Woodsong, C., MacQueen, K. M., Guest, G., & Namey, E. (2005). Module 2– Participant Observation. *Qualitative Research Methods: A Data Collector's Field Guide*. Seattle, WA: Bill & Melinda Gates Foundation. Retrieved from https://assessment.trinity.duke.edu/documents/ParticipantObservationFieldGuide.pdf

Mack, N., Woodsong, C., MacQueen, K. M., Guest, G., & Namey, E. (2005*). Qualitative research methods: A data collector's field guide.* Research Triangle Park, NC: USAID, Family Health International. Retrieved from http://www.fhi360.org/sites/default/files/media/documents/Qualitative%20Research%20Methods%20-%20A%20Data%20Collector's%20Field%20Guide.pdf

Madden, M., & Zickuhr, K. (2011). *Sixty-five percent of online adults use social networking sites.* Washington, DC: Pew Internet & American Life Project. Retrieved from http://www.pewinternet.org/~/media//Files/Reports/2011/PIP-SNS- Update-2011.pdf.

Marshall, C. R., & Rossman, G. B. (2006). *Designing qualitative research.* Thousand Oaks, CA: Sage.

Martin, C. (2012). *Online social learning networks.* Internal Report prepared for the Gates Foundation. Seattle, WA: Gates Foundation.

Martin, C., Marchitello, M., & Lazarin, M. (2014). *Roadmap for a successful transition to the common core in states and districts - Education Writers Association*. Retrieved from http://www.ewa.org/report/roadmap-successful-transition-common-core-states-and-districts

Marzano, R. (2000). *A new era of school reform: Going where the research takes us*. Denver, CO: McREL. Retrieved from http://www.peecworks.org/peec/peec_research/I01795EFA.1/Marzano%20NewEraSchoolReform.pdf

Marzano, R. (2003). *What works in schools: Translating research into action.* Alexandria, VA: Association of Staff Development Council.

McLaughlin, M. W., & Talbert, J. E. (1993). *Contexts that matter for teaching and learning: Strategic opportunities for meeting the nation's educational goals*. Palo Alto, CA: Center for Research on the Context of Secondary School Teaching. Retrieved from http://www.eric.ed.gov/PDFS/ED357023.pdf

Merante, A. J. (2009*) The digital frontier: The implications of evolving and technology on strategic enrollment and managem*ent. Retrieved from http://www.blackboard.com/resources/Connect/HED_Trends_EnrollmentManagement.pdf.

Merriam, S. B. (1998). *Qualitative research and case study applications in education. Revised and expanded from" Case Study Research in Education."* San Francisco, CA: Jossey-Bass.

Mishra, P., & Koehler, M. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *The Teachers' College Record*, *108*(6), 1017-1054. doi:10.1111/j.1467-9620.2006.00684.x

Mishra, P., & Koehler, M. J. (2008). *Introducing technological pedagogical content knowledge*. Paper presented at the Annual Meeting of the American Educational Research Association, New York, NY (pp. 1-16). Retrieved from http://punya.educ.msu.edu/presentations/AERA2008/MishraKoehler_AERA2008.pdf

MMS Education. (2012). *2012 survey of K-12 educators on social networking online communities, and web 2.0 tools*. Retrieved from http://www.edweb.net/fimages/op/reports/ Educators-and-Social-Media-2012-web.pdf

Moore, M. G. (1989). *Editorial: Three types of interaction.* Retrieved from http://aris.teluq.uquebec.ca/portals/598/t3_moore1989.pdf

Nacu, D. (2012) (in preparation). *Metrics that matter: Building frameworks and tools for social learning networks.* Internal Report prepared for the Gates Foundation. Seattle, WA: Gates Foundation.

National Commission on Teaching and America's Future. (1997). *What matters most: Teaching for America's future.* Retrieved from http://nctaf.org/wp-content/uploads/WhatMattersMost.pdf

National Institute for Excellence in Teaching. (2012). *How to ensure that good professional development gets results » NIET.* Retrieved from http://www.niet.org/newsroom/press-releases/view/129

National Mathematics Advisory Panel (NMAP). (2008). *Foundations for success: The final report of the National Mathematics Advisory Panel*. Washington, DC: U.S. Department of Education. Retrieved from https://www2.ed.gov/about/bdscomm/list/mathpanel/report/final-report.pdf

National Reading Panel, National Institutes of Health (NIH). (2000). *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction*. Betheseda, MD: National Institute of Child Health and Human Development, National Institutes of Health. Retrieved from http://www.nichd.nih.gov/publications/pubs/nrp/documents/report.pdf

National Staff Development Council. (2001). *National Staff Development Council's standards for staff development* (Revised Ed.). Oxford, OH: National Staff Development Council.

National Writing Project. (2012). *Report of scoring and results for the digital youth network student writing.* Berkeley, CA: National Writing Project.

Newmann, F. M. (1996). *Authentic achievement: Restructuring schools for intellectual quality.* San Fransisco, CA: Jossey-Bass.

No Child Left Behind Act (NCLB) Act of 2001, 20 U.S.C.A. § 6301 (2002).

Northrup, P. T., & Rasmussen, K. L. (2002). A framework for online professional development. In *Presentation at the International Conference Ed-Media*. Association for the Advancement of Computing in Education (AACE). Retrieved from http://www.editlib.org/p/9971

Office of Educational Technology, U.S. Department of Education. (2010). *Transforming American education: Powered by technology*. Retrieved from www.ed.gov/sites/default/files/NETP-2010-final-report.pdf

Otterman, S., & Gebeloff, R. (2012, February 25). In teacher ratings, good test scores are sometimes not good enough. *New York Times.* Retrieved from http://www.nytimes.com/2012/02/25/education/teacher-quality-widely-diffused-nyc-ratings-indicate.html

Parise, L. M., & Spillane, J. P. (2010). Teacher learning and instructional change: How formal and on-the-job learning opportunities predict change in elementary school teachers' practice. *The Elementary School Journal*, *110*(3), 323-346. doi:10.1086/648981

Parsad, B., Lewis, L., Farris, E., & Greene, B. (2001). Teacher preparation and professional development. Washington, DC: *National Center for Education Statistics (ED)*.

Perry, R., Lewis, C., & Akiba, M. (2002). Lesson study in the San Mateo-Foster City school district. *Annual Meeting of American Educational Research Association.* New Orleans, LA. Retrieved from http://www.lessonresearch.net/AERAfinal.pdf

Picciano, A. G. (2002). Beyond student perceptions: Issues of interaction, presence, and performance in an online course. *Journal of Asynchronous Learning Networks*, *6*(1), 21-40. Retrieved from http://www.anitacrawley.net/Articles/Picciano2002.pdf

Pomson, A. D. M. (2005). One classroom at a time? Teacher isolation and community viewed through the prism of the particular. *Teachers' College Record, 107*(4), 783 – 802. Retrieved from http://www.tcrecord.org/library

Porter, A. C., Garet, M. S., Desimone, L., Yoon, K. S., & Birman, B. F. (2000). *Does professional development change teaching practice? Results from a three-year study.* Retrieved from http://files.eric.ed.gov/fulltext/ED455227.pdf

Reeves, D. (2006, May). Of hubs, bridges, and networks. *Educational Leadership, 63(8), 32-37.* Retrieved from http://www.ascd.org/publications/educational-leadership/may06/vol63/num08/Of-Hubs,-Bridges,-and-Networks.aspx

Richardson, J. (2003, February). The secrets of "can-do" schools: Louisiana team uncovers traits of high poverty, high performing schools. *Results*. Retrieved from www.nsdc.org/library/publications/results.

Rhoton, J., & Stiles, K. E. (2002). Exploring the professional development design process: Bringing an abstract framework into practice. *Science Educator*, *11*(1), 1-8. doi:10.1023/A:1013048828150

Russell, D. L., & Schneiderheinze, A. (2005). Understanding innovation in education using activity theory. *Educational Technology & Society, 8*(1), 38-53. Retrieved from http://www.ifets.info/others/download_pdf.php?j_id=26&a_id=520

Saldaña, J. (2012). *The coding manual for qualitative researchers*. Thousand Oaks, CA: Sage.

Samsonov, P., & Beard, M. (2003). Training trainers to teach online: Experience of a professional development course in educational technology. *Proceedings of EdMedia*: *World Conference on Educational Multimedia, Hypermedia and Telecommunications, 2003*(1), 1760-1763. Association for the Advancement of Computing in Education. Retrieved from http://www.editlib.org/p/14086

Sanders, W. L., & Rivers, J. C. (1996). *Cumulative and residual effects of teachers on future student academic achievement.* Knoxville, TN: University of Tennessee.

Santos, F., & Gebeloff, R. (2012, February 24). Teacher quality widely diffused, ratings indicate. Retrieved from http://www.nytimes.com/2012/02/25/education/teacher-quality-widely-diffused-nyc-ratings-indicate.html

Saxe, G., Gearhart, M., & Nasir, N. S. (2001). Enhancing students' understanding of mathematics: A study of three contrasting approaches to professional support. *Journal of Mathematics Teacher Education, 4*, 55–79. doi:10.1023/A:1009935100676

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*(3), 203–220. doi:10.1080/01972240309464

Schlager, M., & Fusco, J. (2004). Teacher professional development, technology, and communities of practice: Are we putting the cart before the horse? In S. Barab, R. Kling, and J. Gray (Eds*.) Designing for virtual communities in the service of learning* (pp. 120-153). Cambridge, MA: Cambridge University Press. doi:10.1017/CBO9780511805080.009

Shanklin, N. (2009). Being proactive about your professional learning: What's the payoff? *Voices from the Middle*, *16*(4), 45-47. Retrieved from http://www.ncte.org/library/NCTEFiles/Resources/Journals/VM/0164-may09/VM0164Puzzles.pdf

Shirky, C. (2008). *Here comes everybody: The power of organizing without organizations*. New York, NY: Penguin Press.

Showers, B., & Joyce, B. (1996). The evolution of peer coaching. *Educational leadership*, *53*, 12-16. Retrieved from http://www.ascd.org/publications/educational-leadership/mar96/vol53/num06/The-Evolution-of-Peer-Coaching.aspx

Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher*, *15*(2), 4-14. doi:10.3102/0013189X015002004

Shulman, L. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review,* 57, 1-22. Retrieved from http://people.ucsc.edu/~ktellez/shulman.pdf

Shapiro, S. K., & Laine, S. W. M. (2005). *Adding the critical voice: A dialogue with practicing teachers on teacher recruitment and retention in hard-to-staff schools.* Naperville, IL: Learning Point Associates.

Silverman, D. (2000). *Doing qualitative research: A practical handbook.* Thousand Oaks, CA: Sage.

Soo, K. S., & Bonk, C. J. (1998). Interaction: What does it mean in online distance education? Retrieved from http://files.eric.ed.gov/fulltext/ED428724.pdf

Sparks, D. (1994). A paradigm shift in staff development. J*ournal of Staff Development, 15*(4). Retrieved from http://www.nsdc.org/library/publications/jsd/sparks154.cfm

Spencer, S. S., & Logan, K. R. (2003). Bridging the gap: A school based staff development model that bridges the gap from research to practice. *Teacher Education and Special Education: The Journal of the Teacher Education Division of the Council for Exceptional Children*, *26*(1), 51-62. doi:10.1177/088840640302600106

Spiegel-Stroud, C. (2007). *Characteristics of professional learning communities in two Maryland elementary schools and the process they undergo in an effort to improve student learning.* Retrieved from http://proquest.umi.com/pqdweb?did=1268620141

Stepanek, J., Appel, G., Leong, M., Mangan, M., & Mitchell, M. *Leading lesson Study: A practical guide for teachers and facilitators.* Thousand Oaks, CA: Corwin.

Supovitz, J. A. (2001). Translating teaching practice into improved student achievement. *National Society For The Study Of Education Yearbook.* Chicago, IL: University of Chicago Press.

Supovitz, J. A., Mayer, D. P., & Kahle, J. B. (2000). Promoting inquiry-based instructional practice: The longitudinal impact of professional development in the context of systemic reform. *Educational Policy*, *14*(3), 331-356. doi:10.1177/0895904800014003001

U.S. Department of Education. (2010). *A blueprint for reform: The reauthorization of the elementary and secondary education act*. Washington, DC: U.S. Department of

Education, Office of Planning, Evaluation and Policy Development. Retrieved from https://www2.ed.gov/policy/elsec/leg/blueprint/blueprint.pdf

U.S. Department of Education, Office of Educational Technology (2010). *Transforming American education: Learning powered by technology*. Washington, DC: U.S. Dept. of Education, Office of Educational Technology. Retrieved from http://www2.ed.gov/about/offices/list/os/technology/netp-executive-summary.pdf

U.S. Department of Education, National Center for Education Statistics. (2011). *The Condition of Education 2011* (NCES 2012-034). Washington, DC: US. Retrieved from http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2011033

Van Harmelen, M. (2008). Design trajectories: Four experiments in PLE implementation. *Interactive Learning Environments, 16*(1), 35-46. doi:10.1080/10494820701772686.

Vygotsky, L. (1978). *Mind in society.* Cambridge, MA: Harvard University Press.

Wagner, E. D. (1994). In support of a functional definition of interaction. *American Journal of Distance Education*, *8*(2), 6-29. doi:10.1080/08923649409526852

Watanbe, T. (2002). Learning from Japanese lesson study. *Educational Leadership,59* (6), 36-9. Retrieved from http://www.ascd.org/publications/educational-leadership/mar02/vol59/num06/Learning-from-Japanese-Lesson-Study.aspx

Weiss, I. R., Banilower, E. R., & Shimkus, E. S. (2004). *Local systemic change through teacher enhancement: Year nine cross-site report.* Chapel Hill, NC: Horizon Research.

Wenger, E. (1998). *Communities of practice: Learning, meaning, and identity.* Cambridge, MA: Harvard University Press.

Wenger, E. (2000). Communities of Practice and Social Learning Systems. *Organization, 7*(2), 225–246. doi:10.1177/135050840072002

Wenger, E., White, N., & Smith, J. (2009) *Digital habitats: Stewarding technology for communities.* Portland, OR: CPSquare.

Wenglinsky, H. (2000). *How teaching matters: Bringing the classroom back into discussions of teacher quality.* Princeton, NH: Educational Testing Service.

WestEd (Organization). (2000). *Teachers who learn; Kids who achieve.* San Fransisco, CA: WestEd.

Wilson, S. M., & Berne, J. (1999). Teacher learning and the acquisition of professional knowledge: An examination of research on contemporary professional development. *Review of Research in Education*, *24*, 173-209. doi:10.2307/1167270

Woo, Y., & Reeves, T. C. (2007). Meaningful interaction in web-based learning: A social constructivist interpretation. *The Internet and Higher Education, 10*(1), 15-25. doi:10.1016/j.iheduc.2006.10.005

Venezky, R. L., & Winfield, L. F. (1979). Schools that succeed beyond expectations in reading. (Tech. Report No. 1). Newark, DE: Department of Educational Studies, University of Delaware.

Vrasidas, C., & McIsaac, M. S. (1999). Factors influencing interaction in an online course. *American Journal of Distance Education*, *13*(3), 22-36. doi:10.1080/08923649909527033

Yan, J. (2008, Winter). Social technology as a new medium in the classroom. *The New England Journal of Higher Education, 22*(4), 27-30. Retrieved from http://files.eric.ed.gov/fulltext/ EJ794242.pdf

Yoon, K. S., Duncan, T., Lee, S. W. Y., Scarloss, B., & Shapley, K. L. (2007). Reviewing the evidence on how teacher professional development affects student achievement. Issues and answers. REL 2007-No. 033. *Regional Educational Laboratory Southwest (NJ1)*. Retrieved from http://ies.ed.gov/ncee/edlabs/regions/southwest/ pdf/rel_2007033.pdf

Young, J. R. (2002). " Hybrid" teaching seeks to end the divide between traditional and online instruction. *Chronicle of Higher Education*, *48*(28). Retrieved from http://chronicle.com/article/Hybrid-Teaching-Seeks-to-End/18487/

Zepeda, S. (2008). *Professional development: What works*. Larchmont, NY: Eye on Education.

APPENDIX A

Interview Questions

Project: Examining the Impact of Online Professional Development on Teacher Practice.

Time of Interview:
Date:
Place:
Interviewer:
Interviewee:

This is the interview of a participant teacher of the online professional development during the C21 Project.

Interview Questions:

Instructional Practice/Teaching of Writing Skills

1. Describe your writing instruction at the beginning of the school year (prior to using OSLN).

2. Describe your experience using a social network in your writing instruction.

3. Has your writing instruction this year been impacted by utilizing the social network? How?

4. Were there skills or content you taught that were enhanced or made easier by using the OSLN? Can you be specific? (point to any evidence/artifacts in OSLN)

5. Were there skills or content you found difficult to teach using the OSLN? Can you be specific?

6. How did the teaching of specific writing skills/content using the OSLN compare to your previous experiences using strictly face-to-face methods? Give examples.

7. What features of the OSLN did you find particularly useful for your teaching writing skills ? Which ones did you use the most/least (blogs, forums, groups debates etc.)

Feedback

8. Describe your process of providing feedback on student work using the social network.

9. Have your methods of giving feedback been impacted by using the OSLN?

10. How would you compare your face-to-face practices with giving feedback with your online practice using the OSLN? (ask about benefits, challenges, time spent, quality, organization, etc.)

11. What features of the OSLN did you find particularly useful for your giving feedback ? Which ones did you use the most/least (blogs, forums, groups debates etc.)

Professional Development

12. What kinds of other professional development experiences have you had in the past?

13. How would your describe your experience with professional development utilizing the OSLN? Tell me more.

14. Were you able to incorporate any concepts covered in online professional development into your instruction? Be specific (point to artifacts/evidence from OSLN).

15. Can you give me an example of a time you used some aspect of the social network to assist you with teaching? Tell me more about this particular lesson/assignment. (point to artifacts from social network).

16. What were the most useful components of professional development using an OSLN? What were the most challenging?

17. Can you tell me about a particular time or incident you found particularly helpful or challenging?

18. Were there aspects you particularly enjoyed?

19. What activities covered in PD did you use the most/least?

20. What OSLN features did you find the most useful for professional development purposes? (blogs, forums, media, groups) etc. What were the least useful? Give examples.

21. Have you had an online component to other professional development experiences? If so, can you tell me about them?

22. How would you compare this professional development experience with others you have had?

23. What changes would you suggest in the professional development using the OSLN in the future?

APPENDIX B

IRB Approval Letter

PEPPERDINE UNIVERSITY

Graduate & Professional Schools Institutional Review Board

10/18/13

Tracy Lee Edwards
[redacted]

Protocol #: E0913D03
Project Title: Examining the impact of Online PD on Teacher Practice

Dear Ms. Edwards,

Thank you for submitting your application, *Examining the impact of Online PD on Teacher Practice*, for exempt review to Pepperdine University's Graduate and Professional Schools Institutional Review Board (GPS IRB). The IRB appreciates the work you and your faculty advisor, Dr. Linda Polin, have done on the proposal. The IRB has reviewed your submitted IRB application and all ancillary materials. Upon review, the IRB has determined that the above entitled project meets the requirements for exemption under the federal regulations (45 CFR 46 - http://www.nihtraining.com/ohsrsite/guidelines/45cfr46.html) that govern the protections of human subjects. Specifically, section 45 CFR 46.101(b)(2) states:

> (b) Unless otherwise required by Department or Agency heads, research activities in which the only involvement of human subjects will be in one or more of the following categories are exempt from this policy:
>
> **Category (2) of 45 CFR 46.101**, research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: a) Information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and b) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

In addition, your application to waive documentation of consent, as indicated in your **Application for Waiver or Alteration of Informed Consent Procedures** form has been **approved**.

Your research must be conducted according to the proposal that was submitted to the IRB. If changes to the approved protocol occur, a revised protocol must be reviewed and approved by the IRB before implementation. For any proposed changes in your research protocol, please submit a **Request for Modification Form** to the GPS IRB. Because your study falls under exemption, there is no requirement for continuing IRB review of your project. Please be aware that changes to your protocol may prevent the research from qualifying for exemption from 45 CFR 46.101 and require submission of a new IRB application or other materials to the GPS IRB.

A goal of the IRB is to prevent negative occurrences during any research study. However, despite our best intent, unforeseen circumstances or events may arise during the research. If an unexpected situation or adverse event happens during your investigation, please notify the GPS IRB as soon as possible. We will ask for a complete explanation of the event and your response. Other actions also may be required depending on the nature of the event. Details regarding the timeframe in which adverse events must be reported to the GPS IRB and the appropriate form to be used to report this information can be found in the *Pepperdine University Protection of Human Participants in Research: Policies and Procedures Manual* (see link to "policy material" at http://www.pepperdine.edu/irb/graduate/).