2011

The Role Of Web 2.0 And Social Media Community In Education As A Form Of Teacher Personal Professional Development

Brandi Evans Smith
University of Central Florida

THE ROLE OF WEB 2.0 AND SOCIAL MEDIA COMMUNITY IN EDUCATION AS A FORM OF TEACHER PERSONAL PROFESSIONAL DEVELOPMENT

by

BRANDI EVANS SMITH
B.S. Florida Agricultural and Mechanical University, 1997
M.S. University of Central Florida, 2003

A dissertation submitted in partial fulfillment of the requirements
for the degree of Doctor of Education
in the Department of Educational Studies, Curriculum and Instruction
in the College of Education
at the University of Central Florida
Orlando, Florida

Summer Term
2011

Major Professors: Glenda A. Gunter
Debbie L. Hahs-Vaughn

ABSTRACT

Teachers are facing greater technological demands. They are expected to use and teach their students to use various forms of collaborative technology (Partnership for 21st Century Learning, 2010). Personal professional development is professional development that teachers seek on their own, strictly on a voluntary basis, so that they can meet the needs of their students or address issues that are unique to their classroom. This study used a survey to examine the relationship between how teachers' reported using social media community in education for personal professional development and the criteria for effective professional development, teachers' integration practices, teachers' frequency of collaboration, and teachers' ability to communicate with colleagues.

The results revealed a relationship between the criteria that a professional development be content specific and coherent and integrated with teachers' daily lives and whether or not teachers report using social media community in education as a form of professional development. There was also a statistically significant relationship between the frequency of technology integration, the reported level of technology integration, and the feeling of growth based on whether or not teachers used social media community in education to enhance professional practices. A statistically significant relationship was found between the frequency at which teachers report collaborating on technology integration projects with colleagues in social media communities in education and whether or not respondents use Social media community in education connect with other educational professionals. Finally, a statistically

significant relationship was found between how comfortable participants are giving technology integration advice to colleagues in social media communities in education based on whether or not respondents use social media community in education to share materials and ideas.

Based on the findings of the study, several implications can be made regarding the use of social networks for personal professional development. First, the use of social networks for personal professional development is best when there is content specificity and cohesion with teachers' personal and professional goals. Secondly the users of a social network for personal professional development must purposeful in their reasons for using the social network, users must perceive themselves as capable of learning and they must have the willingness to commit to learning. Another implication is that increased levels of ownership for the material in social media communities in education would result in greater frequency of collaboration. Finally, teachers' perceptions of their integration abilities will determine if teachers will use social networks to communicate professionally with colleagues.

Thank you Jesus! This dissertation is dedicated to my family whose love and sacrifice have been a constant source of encouragement throughout this incredible journey.

To my parents, you taught me that I could do all things through Christ. Even when I wanted to give up, you told me that there was nothing that I could not do if I put my mind to it. Now, I have no doubt that you were right. Your steadfastness and unconditional love have been a constant source of inspiration.

To my husband, the love of my life, you have been my rock. Thank you for constantly telling me how smart, talented, and special I am. Your words were life to me when the stress seemed too much to bear. You truly know how to bring out the best in me.

To my baby girl who has sacrificed so much of her mommy time. Thank you so much for your patience. Mommy is done with her homework now! I will tell you like my parents told me, “You can do ALL things through Christ baby girl, ALL things.” And don’t you let anyone else tell you otherwise. Dream BIG, I have faith in you.

To the little one growing inside of mommy’s tummy, God has big plans for you. I know you will do great things. Thank you for cooperating while mommy finished the last stages of her dissertation.

To my sissy, you never cease to amaze me. As if taking care of your three beautiful children were not enough, you still find time to see about your little sister. Thank you for talking me off the ledge; you are my clam in the midst of the storm.

To my Nana who taught me that a woman has to have her own and the only man you should have to depend on is Jesus; to my Aunt Ann who introduced me to the joy of learning, teaching, and serving; and to my Uncle Will who taught me that education was gold and giving up was not an option. Your examples of hard work, sacrifice, and triumph were a strong foundation that I proudly and humbly build on. Enjoy Jesus! I hope that I have made you half as proud as you all made me.

To the rest of my family, friends, and loved one who have been right there for me. I do not take the support and encouragement that you have given me lightly, I count myself as blessed. I know that I could not have done this without you. I love you all!

ACKNOWLEDGMENTS

This has been a very long and tedious journey, but it is one that I will never regret. I will always remember the hard work of the caring educators that guided me though my pursuit of higher education. And so, it is with an immense feeling of gratitude that I acknowledge each member of my dissertation committee and those who gave their assistance.

Dr. Glenda Gunter, committee Chair. You saw something in me that I did not see in myself. Thank you for encouraging me to start this journey and for hanging in there with me until I finished. You cannot even fathom the wealth of knowledge that I gained from you.

Dr. Debbie Hahs Vaughn, committee Co-Chair. I did not realize just how much you had taught me until I started the dissertation process. Thank you so much for your patience and guidance throughout this process. I have a new found respect for statisticians.

Dr. David Boote, committee member. Thank you for sharing your knowledge of curriculum with me. Your insightful guidance helped narrow down a much too broad topic. Thanks for keeping me focused.

Dr. Robert Kenny, committee member. What can I say, digital media and education, a perfect combination. Not only did you support me in the dissertation process, but you helped me broaden my repertoire of teaching techniques. Thank you for opening my eyes to new possibilities.

Dr. Carlyon Hopp, committee member. Thank you so much for stepping in when I really needed you. Your kind words and constructive feedback were greatly appreciated. I could not have completed this without your guidance.

Steve Hardagon, founder of Classroom 2.0. Thank you for all of your assistance. Without your help, this study would not have been possible.

To the advanced graduate coordinator, the review editor, and every person that sent me a reminder of a deadline, booked a room for me, or made sure that I knew the correct procedures to follow; THANK YOU!

TABLE OF CONTENTS

LIST OF TABLES x
CHAPTER I- INTRODUCTION 11
The Background 11
Problem and Purpose of the Study 15
Research Questions 16
Justification of the Study 17
Limitations 19
Delimitations 20
Assumptions 20
Operational Definitions 21
CHAPTER II- REVIEW OF LITERATURE 23
Introduction 23
Teaching Digital Age Students 23
Professional Development 27
Personal Professional Development 31
Social Networking and Education 33
Teacher Collaboration 35
Professional Communication 36
Social Networking and Learning Theory 37
Classroom 2.0 38
Summary 39
CHAPTER III- METHODOLOGY 41
Introduction 41
Research Design 42
Restatement of the Research Questions 42
Population 43
Instrument 44
A Short Survey for Online Community 44
Teacher Questionnaire 45
Survey 46
Survey of an Online Social Network 47
Reliability and Validity 48
Procedures 48
Data Collection 48
Data Analysis 50
Informed Consent 54
Summary 55
CHAPTER IV- DATA ANALYSIS 58
Introduction 58
Population 58
Demographic Data 59

Research Study Design 60
Research Question One 62
Exploratory Factor Analysis Results 62
Logistic Regression Results 67
Summary of Research Question One 70
Research Question Two 70
Chi Square Test of Association One 71
Chi Square Test of Association Two 76
Chi Square Test of Association Three 82
Summary of Research Question Two 86
Research Question Three 87
Chi Square Test of Association 87
Summary of Research Question Three 93
Research Question Four 94
Chi Square Test of Association One 95
Chi Square Test of Association Two 96
Summary of Research Question Four 101
Summary 102
CHAPTER V- DISCUSSIONS AND CONCLUSIONS 106
Introduction 106
Research Question One- Discussion 107
Research Question One: Criteria for Professional Development 108
Research Question Two- Discussion 112
Research Question Two: Technology Integration Practices 113
Research Question Three- Discussion 114
Research Question Three: Collaboration and Social Education Networks 115
Research Question Four- Discussion 116
Research Question Four: Professional Communication and Social Education Networks 117
Implications 118
Recommendations for Future Studies 120
Limitations 123
Conclusion 124
APPENDIX A: PARTICIPANT REQUEST 125
APPENDIX B: REQUESTS TO USE AND MODIFY EXISTING SURVEY INSTRUMENTS 127
APPENDIX C: QUESTIONNAIRE NOTIFICATION LETTER 131
APPENDIX D: QUESTIONNAIRE COVER LETTER 133
APPENDIX E: QUESTIONNAIRE FOLLOW-UP LETTERS 135
APPENDIX F: INFORMED CONSENT 139
APPENDIX G: QUESTIONNAIRE 142
APPENDIX H: SURVEY MODIFICATIONS 155
REFERENCES 163

LIST OF TABLES

Table 1-Sample Characteristics (Frequencies and Percentages) 60

Table 2-Correlation Matrix for Professional Development in Classroom 2.0 65

Table 3-Factor Loadings and Communalities Based on Maximum Likelihood Analysis 66

Table 4-Descriptive Statistics for Three Subscales 67

Table 5-Logistic Regression Results 69

Table 6-Frequency by Professional Practice (Frequencies, Percentages within Columns, and Standardized Residuals) 76

Table 7-Level of Integration by Professional Practice (Frequencies, Percentages within Columns, and Standardized Residuals) 81

Table 8-Growth in Technology Integration by Professional Practice (Frequencies, Percentages within Columns, and Standardized Residuals) 85

Table 9-Collaboration Frequency by Professional Practice (Frequencies, Percentages within Columns, and Standardized Residuals) 93

Table 10-Amount of Time Spent Writing and Respond to Content by Professional Practice (Frequencies, Percentages within Columns, and Standardized Residuals)..... 96

Table 11-Level of Comfort with Giving Advice to Colleagues by Professional Practice (Frequencies, Percentages within Columns, and Standardized Residuals) 101

CHAPTER I- INTRODUCTION

The Background

On April 26, 1983 the National Commission on Excellence in Education released a report called A Nation at Risk: the Imperative for Educational Reform. With the now infamous words, “Our Nation is at risk. Our once unchallenged preeminence in commerce, industry, science, and technological innovation is being overtaken by competitors throughout the world (p. 112)” a new era of reform was launched. In the report researchers asserted that we were producing generations of technologically and scientifically illiterate citizens in the midst of a world that is becoming increasingly infused with technology; therefore the United States educational system was not sufficiently preparing students to compete in global markets (National Commission on Excellence in Education, 1983). The commission made several recommendations including: more stringent high school graduation requirements, the development of rigorous and measurable standards for student performance, longer school days and years, improved teacher preparation and teaching practices, more effective school leadership, and greater fiscal support from the Federal Government and citizens (National Commission on Excellence in Education, 1983). The commission also said that “The teaching of computer science in high school should equip graduates to: (a) understand the computer as an information, computation, and communication device; (b) use the computer in the study of the other basics and for personal and work-related purposes; and (c) understand the world of computers, electronics, and related technologies” (National Commission on Excellence in Education, 1983).

Since the release of A Nation at Risk, federal and state policy making groups have sought ways to improve the nation's educational system by enacting very broad, short-term solutions (Serwach, 2003). In fact, every presidential administration subsequent to the report's release has developed very extensive plans for improving education (Serwach, 2003). President George H.W. Bush and the nation's state governors developed a reform effort known as America 2000. President Bush's goal was to develop better and more accountable schools by means of national testing and school choice, create alternative educational programs that broke the mold of traditional education, improve public opinion of schools, and increase parental and community involvement in the reform effort. Congress incorporated those goals into legislation and President Clinton signed what became known as Goals 2000: Educate America Act of March 1994 into law. The primary focus of Goals 2000 was to support states efforts to develop rigorous standards detailing what every child at each grade level should know and be able to do; one of the National Education Goals was using technology to facilitate students' achievement (U.S. Department of Education, 1998).

On January 8, 2002 President George W. Bush signed the No Child Left Behind Act (NCLB) into law. The primary goal of Part D- Enhancing Education through Technology of NCLB is to improve academic achievement though the use of technology in elementary and secondary schools. The NCLB law also included a definition of high quality professional development that recommended training for teachers and principals in the use of technology as a means of improving teaching and learning (U.S. Department of Education, 2004).

On March 13, 2009 the Obama administration released its blueprint for revising the Elementary and Secondary Education Act. This competitive plan was designed to bring about reform in state and local k-12 school districts. The plan outlines the need for increased collaboration time among teachers and funding for relevant professional development. The Obama administration called for professional development that is focused on academic content and involves teachers actively collaborating with experts on a regular basis to identify effective instructional strategies and examine student work and achievement data so that a cycle of continuous improvement can be created (U.S. Department of Education, 2010).

The premise behind each of these reform efforts was to develop a generation of students that can compete globally in a constantly evolving economy; however, despite the fact the America has invested hundreds of billions of dollars in education over the past two decades, the National Assessment of Educational Progress (NAEP) reports that achievement levels have remained essentially unchanged. More than 350,000 students in fourth and eighth grade students participated in the 2007 NAEP reading assessment. Fifty states, the District of Columbia, and the Department of Defense schools were all represented. About 60% (25 out of 42) of states and jurisdictions that participated in the 1992 and 2007 fourth grade reading assessment showed higher average reading scores and about 2% (1 out of 42) showed a decline in average reading scores; the rest remained unchanged. Amid the states and jurisdictions that participated in the 1998 and 2007 eight grade reading assessment; about 16% (6 out of 38) showed a higher average score while about18% (7 out of 38) showed a decline in average reading scores (Lee, Grigg, & Donahue, 2007). The NAEP reading assessment

was given again between January and March of 2009. Fifty-two states and jurisdictions participated and data shows that only three states showed significant increase in fourth grade reading scores, four states show a decrease, and the rest show no significant change (National Center for Education Statistics, 2009).

Curriculum theorist, Milbrey McLaughlin, contends that decades of reform efforts have failed due to the fact that innovative reform efforts focus largely on technological changes, not organizational changes that seek to change the way students, parents, teachers, and administrators relate to one another. McLaughlin affirms that long-term change will require a mutually adaptive process between the participants and the instructional setting. A process in which the specific goals and methods can be modified in accordance with the needs and interests of the participants and one in which the participants are willing to change in order to meet project requirements (McLaughlin, 2004).

In 2009, educators were afforded another opportunity to meet the needs of students in a technologically diverse society. We have moved from the No Child Left Behind era to the Race to the Top era in which funds are awarded for innovation and multiple measures of achievement (Marcoux & Loertscher, 2009). On February 17, 2009 President Barrack Obama signed the American Recovery and Reinvestment Act of 2009 giving $650 million in additional funds to the Ed Tech program, which was authorized under Title II, Part D, Subpart 1 of the Elementary and Secondary Education Act of 1965. The purpose of the funds were to support student achievement through the use of technology in school, ensure that every student is technologically literate by the end of eighth grade, and to encourage effective technology integration through teacher

training and curriculum development. Because the funds were a onetime source, careful consideration had to be given to “strategies that will help build sustainable capacity for technology integration, improve student achievement, and advance education reform…” including “Increasing teacher effectiveness and addressing inequities in the distribution of effective teachers through high-quality professional development and teacher incentive programs designed to attract and keep effective teachers in hard-to-staff schools in rural and urban areas…” (US Department of Education, 2009; US Department of Education, 2009b).

Problem and Purpose of the Study

The purpose of this study was to examine if the Web 2.0 and social media community in education could be used as a source of personal professional development based on the sites ability to meet the criteria for effective professional development, teachers’ reported integration practices, and teachers’ perceived ability to collaborate and communicate with colleagues using the social network tools. Specifically, the extent to which teachers agree or disagree that social media community in education provides opportunity for active learning, that the information presented in social media communities in education was coherent and integrated with their daily lives, and that information was content specific was examined. The frequency at which teachers integrate technology into their classroom and the frequency at which teachers collaborate and communicate with colleagues were also examined. While previous studies have examined what makes a successful professional development (Penuel, Fishman, Yamaguchi, & Gallagher, 2008; Garet, Porter, Desimone, Birman, &

Yoon, 2001; Webster-Wright, 2009; Duncan, 2010; McNamara, 2010), few have examined the potential social networking sites have as a medium for personal professional development. This issue is addressed by critically examining teachers' beliefs in their ability to sustain the use of technology skills with the support of a social networking site.

Research Questions

The following questions were specifically addressed:

1. Is there a relationship between the criteria for effective professional development (providing active learning, being coherent and integrated with teachers' daily lives, and being content specific) and how K-12 teachers report using social media community in education?
2. Is there a relationship between the frequency at which teachers integrate technology into their classroom and how K-12 teachers report using social media community in education?
3. Is there a relationship between the frequency of collaboration with colleagues and how K-12 teachers report using social media community in education?
4. Is there a relationship between the ability to communicate professionally about technology integration with colleagues and how K-12 teachers report using social media community in education?

Justification of the Study

Today's generation of learners is being educated in the digital age. They are being prepared for a highly advanced, technological, and global society. In addition to basic literacy, students are expected to attain proficiency in critical thinking and problem solving, communication, collaboration, and creativity and innovation (Partnership for 21st Century Learning, 2010). With increased demands on what and how students are expected to learn comes increased demands on what and how teachers are expected to teach. Professional development programs are generally seen as the most appropriate method for meeting those demands (Linn et al., 2010). Professional development is an effort to bring about changes in the teaching practices, beliefs and attitudes of teachers; and the ultimate goal of professional development is increased learning gains for students (Guskey & Kwang Suk, 2010).

One of the objectives of this study was to determine if there is a relationship between the criteria for effective professional development and how K-12 teachers report using social media community in education. In a study of 1,027 mathematics and science teachers, researchers found that professional development is more likely to produce the desired knowledge and skills if they were: 1) sustained and intensive 2) focused on specific content, 3) provided hands-on learning and 4) integrated with teachers' daily lives. Researchers concluded that the type of professional development (i.e., face-to-face, online, or mixed method) was not as important as the previously stated factors. Professional development that includes all four aspects tend to sustain change in teaching practice beyond that of enhanced knowledge and skills (Garet et al, 2001; Huang, Yang, Yueh-Min, & Hsiao, 2010).

For the purpose of this study, using social networks as a form of professional development was chosen because users can access a social network and communicate with colleagues on an ongoing basis, they can collaborate with other members of the community on specific issues, they can then use new knowledge, and finally they can return to discuss successes and failures and continue to grow; thus meeting the criteria for a successful professional development (sustained and intensive, content specific content, hands-on learning and integrated with teachers' daily lives) (Garet et al, 2001) as described by researchers. More research needs to be conducted on the potential of social networks as a means of professional development. Classroom 2.0 was chosen because it is a social network designed as a forum for educators that are interested in Web 2.0 and other collaborative technologies.

The second objective of this study was to determine if there is a relationship between technology integration practices and how K-12 teachers report using social media community in education. Focus was given to improving technology integration practices because simply knowing how to operate technology is not sufficient to impact student achievement. Teachers must be able to use technology to help students achieve curriculum standards and not just as a tool to that perpetuate passive learning (Dexter, Doering & Riedel, 2006; Springer & Maher, 2007).

The third objective of this study was to determine if there is a relationship between teacher collaboration frequency and how K-12 teachers report using social media community in education. Focus was placed on the ability of teachers to collaborate because professional organizations including the American Association of School Librarians (AASL), the International Society for Technology in Education (ISTE),

and Partnership for 21st Century Skills have placed an emphasis on the need for social learning and collaboration (Cox, 2009; Vogel, 2009). Collaboration also actively involves teachers in professional reflection, gives them validation as producers of knowledge, and affirms their role in professional development and decision-making skills (Burbank & Kauchak, 2003).

The final objective of this study was to determine if there is a relationship between the ability to communicate professionally about technology integration with colleagues and how K-12 teachers report using social media community in education. States use a variety of tests to legitimize teachers' professional knowledge and competence. However, teachers must legitimize their own professional identity though social interactions with colleagues, parents, and students (Sutherland, Howard, & Markauskaite, 2010). Social network communities can be used as a place where teachers receive professional support, guidance, and possibly inspiration (Duncan-Howell, 2010) as they develop their professional identity. The asynchronous design of social networks has the potential to promote knowledge building and reflection (Sutherland, Howdard, & Markauskaite, 2010) through the use of professional communication.

Limitations

The following limitations to this study are noted:

1. Participants of the study were volunteers therefore the results may not be generalized to any other population.

2. The questionnaire was completed via self-report; therefore, participants' individual interpretation of questions may influence the response to some items.
3. The questionnaire was completed via self-report; therefore, there is no fidelity check or observation to confirm the accuracy of the self-report data.
4. Only members of Classroom 2.0 were given the opportunity to complete the survey; therefore, the results cannot be generalized to all social networking used as personal professional development.

Delimitations

The following delimitations to this study are noted:

1. The study will include members of Classroom 2.0 that are employed in the United States to avoid data variations caused by global differences in the organization of K-12 educational systems. This will exclude approximately 26% of Classroom 2.0 members.
2. The study will exclude members of Classroom 2.0 that are not K-12 classroom teachers because the primary purpose of the study is to determine the role of social networks on teacher professional development.

Assumptions

The following assumptions were made while investigating the research questions:

1. The participants responded honestly and to the best of their ability.

2. The distribution list of Classroom 2.0 members encompasses all members (i.e., is truly the population of individuals who subscribe to Classroom 2.0)

Operational Definitions

1. Classroom 2.0 (www.Classroom20.com)- a non-facilitated social network developed as a forum for educators that are interested in Web 2.0 and social media in education. Members have the opportunity to start or participate in discussions, view videos, listen to interviews with experts, or read about upcoming technology events. The site also offers Classroom 2.0 hosts to help users with any questions that they may have about the network (Hardagon, 2010).
2. Professional development- method used to bring about a change in the attitudes, beliefs, and teaching practices of educators so that student learning outcomes will improve
3. Personal professional development- professional development that teachers seek on their own. For the purpose of this study, teachers were determined to use social media networks for personal professional development if they report using a social network to: find curriculum materials, mentor or be mentored, keep current in their profession, connect with other educational professionals, share curriculum materials or ideas, or enhance professional practice.
4. Social media network in education- a community of users that are linked by a common bond such as friendship, belief, profession, recreation, or need for companionship. The features and structures of social networking sites vary but

many incorporate Web 2.0 technologies (Boyd & Ellison, 2007). Social media networks allow users collaborate and share information online edit, add to, or repurpose existing content, upload text audio and video (Thompson, 2008). For the purpose of this study social networking was measured through the use of Classroom 2.0.

5. Technology integration- the use of “technology to help meet the curriculum standards and learner outcomes for each lesson, unit, or activity” (Shelly, Gunter & Gunter, 2010)
6. Web 2.0- collaborative learning technologies that include social media networks, wikis, blogs, podcasts, social bookmarking, etc. (O’reilly, 2007; Vogel, 2009; Thompson, 2008). Web 2.0 technologies allow users to collaborate and share information online; edit, add to, or repurpose existing content; and upload text, audio, and video (Thompson, 2008).

CHAPTER II- REVIEW OF LITERATURE

Introduction

In an effort to understand professional development though the use of social networking, this chapter focuses on teacher's use of social networking sites for personal professional development. This review starts by exploring what scholars have deemed as skills important to the success of today's students. From there the issues related to preparing teachers to educate digital age students are discussed. The review then investigates the professional development as a catalyst for change. This review of literature also delves into the actions taken by teachers' to ensure that they are technology literate. We will refer to these actions as personal professional development. The review of literature then discusses the role of social networking in education and the learning theory behind the use of social networking to support teacher collaboration. This review concludes with a description of Classroom 2.0; a social network for educators wants to learn more about integrating Web 2.0 technologies. Finally, a summary provides the reader with a review of the areas covered.

Teaching Digital Age Students

Education has taken on whole new meaning in the 21st Century. Far gone are the days where reading, writing, and arithmetic are the only focus of education. Today's generation is inundated with digital media and other technology that they must be able to decode and comprehend (Partnership for 21st Century Learning, 2010) and the word collaboration has become a common anthem for the cries of reform. Some believe that

it is a passing fad while others believe that it is a vital component of learning and living in the 21st century (Cox, 2009; Nasah, DaCosta, Kinsell, & Seok, 2010; Jones, Ramanau, Cross, & Healing, 2010). Professional organizations including the American Association of School Librarians (AASL), the International Society for Technology in Education (ISTE), and Partnership for 21st Century Skills have placed an emphasis on the need for social learning and collaboration (Cox, 2009; Vogel, 2009).

Many see technology as the impetus for providing students with the collaboration skills that they need even though the true potential of technology to enhance learning has not been sufficiently investigated or well understood (Laferriere et al., 2006). Web 2.0 is increasingly becoming the new buzzword for collaborative learning (O'reilly, 2007). Web 2.0 technologies include social media networks, wikis, blogs, podcasts, social bookmarking, and others (Vogel, 2009; Thompson, 2008). They allow users to do more than just passively receive information. With Web 2.0, users can collaborate and share information online, they can edit, add to, or repurpose existing content, and in addition to uploading text users can upload audio and video (Thompson, 2008; Huang, Yang, Yueh-Min, & Hsiao, 2010; Baker-Doyle & Yoon, 2011).

In 1998 the International Society for Technology in Education (ISTE), a nonprofit membership organization that seeks to improve teaching, learning, and school leadership through the effective use of technology in PK–12 and teacher education, developed the National Educational Technology Standards for Students (NETS-S). The original standards, created in 1998, detailed the knowledge and skills students needed to succeed in a technology driven society. Then in 2007, the standards were updated to include the needed skills to "help students prepare to work, live, and contribute to the

social and civic fabric of their communities" (ISTE, 2009). The second standard on the list was communication and collaboration (ISTE, 2007).

> "Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. Students:
>
> a. interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media.
>
> b. communicate information and ideas effectively to multiple audiences using a variety of media and formats.
>
> c. develop cultural understanding and global awareness by engaging with learners of other cultures.
>
> d. contribute to project teams to produce original works or solve problems (ISTE, 2007, p. 1)."

In 2007, the American Association of School Librarians (AASL) released *Standards for the 21st Century Learner* as a revision to the 1998 publication, Information Literacy Standards for Student Learning. The standards were purposed to help students become producers and consumers of information in a student-centered program of learning. The third standard deals with students' ability to communicate and collaborate. The standard states that learners should use skills, resources, and tools to:

> "Share knowledge and participate ethically and productively as members of our democratic society.
>
> Skills
>
> - Conclude an inquiry- based research process by sharing new understandings and reflecting on the learning.
>
> - Participate and collaborate as members of a social and intellectual network of learners.

- Use writing and speaking skills to communicate new understandings effectively.

- Use technology and other information tools to organize and display knowledge and understanding in ways that others can view, use, and assess.

- Connect learning to community issues.

- Use information and technology ethically and responsibly (ALA, 2007, p. 6)."

Partnership for 21st Century Skills released its Framework for 21st Century Learning. The framework attempted to list the skills, knowledge, and expertise that students would need to be successful in work and life. The Learning and Innovative section of the framework rainbow contained the skills of communication and collaboration. Partnership for 21st Century Learning (2010) states,

Students are expected to be able to:

Communicate Clearly

- Articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts

- Listen effectively to decipher meaning, including knowledge, values, attitudes and intentions

- Use communication for a range of purposes (e.g. to inform, instruct, motivate and persuade)

- Utilize multiple media and technologies, and know how to judge their effectiveness a priori as well as assess their impact

- Communicate effectively in diverse environments (including multi-lingual)

Collaborate with Others

- Demonstrate ability to work effectively and respectfully with diverse teams

- Exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal
- Assume shared responsibility for collaborative work, and value the individual contributions made by each team member (p. 4)."

In order for teachers to properly prepare students to use the communication and collaboration skills that they need to succeed in today's world, they must know how to effectively use technology to communicate and collaborate. Teachers most often name a lack of professional development as the primary reason that they are not using new technology. When teachers are given the opportunity to build virtual leaning communities as a part of professional development, they become immersed in the new technology and start to process ways to use the technology to support student learning (Drexler, 2008).

Professional Development

Students and educators have unprecedented access to technology (Gray, Lewis & Trice, 2009) that is not being effectively integrated into daily classroom routines (Keengwe, Onchwari, & Wachira, 2008). In 2008, the Office of Educational Technology in the U.S. Department of Education commissioned the National Center for Education Statistics to conduct a survey of public schools on the availability and use of educational technology resources, such networks, computers, instructional technology devices, and computer software. The survey also collected information on leadership and staff support for educational technology within districts and schools. Ninety-seven percent of districts reported having local area networks in all of their schools. Sixty-seven percent of districts have replacement plans in place for old computers. Ninety-five percent of the

districts surveyed offered professional development in the area of technology integration, 91% offered professional development for using Internet resources and communication tools for instruction. Researchers also found that districts had written policies in place for the acceptable use of email (84%), social networking sites (76 %), wikis/blogs (52%), and other Internet use (92%) for students (Gray & Lewis, 2009).

In order for teachers to successfully integrate technology into their classroom they must be comfortable using and learning with technology (Shelly, Gunter & Gunter, 2010). However, teachers that have never experienced learning in a technology integrated setting are being asked to prepare students that can effectively use technology skills to enhance their learning (Keengwe, Onchwari, & Wachira, 2008; Shelly, Gunter, & Gunter, 2010). Educators need higher-order teaching skills, deeper levels of content knowledge, continual, collaborative, on the job learning, and a greater responsibility over what happens in their school (Hunt, 2009).

Professional development programs are generally seen as the catalyst for change (Linn et al., 2010). They are an effort to bring about changes in the teaching practices, beliefs and attitudes of teachers; and the ultimate goal of professional development is increased learning gains for students (Guskey & Kwang Suk, 2010). Professional development courses are typically required as part of the recertification process; however, the majority of teachers report that they participate in professional development courses because they want to become better teachers (Darling-Hammond et al, 2009, Helsing, Howell, Kegan & Lahey, 2008).

According to Guskey (2002), professional development needs to seek to change classroom practices first. Teachers need to be instructed on how to make a change in

an instructional approach, how to use new materials, or how to modify current procedures. Next, teachers need to see a change in student learning outcomes. After that, they will experience a change in beliefs and attitudes. If teachers experience successful implementation of the new knowledge (success being defined by improved student learning) they will retain the desired content and change in teaching practices was sustained (Guskey, 2002).

In an analysis of professional development in the United States, researchers reported that 92% of U.S. teachers participated in some sort of professional development, including workshops, conferences, or training sessions; within a twelve month period. Participants reported that the professional development was focused on specific academic content or pedagogy; but, the professional development was not intensive or sustained. In the analysis, researchers' key findings were that professional development should be: 1) sustained, 2) intensive, 3) collaborative, 4) connected to practice, 4) content specific, 5) aligned with school goals, and 5) focused on student learning (Darling-Hammond et al, 2009).

The Regional Educational Laboratory-Southwest sponsored the analysis of over 1,300 studies that addressed the effectiveness of professional development on student learning outcomes. Of the over 1,300 studies that scholars set out to examine, only nine met the standards for credible evidence as set by the What Works Clearinghouse. Using the nine credible research studies, scholars found that: 1) workshops that focused on implementing research-based instructional techniques, provided active-learning experiences, and provided opportunities for teachers adapt instructional practices to their classroom situations were effective as professional development; 2)

professional development that involve an outside expert presenting ideas directly to the teachers and then helping the teachers to facilitate the implementation of the ideas were effective, 3) professional development that provide 30 or more well organized, structured contact hours that are focused on content or pedagogy are effective, 4) effective professional development included significant amounts of follow-up after the initial activity, 5) activities should be determined by the specific content, the nature of the work, and the context in which the work occurred, and 6) the content of an effective professional development should be focus on specific content or pedagogy (Guskey & Suk Yoon, 2009).

In an article on how Web 2.0 technology can be used to support educator learning, authors identified four current trends. First, online courses and repositories were identified. In both, organized information is available for access by teachers on demand. The authors pointed out that while valuable information is available via online courses and repositories and that the information that they receive from those sources may potentially enhance what teachers are doing; online courses and repositories may not elicit a change in teaching beliefs or practices. Web-supported classrooms were also identified as a trend used to support educator learning. In a Web-supported classroom, campus based education programs use course management technologies such as Blackboard or WebCT to support communication. Web-supported classrooms have the potential to support reflective and collaborative communication when used in a manner that supports intentional learning and teacher ownership. The third trend identified was learning networks and communities. This relatively new practice has an increased emphasis on social learning. In learning networks and communities, resource

materials and forums for discussion are provided so that teachers can share experiences and learn from each other. The final trend identified is knowledge management and knowledge building. Like learning networks and communities, these communities are designed to encourage discussion among colleagues however; the discussion is focused on closing the existing gaps between researchers, practitioners, and professional teaching associations worldwide (Laferriere et al, 2006).

Personal Professional Development

"Every day in my classroom issues arise that are unique to that class, those kids, one kid in particular, and so I must go seek that PD [professional development] I need to understand and address the needs of that kid tomorrow...PPD: Personal Professional Development (Jim Burke, online chat, November 12, 2009)." Personal professional development was defined, for the purpose of this research, as professional development that teachers seek on their own, strictly on a voluntarily basis, so that they can meet the needs of their students or address issues that are unique to their classroom.

The Teach Web 2.0 Consortium (http://teachweb2.blogspot.com/2007/09/teach-web-20-consortium-kick-off.html) is a virtual learning environment that was created by researchers to help teachers learn more about Web 2.0 tools and the potential they have to support classroom learning. The Consortium was composed of forty-four teachers and seven members of administration that volunteered to meet face-to-face twice a month and complete an hour of work outside of the scheduled meetings and

thirty-one members that met only online. The members of the Consortium were introduced to Web 2.0 tools that include: blogs, wikis, voice threads, Skype, and Google Doc, de.licio.us, and Twitter. At the end of one year, participants were asked to complete a survey. Twenty-four of the 82 members completed the survey. Of the thirty percent that completed the survey, seventy-nine percent had used one or more of the Teach Web 2.0 tools in their class. However, researchers noted that the level of collaboration was not what they had hoped for because users were looking to the moderators to teach the tool instead of taking ownership and responsibility for the content (Drexler, Baralt, & Dawson, 2009).

Educators have also created online learning communities (e.g. Inquiry Learning Forum, The National Quality Schooling Framework, Teacher Focus, We the Teachers, and Teaching community in Live Journal) and/or voluntarily participated in online learning communities for extended periods of time. In a 2009 study, researchers collected data from interviews, archived postings, community guidelines, and public profiles to determine why k-12 teachers used online learning communities. Their findings indicated that there was five main reasons for teachers participating in online communities that included 1) sharing the emotional stresses related to teaching, 2) using the safety of an online environment to discuss issues that they cannot discuss with teachers in their school, 3) escaping isolation, 4) exploring new teaching ideas, and 5) feeling a sense of camaraderie (Hur & Brush, 2009).

In a study of three social media networks designed for teachers, researchers found that 53% of participants (*n*=98) freely participated in discussions on topics that

interested them and 12% of teachers participated in discussions when they needed help or advice. Twenty-three percent of the participants reported high and low periods of participation based on outside pressures. The results of the survey also revealed that teachers wanted to be in charge of selecting the topic of their professional development (Duncan-Howell, 2010).

Social Networking and Education

Social media networks are Web-based services that allow users to create profiles (demographic information that introduces the user), connect to other users, and share and view communications with other users (Boyd & Ellison, 2007; Huang, Yang, Yueh-Min, & Hsiao, 2010). Social media networks are composed of a community of users that are linked by a common bond such as friendship, belief, profession, recreation, or need for companionship. The features and structures between social networking sites vary but many incorporate Web 2.0 technologies (Boyd & Ellison, 2007; Bower, Hedberg, & Kuswara, 2010). Web 2.0 refers to Internet applications that allow users to do more than just passively receive information. With Web 2.0 users can collaborate and share information online, edit, add to, or repurpose existing content, and upload text, audio, and video (Thompson, 2008). Web 2.0 technologies include, but are not limited to, social media networks, wikis, blogs, podcasts, social bookmarking, etc. (Vogel, 2009; Thompson, 2008; Bower, Hedberg, & Kuswara, 2010).

Professional development opportunities are beginning to move from the traditional setting to an online setting (Sawchuk, 2009; Arnold & Paulus, 2010; Baker-Doyle & Yoon, 2011). Some states and districts are beginning to use the features of

popular social networking sites to connect teachers and create an environment where teachers can ask for feedback, collect new ideas, and reflect on instructional practices using discussion with their colleagues as the vehicle for dissemination. Novice teachers can connect to veteran teachers and teachers of the same subject area or grade level can connect to their colleagues in other schools, states, or even other parts of the world (Sawchuk, 2008; Huang, Yang, Yueh-Min, & Hsiao, 2010).

Social learning communities can become an integral part of teacher professional development because they provide teachers with a collaboration tool that they can alter to meet their own needs and the needs of the learning community regardless of distance or time (Zalon, 2008; Laferriere et al., 2006; Baker-Doyle & Yoon, 2011). Social learning communities can also open communication venues, allow for prompt responses, and present learners with multiple learning strategies (Zalon, 2008). Some believe that the goal of social learning networks for teachers should be asynchronous interactions among a diverse group of teachers (Laferriere et al., 2006) while others believe that the use of technology to support social learning environments is best when learners have a need to know, learners feel a since of responsibility, there is a readiness to learn, the learning is task-centered, learners have an intrinsic motivation, and everyone is free to share their unique knowledge and competencies (Zalon, 2008; Huang, Yang, Yueh-Min, & Hsiao, 2010; Baker-Doyle & Yoon, 2011).

In a study that examined K-12 educators' use of social networking and content sharing tools, Schmucki, Hood, & Meell (2009) found that 61% of the survey respondents had joined a social networking website. The most popular sites were Facebook (85%), MySpace (20%), LinkedIn (14%), Ning (11%), and Classroom 2.0

(5%). Although Facebook had the highest percentage of participants, the users of the other sites had a higher usage rate. Survey respondents reported that they mainly used social networking sites to connect with family and friends but some reported using the sites to communicate with colleagues or stay abreast of Web 2.0 technologies.

Teacher Collaboration

One of the major contributors to a high teacher turnover rate is the feeling of isolation. The very nature of the job, one adult and twenty plus children, as well as the high expectations levied on teachers have a tendency to leave teachers with a feeling of being alone in the profession. Teacher collaboration is one way to alleviate the feeling of isolation. Collaboration with other teachers allows educators to escape the confines of their classroom, share ideas, and solve problems thus helping them to develop a sense of belongingness and purpose (De Lay, 2009). Collaboration in the 21st century permits teachers to connect with colleagues around the world (De Lay, 2009; Sawchuk, 2008). Social network tools can be used to acquire the emotional support and appreciation for creative practices that teacher's seldom get behind closed doors (Greenhow, 2009).

Collaboration done among colleagues in the same school tends to focus on specific problems where everyone knows the child involves while social networking sites tend to garner broad discussions about curriculum, content delivery, and classroom management (Sawchuk, 2008). Social networking sites can also function as a place where teachers can share classroom happening reflect on their classroom practices and

then go back to the classroom and make improvements all without the stigma of failure (Greenhow, 2009).

Professional Communication

While states use a variety of tests to legitimize teachers' professional knowledge and competence, teachers must legitimize their own professional identity though social interactions with colleagues, parents, and students (Sutherland, Howard, & Markauskaite, 2010). Social communities can be used as a place where teachers receive professional support, guidance, and possibly inspiration (Duncan-Howell, 2010) as they develop their professional identity. The asynchronous design of social media networks has the potential to promote knowledge building and reflection (Sutherland, Howdard, & Markauskaite, 2010) through the use of professional communication.

In a study designed to examine how fifteen science teachers used the blog component of social learning networks to develop reform-based practices, researchers found that the majority of posts fell into three categories: cognitive, affective, and social work. Cognitive work was defined as the discussion of pedagogy, students, and issues related to the field of teaching, affective work was used to term discussions of emotions or advocating, and social work included resource sharing, mentoring, encouraging, or communicating. Researchers concluded that social networking technologies effectively support like-minded professional that have a desire to engage in reform. However, careful consideration has to be given to building a community that invites the participation of like-minded professionals and how to engage them in meaningful ways (Luehmann & Tineli, 2008).

Social Networking and Learning Theory

The use of social networking for personal professional development has theoretical ties to the cultural-historical theory. Russian born theorist Lev Semenovich Vygotsky emphasized social interaction and cultural context as the primary components of knowledge acquisition in his cultural-historical theory. He believed that all cognitive abilities originated as internalizations of social interactions. According to Vygotsky, humans used the tools of their culture, such as spoken and written language, social institutions, and objects, to function in their social environments. He believed that these tools were initially developed as a means of communicating needs; however, as social interactions provided the opportunity for feedback and tasks were accomplished, the internalization of these tools led to higher cognition (Driscoll, 2000; Schunk, 2004). The tools of our culture today are highly technological; computer games, emails, the Internet, cell phones, instant messaging, blogs, social media networks, etc. are all integral aspects of our lives.

Vygotsky believed that all functions, even higher mental functions, have foundation in the social environment. Learning first occurs from the outside, or between people, and then from inside the learner. A learner constructs his or her knowledge by interacting with other people who provide feedback and help accomplish the task. As the learner discusses a new problem, he or she gains a better understanding. Then, the learner begins to internalize the language and eventually the task can be completed without help (Driscoll, 2000; Schunk, 2004). Ryberg and Christiansen (2008) used Vygotsky's theory to create what they called a "ladder of participation and mastering" (p. 210) for online social media networks. On the first step of the ladder, users lurk and

mimic the behavior of the community. Users then move to gradually mastering content. Next, the user gains confidence in his/her ability and becomes a legitimate member of the social community. Finally, the user begins teaching others and becomes an asset to the community. Ryberg and Christiansen's (2008) research findings indicate that learning and development on social media networks are increased when a sense of belongingness is nurtured and when the structure and design of the site allow for self and collective regulation around problem solving issues.

Classroom 2.0

Classroom 2.0 is a social network started by Steve Hargadon, the social learning consultant at Elllluminate, the emerging technologies chair for National Educational Computing Conference, and a columnist at School Library Journal, in March of 2008. It was developed as a forum for educators that are interested in Web 2.0 and other collaborative technologies. There are currently over 50,000 members and 461 groups. Classroom 2.0 creates asynchronous interactions among a diverse group of teachers from six continents with countries including the United States, Canada, Mexico, India, and the Netherlands. Teachers' have the opportunity to start or participate in discussions, view videos, listen to interviews with experts, or read about upcoming technology events. The site also offers Classroom 2.0 hosts to help users with any questions that they may have about the network (Hardagon, 2010).

Classroom 2.0 offers a Saturday LIVE Show, which is an opportunity for the members of the community to gather in real time using audio, chat, desktop sharing, and video. Classroom 2.0 has also partnered with PBS Teachers to offer free webinars

that are designed to help preK-12 educators learn new ways to integrate online instructional resources. Additionally, the site contains a wiki that users can collaboratively build a Web site that will help educators integrate and use technology in the classroom. Users are encouraged to add and edit lesson plans, discussions and other educational resources (Hardagon, 2010).

Classroom 2.0 has been the recipient of several awards. The site was named one of the American Association of School Librarians (AASL) top twenty-five Web sites for teaching and learning. Classroom 2.0 was the 2007 and 2008 recipient of the Edublog Award for best use of a social networking site. The site was also an eSchool News Site of the Week award winner in 2009. Classroom 2.0 is also ISTE supported (Hardagon, 2010).

Summary

Throughout eras of school reform a common thread has been the call for reform in teacher quality so that students in the United States can compete in an increasingly global society (U.S. Department of Education, 2004, Serwach, 2003, & National Commission on Excellence in Education, 1983). Traditional teacher professional development is the means most often used to improve teacher quality (Linn et al., 2010, Guskey & Kwang Suk, 2010). They are an effort to bring about changes in the teaching practices, beliefs and attitudes of teachers; and the ultimate goal of professional development is increased learning gains for students (Guskey & Kwang Suk, 2010). Most states require that teachers participate in some type of professional development as part of the recertification process; however, teachers often report that they participate

in professional development courses because they want to become better teachers (Darling-Hammond et al, 2009, Helsing, Howell, Kegan & Lahey, 2008). Personal professional development are those learning opportunities that teachers seek on their own so that they can meet the needs of their students or address issues that are unique to their classroom.

Social media networks are Web-based services that are composed of a community of users that are linked by a common bond (Boyd & Ellison, 2007). Social learning communities can become an integral part of teacher professional development because they provide teachers with a collaboration tool that they can alter to meet their own needs and the needs of the learning community regardless of distance or time (Zalon, 2008; Laferriere et al., 2006). Social communities can be used as a place where teachers receive professional support, guidance, and possibly inspiration as they develop their professional identity, build new knowledge, and reflect on their teaching practices (Sutherland, Howdard, & Markauskaite, 2010) through the use of professional communication.

CHAPTER III- METHODOLOGY

Introduction

The purpose of this study was to examine if the social network Classroom 2.0 could be used as a source of personal professional development based on the sites ability to meet the criteria for effective professional development, teachers' reported integration practices, and teachers' perceived ability to collaborate and communicate with colleagues using the social network tools. Specifically, the extent to which teachers agree or disagree that Classroom 2.0 provides opportunity for active learning, that the information presented on Classroom 2.0 was coherent and integrated with their daily lives, and that information was content specific was examined. The frequency at which teachers integrate technology into their classroom and the frequency at which teachers collaborate and communicate with colleagues were also examined.

This chapter presents the procedures that were used to gather and analyze the data needed to answer the research questions and an overview of the methodology that was used to conduct this research. The chapter also describes the subjects, the survey instrument, and the procedures that were used to determine SCORE reliability and validity. The data collection and analysis are then outlined. Finally, the procedures that were used to ensure informed consent and the protection of human subjects are summarized.

Research Design

A non-experimental study was conducted to examine the relationship between how teachers' reported using the social network Classroom 2.0 for personal professional development and the criteria for effective professional development, teachers' integration practices, and teachers' ability to collaborate and communicate with colleagues. A self-administered questionnaire was used to gather data.

Restatement of the Research Questions

The research methodology presented in this chapter addressed the research questions that are restated below.

1. Is there a relationship between the criteria for effective professional development (providing active learning, being coherent and integrated with teachers' daily lives, and being content specific) and how K-12 teachers report using social media community in education?
2. Is there a relationship between the frequency at which teachers integrate technology into their classroom and how K-12 teachers report using social media community in education?
3. Is there a relationship between the frequency of collaboration with colleagues and how K-12 teachers report using social media community in education?
4. Is there a relationship between the ability to communicate professionally about technology integration with colleagues and how K-12 teachers report using social media community in education?

Population

Classroom 2.0 has over 50,000 members from over 170 different counties including students, pre-service and in-service teachers, and technology facilitators. There are also members from the commercial entity. The target population for this study consisted of K-12 classroom teachers who are employed at schools located within the United States (including schools located on U.S. military bases) that use the social network, Classroom 2.0. The study excluded members of Classroom 2.0 that were not K-12 classroom teachers because the primary goal of the study is to determine the role of online social media networks on teacher personal professional development. The study will also exclude Classroom 2.0 members who are employed at K-12 institutions other than those in the United States to avoid data variations caused by global differences in the organization of K-12 educational systems. These exclusions will eliminate approximately 26% of Classroom 2.0 members (Hardagon, 2010).

Instrument

The review of literature led to three instruments: 1) *A Short Survey for Online Community*, created by Hui (2006) to gather participants' experiences and views on learning within an online community; 2) *Teacher Questionnaire*, created by Mierzejewski (2009) to gather participants views on how technology impacted professional development; and 3) a survey created by Snider (2009) to determine how rural teachers used online communities. Each of the researchers used the survey questions as a means to garner participation in follow-up interviews. Portions of each of the questionnaires were appropriate for this study with slight modification of the wording.

A Short Survey for Online Community

The original instrument, *A Short Survey for Online Community*, was designed to gather data on teachers' experiences in e-communities with specific regard to sustainability and teacher support. The original instrument consisted of 11 multiple choice type questions, two open-ended questions, and three questions pertaining to demographic information (Hui, 2006). Some of the questions asked in the original instrument include (Hui, 2006):

- "Why did you join the [INSERT LIST NAME] list?"
- "How much time do you usually spend each day in browsing/reading or writing/responding within this specific online community?"
- "Would you consider this online community a sustainable one (i.e., ongoing for a relatively long period of time)?"
- "Do you think that online community can improve teacher retention (i.e., to provide support to new or re-entering teachers), and if so, at the same time facilitate professional learning (i.e., to keep high professional standard)?"

Questions 3-10 were appropriate to this study with modifications being made to each of the questions except question eight. Appendix H lists the original questions along with the modifications that were made to questions 3-7 and 9-10 of the original instrument. Question eight was used as presented in the original questionnaire, “Have you changed personally and/ or professionally as a result of your participation in this online community (Hui, 2006)?” No reliability measures were reported on the original instrument.

Teacher Questionnaire

The original instrument, *Teacher Questionnaire,* was designed to determine teachers’ perceptions of their level of technology and the type and amount of professional development that they received. The instrument was comprised of 57 Likert-type questions and four open-ended questions that were divided into three sections: general (2 items), technology use (43 items), and professional development (16 items) (Mierzejewski, 2009). Some of the questions asked in the original instrument include (Mierzejewski, 2009):

- How often have you participated in district-led workshops in technology use?”
- “How often have you been able to practice the newly acquired technology skills?”
- “How often have you conferred with a technology coach or other staff member dedicated to assist with instructional technology?”
- “How often are you able to collaborate with other teachers on aspects of technology use?”

The original response scale for each of the questions was a 6-point Likert scale where 0=Never, 1=Once a year, 2=Twice a year, 3=Monthly, 4=Weekly, and 6=Daily. For the purpose of this study, participants completed four questions from the professional development section with modifications being made to all of the questions. Appendix H lists the modifications that were made to four of the questions from the professional development portion of the original instrument. The author of the original instrument reported content validity through the use of an expert panel and a pilot test of twelve teachers and external validity was strengthened by using multiple test sites and reliability was addressed through the triangulation of data (Mierzejewski, 2009).

Survey

The original instrument, titled *Survey* (Snider, 2009), was designed to gather data regarding participants' use of online communication. The original instrument consisted of five questions pertaining to demographic information, three forced-choice formatted questions and three Likert-styled questions (Snider, 2009). Some of the questions asked in the original instrument include:

- "Do you use online communities for any of the following professional reasons (Snider, 2009)?"
- "In your experience, which of the following have you found to be hindrances to using online communities in meeting your professional needs (Snider, 2009, p. 104)?"

For the purposes of this study, participants completed the demographic items (questions 1-5) as well as questions ten and eleven with modifications being made to both questions. Appendix H lists the modifications that were made to the two questions from the original instrument. The original instrument asked demographic information

concerning age, gender, and highest level of education attained, current teaching assignment, and years of teaching experience. For the purpose of this study, a question about the country of employment was added to help delimit the population to include only members of Classroom 2.0 that are employed in the United States. A question regarding race was also added to gather demographic data. The author of the original instrument reported content validity through the use of a professional panel. Reliability was reported through the use of Cronbach's alpha on the Likert-style questions (Snider, 2009); however, no reliability was reported for questions ten and eleven.

Survey of an Online Social Network

In addition to completing the combined portions of the surveys listed above, participants completed seven questions created for the purposes of this study to garner information specific to participants' use of the Classroom 2.0 social network site. The questions focus on participants' efficacy in the skills that they acquired by using Classroom 2.0, their perceived level of technology integration, and their perceived ability to communicate and collaborate with colleagues. Examples of questions include:

- How long have you used the Classroom 2.0 social network?
- How often do you use the technology integrations skills that you learned on the Classroom 2.0 social network?
- How often do you collaborate on technology integration projects with colleagues in the Classroom 2.0 community?

Reliability and Validity

Select questions from three surveys and seven questions created specifically for this study were combined to create a new instrument that would be used to help determine if the social network Classroom 2.0 could be used as a source of personal professional development based on the sites ability to meet the criteria for effective professional development, teachers' reported integration practices, and teachers' perceived ability to collaborate and communicate with colleagues using the social network tools. The new instrument, *Survey of an Online Social Network*, was put through three rounds of cognitive testing with experts in the fields of social networking, professional development, and/or survey design to give evidence of content validity. After each round of cognitive testing, revisions were made based on the results of the cognitive interviews. For items where the response scale permits, additional evidence of reliability and validity was determined using an exploratory factor analysis for construct validity and Cronbach's alpha for internal consistency reliability.

Procedures

Data Collection

The data for this study was collected during a period of five weeks during the fall of 2010. The creator of Classroom 2.0 was solicited by email to provide email addresses of educators' from the Classroom 2.0 Community. Members of the community received access to the survey through email using SurveyMonkey.com. Potential participants were contacted using Dillman's (1999) Tailored Design Method.

The Tailored Design Method was designed to help researchers accrue a high response rate to questionnaires. In this method, members of the sample group are alerted to the fact a problem exists that is of importance to them and that they are needed to help find a solution. The researcher acts as the catalyst for change and strives to make each participant feel as if their expertise is needed to solve an important problem that directly affects them (Dillman, 1999).

The population was contacted a maximum of five times. The first contact was a pre-notification. Teachers were notified of the impending questionnaire (Appendix B) via email three days prior to receiving the questionnaire. Three days after the pre-notification email was sent, a link to the questionnaire was emailed to the teachers along with a cover letter (Appendix C) explaining the purpose of the questionnaire and the fact that the questionnaire was voluntary. The link directed teachers to a passive informed consent page (Appendix E). If the teacher agrees to answer the questions, they were directed to the questionnaire. If the teacher chooses to opt-out, the questionnaire will not launch.

Using the management system of SurveyMonkey.com, community members that did not respond were identified and a third contact was made. One week after teachers receive the questionnaire, a follow-up notice (Appendix D) was emailed to those who had not responded or opted-out. Two weeks after the third contact, a fourth contact was made. Teachers received another link to the questionnaire along with an email (Appendix D) reiterating the importance of receiving a response from anyone who has not done so. A fifth and final notice (Appendix D) was sent one week after the fourth contact, giving anyone that had not responded a last chance to respond.

Data Analysis

The collected data was analyzed using Statistical Package for Social Sciences (SPSS) version 18.

Research Question One

The first research question asked: Is there a relationship between the criteria for effective professional development (providing active learning, being coherent and integrated with teachers' daily lives, and being content specific) and how K-12 teachers report using social media community in education?

The dependent variable for research question one is how K-12 teachers report using the social network Classroom 2.0. Question 14; sub-question 2, which asked participants whether or not they use Classroom 2.0 to participate in professional development, was used to measure the dependent variable. The independent variable for research question one is the criteria for effective professional development (questions 20-22, Appendix G). The independent variable measure the extent to which participants agree or disagree that their most recent professional development in Classroom 2.0 provided opportunities for active learning (question 20, Appendix G), was coherent and integrated with teachers' daily lives (question 21, Appendix G), and was focused on specific content (question 22, Appendix G). Questions 20-22 of the *Survey of an Online Social Network* questionnaire (Appendix G) each contained sub-questions. The sub-questions in each section were summed to create a composite score for the group of items. Exploratory factor analysis was used to determine the subscales. How teachers report using social media networks was measured using question 14, sub-

question two of the *Survey of an Online Social Network* questionnaire (Appendix G). This question measures if teachers use Classroom 2.0 (yes or no) as a way to participate in professional development. Logistic regression was used to predict the binary outcome (if teachers use Classroom 2.0 as a way to participate in professional development) based on the three composite scores form questions 20-22.

Research Question Two

The second research question asked: Is there a relationship between the frequency at which teachers integrate technology into their classroom and how K-12 teachers report using social media community in education?

The independent variable for research question two is technology integration practices and the dependent variable for research question two is how teachers report using Classroom 2.0. For the purpose of this study, technology integration practices were measured using responses to question 15, 17, and 19 of the *Survey of an Online Social Network* questionnaire (Appendix G). Question 15 (Appendix G) deals with frequency of integration and responses include five categories: a) daily, b) weekly, c) once a month, d) less than once a month, and e) never. Question 17 (Appendix G) deals with level of ability and responses include four categories: a) no skill, b) basic, c) skilled, and d) expert. Question 19 (Appendix G) deals with feelings of achievement and responses include three categories: a) yes, b) not sure, and c) no. How teachers report using social networking was measured using question 14; sub-question 9 of the *Survey of an Online Social Network* questionnaire (Appendix G), which asked participants whether or not they use Classroom 2.0 to seek information to enhance professional

practice. This question measures if teachers use Classroom 2.0 (yes or no) to seek information to enhance professional practice. Three chi square tests of associations were computed to determine the relationship between teachers' technology integration practices (three independent variables) and use of social networking (dependent variable).

Research Question Three

The third research question asked: Is there a relationship between the frequency of collaboration with colleagues and how K-12 teachers report using social media community in education?

The independent variable for research question three is teacher collaboration on technology integration projects and the dependent variable for research question three is how teachers report using Classroom 2.0. For the purposes of this study, collaboration on technology integration projects (independent variable) was measured using question 16 of the *Survey of an Online Social Network* questionnaire (Appendix G). The independent variable measures the frequency at which participants report collaborating on technology integration projects with colleagues in the Classroom 2.0 community and responses include five categories: a) daily, b) weekly, c) once a month, d) less than once a month, and e) never. How teacher report using Classroom 2.0 (dependent variable) was measured using question 14; sub-question five, which asked participants whether or not they use Classroom 2.0 to connect with other educational professionals. This question measures if teachers use Classroom 2.0, yes or no, to connect with other educational professionals. A chi square test of association was

computed to determine the relationship between teacher collaboration on technology integration projects (independent variable) and use of social networking (dependent variable).

Research Question Four

The fourth research question asked: Is there a relationship between the ability to communicate professionally about technology integration with colleagues and how K-12 teachers report using social media community in education?

The independent variable is the ability to communicate professionally about technology and the dependent variable is how teachers report using Classroom 2.0 (question 14, sub-question six). For the purposes of this study, ability to communicate professionally about technology (independent variable) was measured using questions 9 and eighteen of the *Survey of an Online Social Network* questionnaire (Appendix G). The independent variables measure how much time participants usually spend writing or responding to the content on the Classroom 2.0 social network (question 9, Appendix G) and how comfortable participants are giving technology integration advice to colleagues in the Classroom 2.0 community (question eighteen, Appendix G). The response scale for question 9 (Appendix G) includes three categories: a) less than one hour each day, b) 1-3 hours each day, and c) more than 3 hours each day. The response scale for question eighteen (Appendix G) includes four categories: a) no skill, b) basic, c) skilled, and d) expert. How teachers report using social networking was measured using responses to question 14; sub-question six of the *Survey of an Online Social Network* questionnaire (Appendix G), which asked participants whether or not

they use Classroom 2.0 to share materials and ideas. This question measures if teachers use Classroom 2.0, yes or no, as a way to share materials and ideas. Two chi square tests of association were computed to determine the relationship between teachers' ability to communicate professionally about technology (two independent variables) and use of social networking (dependent variable).

To control the chance of a Type I error due to conducting multiple chi square procedures in research questions two through four, the Bonferroni adjustment was applied. Rather than testing at an alpha of .05, an alpha of 0.833 (.05/.06) was used.

Informed Consent

Research protocols followed the human subject guidelines as set forth by the University of Central Florida under the oversight of the UCF Institutional Review Board. The opening page of the online survey will contain a passive informed consent page (Appendix E). Participants were informed that that they do not have to answer any question that you feel uncomfortable answering. They will also be made of their right not to participate in this research, and their right to withdraw consent at any time without consequence. After reading the informed consent page, if the teacher agrees to participate in the survey, they were directed to the *Survey of an Online Social Network* questionnaire. If the teacher chooses to opt-out, the questionnaire will not launch and he or she will not receive further contact.

Summary

A non-experimental study was conducted to examine the relationship between how teachers' reported using the social network Classroom 2.0 for personal professional development and the criteria for effective professional development, teachers' integration practices, and teachers' ability to collaborate and communicate with colleagues. A self-administered questionnaire, *Survey of an Online Social Network,* was used to gather data. The data for this study was collected during a period of five weeks during the fall of 2010. The collected data was analyzed using Statistical Package for Social Sciences (SPSS) version 18.

The first research question asked: Is there a relationship between the criteria for effective professional development (providing active learning, being coherent and integrated with teachers' daily lives, and being content specific) and how K-12 teachers report using social media networks? Survey questions 20-22 and question14; sub-question two (Appendix G) were used to analyze research question one. Questions 20-22 of the *Survey of an Online Social Network* questionnaire (Appendix G) each contained sub-questions. The sub-questions in each section were summed to create a composite score for the group of items. Exploratory factor analysis was used to determine the subscales. That was followed by a logistic regression analysis. Logistic regression was used to predict the binary outcome (if teachers use Classroom 2.0 as a way to participate in professional development) based on the three composite scores form questions 20-22 (Appendix G).

The second research question asked: Is there a relationship between the frequency at which teachers integrate technology into their classroom and how K-12

teachers report using social media networks? Survey questions 15, 17, 19, and question 14; sub-question nine (Appendix G) were used to analyze research question two. Three chi square tests of associations were conducted to determine if technology integration practices (specifically; frequency of integration, level of integration, and growth) vary depending on whether respondents use Classroom 2.0 to seek information that will enhance their professional practice (yes or no).

The third research question asked: Is there a relationship between the frequency of collaboration with colleagues on the Classroom 2.0 social network and how K-12 teachers report using social media networks? Survey question 16 and question 14; sub-question five (Appendix G) were used to analyze research question three. A chi square test of association was conducted to determine if the frequency at which teachers reported collaborating on technology integration projects with colleagues in the Classroom 2.0 community varied depending on whether respondents used Classroom 2.0 connect with other educational professionals.

The fourth research question asked: Is there a relationship between the ability to communicate professionally about technology integration with colleagues on the Classroom 2.0 social network and how K-12 teachers report using social media networks? Survey questions 9, fourteen, and question 14; sub-question 6 (Appendix G) were used to analyze research question four. Two chi square tests of associations were conducted to determine if the ability to communicate professionally about technology integration (specifically; how much time participants usually spend writing or responding to the content on the Classroom 2.0 social network and how comfortable participants are giving technology integration advice to colleagues in the Classroom 2.0 community)

varied depending on whether respondents used Classroom 2.0 to share materials and ideas.

Research protocols followed the human subject guidelines as set forth by the University of Central Florida under the oversight of the UCF Institutional Review Board.

CHAPTER IV- DATA ANALYSIS

Introduction

The purpose of this study was to examine the relationships between how teachers' reported using the social network Classroom 2.0 for personal professional development , the criteria for effective professional development, teachers' integration practices, and teachers' ability to collaborate and communicate with colleagues. This chapter begins with a brief description of the research population and the collected demographic data. Next, a succinct overview of the research study design is presented. Each research questions is then restated and followed by a discussion of the related data analysis procedures and findings. Finally, a summary of the analyzed findings is presented.

Population

The population for this study consisted of preK-12 classroom teachers who are employed at schools located within the United States (including schools located on U.S. military bases) that use the social network, Classroom 2.0. Each member (*N*=54,039) of Classroom 2.0 was sent several email invitations asking them to participate in an online survey. There were 2,270 (4%) responses to the email invitations. Of the respondents, 3% (*n*=70) opted out of the survey, 33% (*n*=751) started but did not complete the questionnaire and 64% (*n*=1,449) completed the survey. Seventy-six percent (*n*=1027) of respondents indicated that they were currently employed in the United States and, of those, 76% (*n*=781) respondents indicated that they were PreK-12 teachers. Therefore,

the sample for this study consists of 781 preK-12 classroom teachers that are employed in the United States.

Demographic Data

Approximately 67.5% (*n*=526) of the respondents were between the ages of 40-59, while less than 25% (*n*=179) of the respondents were between the ages of 20-39. The gender data revealed that over 75% of the participants were female (*n*=595). Almost 90% of the participants were Non-Hispanic White (*n*=697), a little over 6% of the participants were Black/ African American or Hispanic/ Latino (*n*=48), and less than 4% were American Indian/Alaska Native, Asian Indian, Chinese, Filipino, Japanese, Native Hawaiian, other Asian, and other Pacific Islander (n=22). Approximately 76.8% (n=600) of the participants had a master's degree or higher and 23.1% (n=166) of participants had a bachelor's degree.

Table 1-Sample Characteristics (Frequencies and Percentages)

	f	%
Gender		
Male	181	23.3
Female	595	76.2
Age		
20-29	40	5.1
30-39	139	17.8
40-49	244	31.3
50-59	282	36.2
60 or over	74	9.5
Race		
American Indian or Alaska Native	6	.8
Asian Indian	1	.1
Filipino	7	.9
Black or African American	27	3.5
Chinese	2	.3
Filipino	7	.9
Hispanic or Latino	21	2.7
Japanese	3	.4
Native Hawaiian	1	.1
Non-Hispanic White	697	89.2
Other Asian	1	.1
Other Pacific Islander	1	.1
Education		
Bachelor's Degree	166	21.3
Doctoral Degree	33	4.2
Master's Degree	512	65.6
Specialist's Degree	55	7.0

Research Study Design

A correlational design study was conducted to examine the relationships between how teachers' reported using the social network Classroom 2.0 for personal professional development, the criteria for effective professional development, teachers' integration practices, and teachers' ability to collaborate and communicate with colleagues. A self-administered questionnaire, Survey of an Online Social Network, was

used to gather data. The survey consisted of 29 questions; 12 multiple choice questions, 10 Likert scaled questions, and seven demographic questions.

The Survey of an Online Social Network questionnaire was distributed to members of the Classroom 2.0 through email using SurveyMonkey.com. Potential participants were contacted a maximum of five times using Dillman's (1999) Tailored Design Method. Potential participants had five weeks to respond to the survey.

The collected data was analyzed using Statistical Package for Social Sciences (SPSS) version 18. For research question one, exploratory factor analysis was used to determine the subscales and then logistic regression was used to predict the binary outcome (if teachers use Classroom 2.0 as a way to participate in professional development) based on the three composite scores from questions 20-22. For research question two, three chi square tests of associations were computed to determine the relationship between teachers' technology integration practices (three independent variables) and use of social networking (dependent variable). For research question three, a chi square test of association was computed to determine the relationship between teacher collaboration on technology integration projects (independent variable) and use of social networking (dependent variable). Finally, for research question four, two chi square tests of association were computed to determine the relationship between teachers' ability to communicate professionally about technology (two independent variables) and use of social networking (dependent variable).

To control the chance of a Type I error due to conducting multiple chi square procedures in research questions two through four, the Bonferroni adjustment was applied. Rather than testing at an alpha of .05, an alpha of 0.833 (.05/.06) was used.

Research Question One

The first research question asked: Is there a relationship between the criteria for effective professional development (providing active learning, being coherent and integrated with teachers' daily lives, and being content specific) and how K-12 teachers report using social media community in education? Survey questions 20-22 and question14; sub-question two (Appendix G) were used to analyze research question one. Questions 20-22 of the *Survey of an Online Social Network* questionnaire (Appendix G) each contained sub-questions. The sub-questions in each section were summed to create a composite score for the group of items. Exploratory factor analysis was used to determine the subscales. That was followed by a logistic regression analysis. Logistic regression was used to predict the binary outcome (if teachers use Classroom 2.0 as a way to participate in professional development) based on the three composite scores form questions 20-22 (Appendix G).

Exploratory Factor Analysis Results

Survey questions 20-22 each contained a series of five sub-questions to measure the extent to which participants agree or disagree that their most recent professional development in Classroom 2.0 provided opportunities for active learning (question 20), was coherent and integrated with teachers' daily lives (question 21), and was focused on specific content (question 22) . Possible responses to the questions included: Strongly Disagree, Disagree, Undecided, Agree, and Strongly Agree (Appendix G). Because each of the questions 20-22 of the survey contained a series of

five related sub-questions, exploratory factor analysis was used to determine the underlying factors of these items.

First, 15 of 15 items correlated at least .30 with at least one other item and all were statistically significant ($p < .05$) (see Table 1). The overall Kaiser-Meyer-Olkin measure of sampling adequacy was .919, larger than the recommended value of .50. In addition, the measures of sampling adequacy values for the individual items were all .794 or above, which is larger than the recommended value of .50. Bartlett's test of sphericity was statistically significant χ^2 (105, n=781) = 3888.805, $p < .001$. Finally, communalities were reviewed. Two sets of communalities were provided, the initial set and the extracted set. Of 15 items, one was below the recommended value of .30 and none exceeded 1.0; this provides evidence of shared variance among the items (see Table 2). Therefore, the result could be further interpreted

The maximum likelihood estimation procedure was used to extract the factors. Kaiser's rule was used to determine which factors were most eligible for interpretation. Three factors were extracted explaining about 58.7% of all the variable variances. The maximum likelihood converged in four iterations. Promax was chosen as the rotation method because it assumes that nonzero correlations among the factors are reasonable. The correlations in the factor correlation matrix can be justified because the correlations exceed the value of .25.

The responses to: a) The goals of the professional development were consistent with my goals, b) The PD was based on previous learning experiences, c) The PD was followed up with activities that built upon what was learned, d) The content and pedagogy was aligned with state and district standards, e) I was encouraged to

participate with other teachers, and f) I participated in meaningful discussion were very similar. The variables together contributed most notably to Factor 1(see Table 3), which will be called Coherent and Integrated with Teachers' Daily Lives; therefore, those variables were summed and a composite score was created.

The structure matrix showed that the responses to: a) I gained knowledge and skills in the area of curriculum, b) I gained knowledge and skills in the area of instructional methods, c) I gained knowledge and skills in the area of approaches to assessment, d) I gained knowledge and skills in the area of technology instruction, and e) My knowledge of content was deepened were comparable. The variables together contributed most notably to Factor 2 (see Table 3), which will be called Content Specific; therefore, those variables were summed and a composite score was created.

The structure matrix showed that the responses to: a) I had the opportunity to observe expert teachers or be observed teaching, b) I had the opportunity to plan classroom implementation, c) I gave a presentation or demonstration of a lesson, and d) I examined and reviewed student work were very similar. The variables together contributed most notably to Factor 3 (see Table 3), which will be called Active Learning; once again, the variables were summed and a composite score was created.

Internal consistency for each of the subscales was examined using Cronbach's alpha and was .805 for Coherent and Integrated with Teachers' Daily Lives, .854 for Content Specific and .724 for Active Learning. A substantial increase in Cronbach's alpha would not be achieved by deleting any items from the scales. Descriptive statistics for the scales are provided in Table 4.

Table 2-Correlation Matrix for Professional Development in Classroom 2.0

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1.000														
2	.332	1.000													
3	.351	.412	1.000												
4	.284	.406	.320	1.000											
5	.384	.371	.513	.331	1.000										
6	.247	.356	.102	.486	.202	1.000									
7	.160	.378	.079	.333	.193	.582	1.000								
8	.261	.400	.289	.332	.383	.361	.450	1.000							
9	.233	.327	.140	.300	.279	.441	.409	.461	1.000						
10	.251	.346	.151	.429	.237	.470	.406	.388	.417	1.000					
11	.258	.397	.215	.403	.233	.504	.406	.345	.421	.455	1.000				
12	.306	.390	.181	.418	.273	.533	.433	.376	.410	.476	.663	1.000			
13	.274	.365	.299	.334	.303	.335	.330	.432	.380	.356	.480	.541	1.000		
14	.206	.374	.117	.466	.215	.612	.491	.386	.362	.511	.572	.638	.442	1.000	
15	.305	.410	.238	.329	.286	.439	.372	.387	.367	.425	.634	.521	.444	.538	1.000

1. I had the opportunity to observe expert teachers or be observed teaching.
2. I had the opportunity to plan classroom implementation.
3. I gave a presentation or demonstration of a lesson.
4. I participated in meaningful discussion.
5. I examined and reviewed student work.
6. The goals of the professional development were consistent with my goals.
7. The PD was based on previous learning experiences.
8. The PD was followed up with activities that built upon what was learned.
9. The content and pedagogy was aligned with state and district standards.
10. I was encouraged to participate with other teachers.
11. I gained knowledge and skills in the area of curriculum.
12. I gained knowledge and skills in the area of instructional methods.
13. I gained knowledge and skills in the area of approaches to assessment.
14. I gained knowledge and skills in the area of technology instruction.
15. My knowledge of content was deepened.

Table 3-Factor Loadings and Communalities Based on Maximum Likelihood Analysis

Item	Factor 1	Factor 2	Factor 3	Communality
1. I had the opportunity to observe expert teachers or be observed teaching.	.318	.354	**.514**	.277
2. I had the opportunity to plan classroom implementation.	.519	.496	**.587**	.423
3. I gave a presentation or demonstration of a lesson.	.198	.270	**.737**	.573
4. I participated in meaningful discussion.	**.570**	.508	.473	.381
5. I examined and reviewed student work.	.345	.326	**.696**	.488
6. The goals of the professional development were consistent with my goals.	**.777**	.622	.284	.618
7. The PD was based on previous learning experiences.	**.724**	.501	.271	.534
8. The PD was followed up with activities that built upon what was learned.	**.584**	.461	.515	.416
9. The content and pedagogy was aligned with state and district standards.	**.581**	.495	.363	.350
10. I was encouraged to participate with other teachers.	**.624**	.574	.348	.413
11. I gained knowledge and skills in the area of curriculum.	.603	**.833**	.383	.697
12. I gained knowledge and skills in the area of instructional methods.	.659	**.800**	.387	.646
13. I gained knowledge and skills in the area of approaches to assessment.	.502	**.611**	.475	.413
14. I gained knowledge and skills in the area of technology instruction.	.727	**.734**	.305	.619
15. My knowledge of content was deepened.	.559	**.721**	.427	.526

Table 4-Descriptive Statistics for Three Subscales

	Coherent and Integrated with Teachers' Daily Lives	Content Specific	Active Learning
Number of Items	6	5	4
Mean	3.6770	3.7932	3.0935
Standard deviation	.63456	.67742	.68846
Cronbach's alpha	.805	.854	.724

Logistic Regression Results

A binary logistic regression analysis was conducted to determine whether three predictors (Coherent and Integrated with Teachers' Daily Lives, Content Specific, and Active Learning) could predict if teachers use Classroom 2.0 as a way to participate in professional development (where 1=No, 2=Yes). The test was conducted using an alpha of .05. The assumptions of logistic regression including: non-collinearity, linearity, and independence were tested. According to Menard (1995), VIF values greater than 10 indicate mulitcollinearity and tolerance values less than .10 indicate concern with potential multicollinearity.

For Active Learning, a VIF value of 1.38 and a tolerance value of .725 provide evidence of non-collinearity. A VIF value of 2.205 and a tolerance value of .454 for Coherent and Integrated with Teachers' Daily Lives indicate non-collinearity. Non-collinearity was also evident for Content Specific with its VIF value of 2.142 and its tolerance value of .467. However, after examining the collinearity diagnostics, some signs of multicollnearity existed. The variance proportions suggested that 87% of the

variance of the regression coefficient for Coherent and Integrated with Teachers' Daily Lives and 75% for Content Specific were related to the smallest eigenvalue.

The linearity assumption is only applicable to continuous variables; therefore, the test was conducted only for active learning. Linearity was checked using the Tidwell transformation test. An interaction term (a product of the independent variable and its natural log) was created to run this test. The interaction term was not statistically significant (*B*= -1.34, *SE*= .155, Wald= .754, *df*= 1, *p*= .385) thus providing evidence of linearity.

A plot of standardized residuals was reviewed to access independence. With the exception of a few cases that were outside of the band, the majority of the cases were within the absolute value of 2.0 which indicated that the assumption of independence had been met.

The logistic regression analysis did not indicate statistically significant results on the Hosmer and Lemeshow test, χ^2 (8, *n*=781) =13.424, *p*=.098, and a relatively trivial effect size. A Nagelkerke's R^2 of .159 indicated a small relationship between the predictors (Coherent and Integrated with Teachers' Daily Lives, Content Specific, and Active Learning) and the outcome (using Classroom 2.0 to participate in professional development). According to the model, the odds of a teacher using Classroom 2.0 as a form of professional development was negatively related to Active Learning (-.010) and positively related to Coherent and Integrated (.136) and Content Specific (.118). These results suggest that the predictors, as set, reliably distinguished between teachers that use Classroom 2.0 as a way to participate in professional development.

Of the three predictors in the model, Coherent and Integrated with Teachers' Daily Lives (Wald= 12.179, $p< .001$) and Content Specific (Wald= 8.021, $p=.005$) were statistically significant predictors of using Classroom 2.0 as a way to participate in professional development.

The odds ratio for Coherent and Integrated with Teachers' Daily Lives suggest that for every one point of increase in Coherent and Integrated with Teachers' Daily Lives, the odds were about 15% higher for using Classroom 2.0 as a source of professional development (as compared to not using Classroom 2.0 as a source of professional development). For every one point of increase in Content Specific, the odds were approximately 13% higher for using Classroom 2.0 as a source of professional development (as compared to not using Classroom 2.0 as a source of professional development). Active Learning was not statistically significant; therefore, the odds for using Classroom 2.0 as a source of professional development (as compared to not using Classroom 2.0 as a source of professional development) are similar regardless of the score on the variable. The table below presents the results for the model including the regression coefficients, the Wald criterion statistics, the odds ratios, and the 95% confidence intervals for the odds ratio.

Table 5-Logistic Regression Results

						95% CI for Exp(*B*)	
	B	*SE*	Wald	*p*	Exp(*B*)	Lower	Upper
Active Learning	-.010	.036	.083	.774	.990	.922	1.062
Coherent and Integrated	.136	.039	12.179	.000	1.145	1.061	1.236
Content Specific	.118	.042	8.021	.005	1.125	1.037	1.221
Constant	-3.991	.662	36.369	.000	.018		

The logistic model accurately predicted 75% of the participants in the sample with participants that use Classroom 2.0 as a form of professional development more likely to be classified correctly (97.1% of participants that used Classroom as a form of professional development and 14.5% of participants that did not use Classroom as a form of professional development). To account for chance agreement, the Kappa coefficient was computed. The Kappa measure of agreement was .155, a relatively small value.

Summary of Research Question One

In summary, the results suggested that there was a statistically significant relationship between the criteria for effective professional development and how K-12 teachers report using social media networks. Specifically, Content Specific and Coherent and Integrated with Teachers' Daily Lives made significant contributions to the prediction of whether teachers would use Classroom 2.0 as a form of professional development, while Active Learning was not a significant predictor. The odds for using Classroom 2.0 as a source of professional development (as compared to not using Classroom 2.0 as a source of professional development) are similar for the Active Learning category regardless of the score on the variable. The overall prediction success was 75%.

Research Question Two

The second research question asked: Is there a relationship between the frequency at which teachers integrate technology into their classroom and how K-12 teachers report using social media community in education? Survey questions 15, 17, 19, and question 14; sub-question nine (Appendix G) were used to analyze research question two. Three chi square tests of associations were conducted to determine if technology integration practices (specifically; frequency of integration, level of integration, and growth) vary depending on whether respondents use Classroom 2.0 to seek information that will enhance their professional practice. Respondents were asked to select yes or no to determine whether or not they use Classroom 2.0 to seek information that will enhance their professional practice. Chi square tests of associations were chosen for these analyses because the variables were categorical.

Chi Square Test of Association One

The first chi square test of association was conducted to determine whether the frequency of technology use in the classroom varied depending on whether respondents used Classroom 2.0 to seek information that would enhance their professional practice. Respondents were asked to indicate daily, weekly, once a month, less than once a month, or never for frequency of technology use. Respondents were asked to indicate yes or no for seeking information that would enhance their professional practice. Applying the Bonferroni to control for the increased possibility of a Type I error, the test was conducted using an alpha of .083 (.05/.06). The null hypothesis was that there is no relationship between the frequency

of technology integration and the use of Classroom 2.0, and the alternative hypothesis was that there is a relationship between the frequency of technology integration and the use of Classroom 2.0. The dependent variable was frequency of integration and the independent variable was how teachers report using Classroom 2.0.

Frequency of integration was statistically significant related to the use of Classroom 2.0, Pearson χ^2(4, *n*=767) =118.682, *p* <.001, phi=.393. The phi statistic indicated a small to moderate effect (Cohen, 1988). One cell violated the assumption of five expected frequencies; therefore, results must be interpreted with caution. Among the respondents that used Classroom 2.0 to seek information that would enhance their professional practice, 56.1% (*n*=409) of them used the integration skills that they learned on the Classroom 2.0 Web site weekly or daily while only 18.6% (*n*=136) used their learned integration skills less than once a month or never. The null hypothesis was rejected. There was evidence to support a relationship between the frequency of technology integration and the use of Classroom 2.0 to seek information that would enhance professional practice.

Review of Standardized Residuals

Standardized residuals were reviewed to determine which cells contributed to the overall statistically significant relationship. Using an alpha of .083, standard residuals greater than +/-1.73 are considered statistically significant and indicate that a cell contributed to the association between the variables (these cells are highlighted in table

6). Residuals with a positive value indicate that the observed frequency was greater than the expected frequency and residuals with a negative value indicate that the observed frequency was less than the expected frequency. Table 6 gives a synopsis of the standardized residuals for the first chi square test of association.

Level 1: Never use the technology integration skills learned on the Classroom 2.0 social network

Based on the examination of the standardized residuals for the cells, there were statistically significantly: 1) more respondents that do not use Classroom 2.0 to enhance professional practices (*SR*=9.9); and 2) less respondents that do use Classroom 2.0 to enhance professional practices (*SR*=-2.3) who have never use the technology integration skills learned on the Classroom 2.0 social network. Approximately 44.7% of teachers who do not use Classroom 2.0 to enhance professional practices and about 3.8% of teachers who used Classroom 2.0 to enhance professional practices never used the technology integration skills that they learned on the Classroom 2.0 social network.

Level 2: Use the technology integration skills learned on the Classroom 2.0 social network less than once a month

Among teachers that reported using the Classroom 2.0 social network less than once a month, the proportion that did not use Classroom 2.0 to enhance professional practices (*SR*=1.7) and the proportion that used Classroom 2.0 to enhance professional practices (*SR*=-.4) did not contribute significant to the chi square results. Approximately 26.3% of teachers who did not use Classroom 2.0 to enhance professional practices

integrated the technology skills that they learned on the Classroom 2.0 social network less than once a month and about 14.8% of teachers who used Classroom 2.0 to enhance professional practices integrated the technology skills that they learned on the Classroom 2.0 social network less than once a month.

Level 3: Use the technology integration skills learned on the Classroom 2.0 social network once a month

A review of the standardized residuals for the cells revealed that there were statistically significantly fewer teachers that do not use Classroom 2.0 to enhance professional practices who use the technology integration skills learned on the Classroom 2.0 social network once a month(*SR*=-2.1). The proportion of teachers that used Classroom 2.0 to enhance professional practices and used the technology integration skills learned on the Classroom 2.0 social network once a month (*SR*=.5) did not contribute to the statistically significant chi square results. Approximately 7.9% of teachers who did not use Classroom 2.0 to enhance professional practices and about 25.2% of teachers who used Classroom 2.0 to enhance professional practices use the technology integration skills that they learned on the Classroom 2.0 social network once a month.

Level 4: Use the technology integration skills learned on the Classroom 2.0 social network weekly

The standardized residuals for the cells showed that there were statistically significantly fewer teachers that did not use Classroom 2.0 to enhance professional practices who used the technology integration skills learned on the Classroom 2.0 social

network weekly (*SR*=-2.2). The proportion of teachers that used Classroom 2.0 to enhance professional practices who used the technology integration skills learned on the Classroom 2.0 social network weekly (*SR*=.5) did not contribute to the statistically significant chi square results. Approximately 13.2% of teachers who did not use Classroom 2.0 to enhance professional practices and approximately 35.0% of teachers who used Classroom 2.0 to enhance professional practices used the technology integration skills they learned on the Classroom 2.0 social network weekly.

Level 5: Use the technology integration skills learned on the Classroom 2.0 social network daily

Among respondents that reported using the integration skills that they learned on Classroom 2.0 daily, the proportion of teachers that did not use Classroom 2.0 to enhance professional practices (*SR*=-1.7) and the proportion of teachers that used Classroom 2.0 to enhance professional practices (*SR*=.4) did not contribute to the statistically significant chi square results. Approximately 7.9% of teachers who did not use Classroom 2.0 to enhance professional practices used the technology integration skills that they learned on the Classroom 2.0 social network daily and about 21.1% of teachers who used Classroom 2.0 to enhance professional practices used the technology integration skills that they learned on the Classroom 2.0 social network daily.

Table 6-Frequency by Professional Practice (Frequencies, Percentages within Columns, and Standardized Residuals)

		Seek Information to Enhance Professional Practice		
Question	Response	No	Yes	Total
How often do you use the technology integration skills that you learned on the Classroom 2.0 social network?	Never (1)	*n*=17 (44.7%) *SR*=9.9	*n*=28 (3.8%) *SR*=-2.3	*n*=45 (5.9%)
	Less than once a month (2)	*n*=10 (26.3%) *SR*=1.7	*n*=108 (14.8%) *SR*=-.4	*n*=118 (15.4%)
	Once a month (3)	*n*=3 (7.9%) *SR*=-2.1	*n*=184 (25.2%) *SR*=.5	*n*=187 (24.4%)
	Weekly (4)	*n*=5 (13.2%) *SR*=-2.2	*n*=255 (35.0%) *SR*=.5	*n*=260 (33.9%)
	Daily (5)	*n*=3 (7.9%) *SR*=-1.7	*n*=154 (21.1%) *SR*=.4	*n*=157 (20.5%)

Chi Square Test of Association Two

The second chi square test of association was conducted to determine whether teachers' level of technology integration varied depending on whether respondents used Classroom 2.0 to seek information that would enhance their professional practice. Respondents were asked to indicate expert, skilled, basic, or no skill for level of technology integration. Respondents were asked to indicate yes or no for using Classroom 2.0 to seek information that would enhance their professional practice. Applying the Bonferroni to control for the increased possibility of a Type I error, the test

was conducted using an alpha of .083 (.05/.06). The null hypothesis was that there is no relationship between teachers' level of technology integration and the use of Classroom 2.0, and the alternative hypothesis was that there is a relationship between teachers' level of technology integration and the use of Classroom 2.0. The independent variable was the level of integration and the dependent variable was how teachers reported using Classroom 2.0.

Level of integration was found to be statistically significant related to the use of Classroom 2.0, Pearson χ^2 (3, *n*=781) =28.67, *p* <.001, phi=.194. The phi statistic indicated a small effect (Cohen, 1988). Two cells violated the assumption of five expected frequencies; therefore, results must be interpreted with caution. Among the respondents that used Classroom 2.0 to seek information that would enhance their professional practice, 87.9% (*n*=638) of them felt that they had become skilled or experts at integrating technology in their classroom since they joined the Classroom 2.0 community while only 12.2% (*n*=88) of them believed that they still had very basic or no skills. The null hypothesis was rejected. There was evidence to support a relationship between teachers' level of technology integration and the use of Classroom 2.0 to seek information that would enhance professional practice.

Review of Standardized Residuals

Standardized residuals were reviewed to determine which cells contributed to the overall statistically significant relationship. Using an alpha of .083, standard residuals

greater than +/-1.73 are considered statistically significant and indicate that a cell contributed to the association between the variables (these cells are highlighted in table 7). Residuals with a positive value indicate that the observed frequency was greater than the expected frequency and residuals with a negative value indicate that the observed frequency was less than the expected frequency. Table 7 gives a synopsis of the standardized residuals for the second chi square test of association.

Level 1: Rates level of technology integration as no skill since joining the Classroom 2.0 community

Based on the examination of the standardized residuals for the cells, there were statistically significantly more teachers that do not use Classroom 2.0 to enhance professional practices who rated their level of technology integration as no skill (*SR*=4.7) since joining the Classroom 2.0 community. The proportion of teachers that use Classroom 2.0 to enhance professional practices and rated their level of technology integration as no skill since joining the Classroom 2.0 community (*SR*=-1.1) did not contribute to the statistically significant chi square results. Approximately 10.8% of teachers who did not use Classroom 2.0 to enhance professional practices and about 1.0% of teachers who used Classroom 2.0 to enhance professional practices, rated their level of technology integration as no skill since joining the Classroom 2.0 community.

Level 2: Rates level of technology integration as basic since joining the Classroom 2.0 community

According to the examination of the standardized residuals for the cells, there were statistically significantly more teachers that did not use Classroom 2.0 to enhance professional practices who rated their level of technology integration as basic since joining the Classroom 2.0 community (*SR*=1.8). The proportion of teachers that used Classroom 2.0 to enhance professional practices and rated their level of technology integration as basic since joining the Classroom 2.0 community (*SR*=-.4) did not contribute to the statistically significant chi square results. Approximately 26.1% of teachers who did not use Classroom 2.0 to enhance professional practices and about 11.2% of teachers who used Classroom 2.0 to enhance professional practices rated their level of technology integration as basic since joining the Classroom 2.0 community.

Level 3: Rates level of technology integration as skilled since joining the Classroom 2.0 community

As denoted by the examination of the standardized residuals for the cells, the proportion of teachers that did not use Classroom 2.0 to enhance professional practices and rated their integration level as skilled (*SR*=-.8) and the proportion of teachers that used Classroom 2.0 to enhance professional practices and rated their integration level as skilled (*SR*=.2), did not contribute to the statistically significant chi square results. Approximately 35.1% of teachers who did not use Classroom 2.0 to enhance professional practices and about 44.2% of teachers who used Classroom 2.0 to enhance professional practices, rated their level of technology integration as skilled since joining the Classroom 2.0 community.

Level 4: Rates level of technology integration as expert since joining the Classroom 2.0 community

Amid the respondents that rated their level of technology integration as expert, the proportion of teachers that did not use Classroom 2.0 to enhance professional practices (*SR*=-1.0) and the proportion of teachers that used Classroom 2.0 to enhance professional practices (*SR*=.2) did not contribute to the statistically significant chi square results. Approximately 32.4% of teachers who did not use Classroom 2.0 to enhance professional practices and about 43.7% of teachers who used Classroom 2.0 to enhance professional practices rated their level of technology integration as expert since joining the Classroom 2.0 community.

Table 7-Level of Integration by Professional Practice (Frequencies, Percentages within Columns, and Standardized Residuals)

		Seek Information to Enhance Professional Practice		
Question	Response	No	Yes	Total
How would you rate your level of technology integration since you joined the Classroom 2.0 community?	No Skill (1)	*n*=4 (10.8%) *SR*=4.7	*n*=7 (1.0%) *SR*=-1.1	*n*=11 (1.4%)
	Basic (2)	*n*=8 (26.1%) *SR*=1.8	*n*=81 (11.2%) *SR*=-.4	*n*=89 (11.7%)
	Skilled (3)	*n*=13 (35.1%) *SR*=-.8	*n*=321 (44.2%) *SR*=.2	*n*=334 (43.8%)
	Expert (4)	*n*=12 (32.4%) *SR*=-1.0	*n*=317 (43.7%) *SR*=.2	*n*=329 (43.1%)

Chi Square Test of Association Three

A chi square test of association was conducted to determine whether teachers' belief that they had become better at integrating technology varied depending on whether respondents used Classroom 2.0 to seek information that will enhance their professional practice. Respondents were asked to indicate yes, not sure, or no for beliefs about becoming better at integrating technology. Respondents were asked to indicate yes or no for using Classroom 2.0 to seek information that will enhance their professional practice. Applying the Bonferroni to control for the increased possibility of a Type I error, the test was conducted using an alpha of .083 (.05/.06). The null hypothesis was that there was no relationship between teachers' beliefs that they had become better at integrating technology and the use of Classroom 2.0. The alternative hypothesis was that there is no relationship between teachers' beliefs that they had become better at integrating technology and the use of Classroom 2.0. The independent variable was growth in technology integration and the dependent variable was how teachers reported using Classroom 2.0.

Growth in technology integration was statistically significant related to the use of Classroom 2.0, Pearson χ^2 (2, *n*=781) =60.842, *p* < .001, phi=.282. The phi statistic indicated a small to moderate effect (Cohen, 1988). One cell violated the assumption of five expected frequencies; therefore, results must be interpreted with caution. Among the respondents that used Classroom 2.0 to seek information that would enhance their professional practice, 57.8% (*n*=422) of them felt that they had become

better at integrating technology in their classroom since they joined the Classroom 2.0 community while 34.1% (*n*=249) believed that they had not become better at integrating technology in their classroom since they joined the Classroom 2.0 community. The null hypothesis was rejected. There was evidence to support a relationship between teachers' beliefs that they had become better at integrating technology and the use of Classroom 2.0 to seek information that would enhance their professional practice.

Review of Standardized Residuals

Standardized residuals were reviewed to determine which cells contributed to the overall statistically significant relationship. Using an alpha of .083, standard residuals greater than +/-1.73 are considered statistically significant and indicate that a cell contributed to the association between the variables (these cells are highlighted in table 8). Residuals with a positive value indicate that the observed frequency was greater than the expected frequency and residuals with a negative value indicate that the observed frequency was less than the expected frequency. Table 8 gives a synopsis of the standardized residuals for the third chi square test of association.

Level 1: No, the Classroom 2.0 social network has not helped improve classroom technology integration

Among the respondents that reported that the Classroom 2.0social network had not helped improve their classroom integration , the proportion of teachers that do not

use Classroom 2.0 to enhance professional practices (*SR*=1.0) and the proportion of teachers that do use Classroom 2.0 to enhance professional practices (*SR*=-.2) did not contribute to the statistically significant chi square results. Approximately 44.4% of teachers who did not use Classroom 2.0 to enhance professional practices and about 34.1% of teachers who used Classroom 2.0 to enhance professional practices reported that the use of the Classroom 2.0 social network had not helped improve classroom their technology integration.

Level 2: Not sure if the Classroom 2.0 social network has helped improve classroom technology integration

According to the examination of the standardized residuals for the cells, there were statistically significantly more teachers that did not use Classroom 2.0 to enhance professional practices who reported that they were not sure if the Classroom 2.0 social network had helped improve their classroom integration (*SR*=6.6). The proportion of teachers that used Classroom 2.0 to enhance professional practices and reported that they were not sure if the Classroom 2.0 social network had helped improve their classroom integration (*SR*=-1.5) did not contribute to the statistically significant chi square results. Approximately 44.4% of teachers who did not use Classroom 2.0 to enhance professional practices and about 8.1% of teachers who used Classroom 2.0 to enhance professional practices reported that they were not sure if the Classroom 2.0 social network had helped improve their classroom integration.

Level 3: Yes, the Classroom 2.0 social network has helped improve classroom technology integration

As shown by the standardized residuals for the cells, there were statistically significantly fewer teachers that did not use Classroom 2.0 to enhance professional practices who reported that the Classroom 2.0 social network had helped improve their classroom integration (*SR*=-3.6). The proportion of teachers that used Classroom 2.0 to enhance professional practices who reported that the Classroom 2.0 social network had helped improve their classroom integration (*SR*=.8) did not contribute to the statistically significant chi square results. Approximately 11.1% of teachers who did not use Classroom 2.0 to enhance professional practices and about 57.8% of teachers who used Classroom 2.0 to enhance professional practices reported that the Classroom 2.0 social network had helped improve their classroom integration.

Table 8-Growth in Technology Integration by Professional Practice (Frequencies, Percentages within Columns, and Standardized Residuals)

		Seek Information to Enhance Professional Practice		
Question	Response	No	Yes	Total
Has the use of the Classroom 2.0 social networking site helped you to become better at integrating technology in your classroom?	Yes (1)	*n*=16 (44.4%) *SR*=1.0	*n*=249 (34.1%) *SR*=-.2	*n*=265 (34.6%)
	Not Sure (2)	*n*=16 (44.4%) *SR*=6.6	*n*=59 (8.1%) *SR*=-1.5	*n*=75 (9.8%)
	No (3)	*n*=4 (11.1%) *SR*=-3.6	*n*=422 (57.8%) *SR*=.8	*n*=426 (55.6%)

Summary of Research Question Two

In summary, the results suggested that there was a statistically significant relationship between technology integration practices and how K-12 teachers report using social media networks. Frequency of integration was statistically significant related to the use of Classroom 2.0. There were statistically significantly: a) more respondents that did not use Classroom 2.0 to enhance professional practices and fewer respondents that used Classroom 2.0 to enhance professional practices who never use the technology integration skills learned on the Classroom 2.0 social network (Table 3, level 1), b) less teachers that did not use Classroom 2.0 to enhance professional practices who used the technology integration skills learned on the Classroom 2.0 social network once a month (Table 3, level 3), and c) less teachers that did not use Classroom 2.0 to enhance professional practices who used the technology integration skills learned on the Classroom 2.0 social network weekly (Table 3, level 4).

Level of integration was statistically significant related to the use of Classroom 2.0. There were statistically significantly: a) more teachers that did not use Classroom 2.0 to enhance professional practices who rated their level of technology integration as no skill since joining the Classroom 2.0 community (Table 4, level 1) and b) more teachers that did not use Classroom 2.0 to enhance professional practices who rated their level of technology integration as basic since joining the Classroom 2.0 community (Table 4, level 2).

Growth in technology integration was statistically significant related to the use of Classroom 2.0. Statistically significantly fewer teachers that did not use Classroom 2.0

to enhance professional practices reported that the Classroom 2.0 social network had helped improve their classroom integration (Table 5, level 3).

Research Question Three

The third research question asked: Is there a relationship between the frequency of collaboration with colleagues and how K-12 teachers report using social media community in education? Survey question 16 and question 14; sub-question five (Appendix G) were used to analyze research question three. A chi square test of association was conducted to determine if the frequency at which teachers reported collaborating on technology integration projects with colleagues in the Classroom 2.0 community varied depending on whether respondents used Classroom 2.0 connect with other educational professionals. A chi square test of association was chosen for this analysis because the variables were categorical.

Chi Square Test of Association

A chi square test of association was conducted to determine if the frequency at which teachers reported collaborating on technology integration projects with colleagues in the Classroom 2.0 community varied depending on whether respondents used Classroom 2.0 connect with other educational professionals. Respondents were asked to indicate daily, weekly, once a month, less than once a month, or never for frequency. Respondents were asked to indicate yes or no for using used Classroom 2.0 connect with other educational professionals. Applying the Bonferroni to control for

the increased possibility of a Type I error, the test was conducted using an alpha of .083 (.05/.06). The null hypothesis was that there is no relationship between the frequency at which teachers report collaborating on technology integration projects with colleagues in the Classroom 2.0 community and the use of Classroom 2.0 to connect with other educational professionals. The alternative hypothesis was that there is a relationship between the frequencies at which teachers report collaborating on technology integration projects with colleagues in the Classroom 2.0 community and the use of Classroom 2.0 to connect with other educational professionals. The independent variable is frequency at which teachers reported collaborating on technology integration projects with colleagues and the dependent variable is how teachers reported using Classroom 2.0.

Frequency of integration was statistically significant related to the use of Classroom 2.0, Pearson χ^2 (4, *n*=757) =46.503, *p* <.001, phi=.248. The phi statistic indicated a small effect (Cohen, 1988). One cell violated the assumption of five expected frequencies; therefore, results must be interpreted with caution. Among the respondents that used Classroom 2.0 to connect with other educational professionals, 10.3% (*n*=78) collaborated on technology projects with colleagues within the Web site weekly or daily; and, less than 1% (*n*=6) of respondents that did not use Classroom 2.0 to connect with colleagues collaborated on technology projects within the Web site weekly or daily. On the other hand, 62.6% (*n*=474) of respondents that used Classroom 2.0 to connect with educational professionals, collaborated on technology projects with colleagues within the Web site less than once a month or never; and,

17.7% (*n*=134) of respondents that did not use the Web site to connect with colleagues also collaborated on technology projects within the Web site less than once a month or never. The null hypothesis was rejected. There was evidence to support a relationship between the frequencies at which teachers reported collaborating on technology integration projects with colleagues in the Classroom 2.0 community and the use of Classroom 2.0 to connect with other educational professionals.

Review of Standardized Residuals

Standardized residuals were reviewed to determine which cells contributed to the overall statistically significant relationship. Using an alpha of .083, standard residuals greater than +/-1.73 are considered statistically significant and indicate that a cell contributed to the association between the variables (these cells are highlighted in table 9). Residuals with a positive value indicate that the observed frequency was greater than the expected frequency and residuals with a negative value indicate that the observed frequency was less than the expected frequency. Table 9 gives a synopsis of the standardized residuals for the chi square test of association.

Level 1: Never collaborate on technology integration projects with colleagues in the Classroom 2.0 community

Based on the examination of the standardized residuals for the cells, there were statistically significantly more teachers that did not use Classroom 2.0 to connect with other educational professionals who never collaborated on technology integration

projects with colleagues in the Classroom 2.0 community (*SR*=3.5). The proportion of teachers that used Classroom 2.0 connect with other educational professionals who never collaborated on technology integration projects with colleagues in the Classroom 2.0 community (*SR*=-1.5) did not contribute to the statistically significant chi square results. Approximately 69.1% of teachers who did not use Classroom 2.0 to connect with other educational professionals and about 43.2% of teachers who used Classroom 2.0 to connect with other educational professionals never collaborated on technology integration projects with colleagues in the Classroom 2.0 community.

Level 2: Collaborate on technology integration projects with colleagues in the Classroom 2.0 community less than once a month

According to the examination of the standardized residuals for the cells, there were statistically significantly fewer teachers that did not use Classroom 2.0 to connect with other educational professionals who collaborated on technology integration projects with colleagues in the Classroom 2.0 community less than once a month (*SR*=-2.1). The proportion of teachers that used Classroom 2.0 connect with other educational professionals who collaborated on technology integration projects with colleagues in the Classroom 2.0 community less than once a month (*SR*=.9) did not contribute to the statistically significant chi square results. Approximately 22.0% of teachers who did not use Classroom 2.0 to connect with other educational professionals and about 35.0% of teachers who used Classroom 2.0 to connect with other educational professionals collaborated on technology integration projects with colleagues in the Classroom 2.0 community less than once a month.

Level 3: Collaborate on technology integration projects with colleagues in the Classroom 2.0 once a month

As indicated by the examination of the standardized residuals for the cells, there were statistically significantly fewer teachers that did not use Classroom 2.0 to connect with other educational professionals who collaborated on technology integration projects with colleagues in the Classroom 2.0 community once a month (*SR*=-2.9). The proportion of teachers that used Classroom 2.0 connect with other educational professionals who collaborated on technology integration projects with colleagues in the Classroom 2.0 community once a month (*SR*=1.3) did not contribute to the statistically significant chi square results. Approximately .8% of teachers who did not use Classroom 2.0 to connect with other educational professionals and about 10.1% of teachers who used Classroom 2.0 to connect with other educational professionals collaborated on technology integration projects with colleagues in the Classroom 2.0 community once a month.

Level 4: Collaborate on technology integration projects with colleagues in the Classroom 2.0 weekly

The proportion of teachers that did not use Classroom 2.0 to connect with other educational professionals who collaborated on technology integration projects with colleagues in the Classroom 2.0 community weekly (*SR*=-.7) and the proportion of teachers that used Classroom 2.0 to connect with other educational professionals who collaborated on technology integration projects with colleagues in the Classroom 2.0 community weekly (*SR*=.3) did not contribute to the statistically significant chi square

results. Approximately 7.3% of teachers who did not use Classroom 2.0 to connect with other educational professionals and about 9.5% of teachers who used Classroom 2.0 to connect with other educational professionals collaborated on technology integration projects with colleagues in the Classroom 2.0 community weekly.

Level 5: Collaborate on technology integration projects with colleagues in the Classroom 2.0 daily

A review of the standardized residuals for the cells shows that the proportion of teachers that did not use Classroom 2.0 to connect with other educational professionals who collaborated on technology integration projects with colleagues in the Classroom 2.0 community daily (*SR*=-.9) and the proportion of teachers that used Classroom 2.0 to connect with other educational professionals who collaborated on technology integration projects with colleagues in the Classroom 2.0 community daily (*SR*=.4) did not contribute to the statistically significant chi square results. Approximately .8% of teachers who did not use Classroom 2.0 to connect with other educational professionals and about 2.2% of teachers who used Classroom 2.0 to connect with other educational professionals collaborated on technology integration projects with colleagues in the Classroom 2.0 community daily.

Table 9-Collaboration Frequency by Professional Practice (Frequencies, Percentages within Columns, and Standardized Residuals)

		Connect with other educational professionals		
Question	Response	No	Yes	Total
How often do you collaborate on technology integration projects with colleagues in the Classroom 2.0 community?	Never (1)	*n*=88 (69.1%) *SR*=3.5	*n*=274 (43.2%) *SR*=-1.5	*n*=359 (47.4%)
	Less than once a month (2)	*n*=27 (22.0%) *SR*=-2.1	*n*=222 (35.0%) *SR*=.9	*n*=249 (32.9%)
	Once a month (3)	*n*=1 (.8%) *SR*=-2.9	*n*=64 (10.1%) *SR*=1.3	*n*=65 (8.6%)
	Weekly (4)	*n*=9 (7.3%) *SR*=-.7	*n*=60 (9.5%) *SR*=.3	*n*=69 (9.1%)
	Daily (5)	*n*=1 (.8%) *SR*=-.9	*n*=14 (2.2%) *SR*=.8	*n*=15 (2.0%)

Summary of Research Question Three

In summary, the results suggested that there was a statistically significant relationship between the frequency of collaboration with colleagues and how K-12 teachers reported using social media networks. Specifically, a statistically significant relationship was found between the frequencies at which teachers reported collaborating on technology integration projects with colleagues in the Classroom 2.0 community based on whether or not respondents used Classroom 2.0 connect with other educational professionals.

The frequency of collaboration with colleagues was found to have statistically significant relationship to the use of Classroom 2.0. There were statistically significantly: a) more teachers that did not use Classroom 2.0 to connect with other educational professionals who never collaborated on technology integration projects with colleagues in the Classroom 2.0 community (Table 6,level 1), b) fewer teachers that did not use Classroom 2.0 to connect with other educational professionals who collaborated on technology integration projects with colleagues in the Classroom 2.0 community less than once a month (Table 6,level 2), c) and fewer teachers that did not use Classroom 2.0 to connect with other educational professionals who collaborated on technology integration projects with colleagues in the Classroom 2.0 community once a month (Table 6,level 3).

Research Question Four

The fourth research question asked: Is there a relationship between the ability to communicate professionally about technology integration with colleagues and how K-12 teachers report using social media community in education? Survey questions 9, fourteen, and question 14; sub-question 6 (Appendix G) were used to analyze research question four. Two chi square tests of associations were conducted to determine if the ability to communicate professionally about technology integration (specifically; how much time participants usually spend writing or responding to the content on the Classroom 2.0 social network and how comfortable participants are giving technology integration advice to colleagues in the Classroom 2.0 community)

varied depending on whether respondents used Classroom 2.0 to share materials and ideas. Chi square tests of associations were chosen for these analyses because the variables were categorical.

Chi Square Test of Association One

The first chi square test of association was conducted to determine whether the amount of time participants spent writing or responding to the content on Classroom 2.0 varied according to whether respondents used Classroom 2.0 to share materials and ideas. Respondents were asked to indicate more than 3 hours each day, 1-3 hours each day or less than one hour each day for amount of time. Respondents were asked to indicate yes or no for using Classroom 2.0 to share materials and ideas. Applying the Bonferroni to control for the increased possibility of a Type I error, the test was conducted using an alpha of .083 (.05/.06). One cell violated the assumption of five expected frequencies; therefore, results must be interpreted with caution. The null hypothesis was that there is no relationship between the amounts of time teachers spend writing and responding to content on Classroom 2.0 and the use of Classroom 2.0 to share materials and ideas, and the alternative hypothesis was that there is a relationship between the amounts of time teachers spend writing and responding to content on Classroom 2.0 and the use of Classroom 2.0 to share materials and ideas. The independent variable was the amount of time participants spent writing or responding to the content on Classroom 2.0 and the dependent variable was how teachers reported using Classroom 2.0.

Amount of time spent writing and responding to content was not statistically significant related to the use of Classroom 2.0, Pearson χ^2 (1, *n*=757) =.382, *p*=.537, phi=.022. The phi statistic indicated little or no association (Cohen, 1988). Fail to reject the null hypothesis, there was no evidence to support a relationship between the amount of time teachers spent writing and responding to content on Classroom 2.0 and the use of Classroom 2.0 to share materials and ideas. Post-hoc procedures were not conducted because the chi square results were not statistically significant. Table 7 gives a synopsis of the standardized residuals for the first chi square test of association.

Table 10-Amount of Time Spent Writing and Respond to Content by Professional Practice (Frequencies, Percentages within Columns, and Standardized Residuals)

		Share Materials and Ideas		
Question	Response	No	Yes	Total
How much time do you usually spend writing or responding to the content on the Classroom 2.0 social network?	Less than one hour each day (1)	*n*=121 (100.0%) *SR*=.0	*n*=634 (99.7%) *SR*=.0	*n*=755 (99.7%)
	1-3 hours each day (2)	*n*=0 (.0%) *SR*=-.6	*n*=2 (.3%) *SR*=.2	*n*=2 (.3%)

Chi Square Test of Association Two

The second chi square test of association was conducted to determine whether the level of comfort participants have about giving technology integration advice to colleagues in the Classroom 2.0 community varied depending on whether respondents used Classroom 2.0 to share materials and ideas. Respondents were asked to indicate

expert, skilled, basic, or no skill for level of comfort. Respondents were asked to indicate yes or no for using Classroom 2.0 to share materials and ideas. Applying the Bonferroni to control for the increased possibility of a Type I error, the test was conducted using an alpha of .083 (.05/.06). The null hypothesis was that there is no relationship between respondents' level of comfort about giving technology integration advice in the Classroom 2.0 community and the use of Classroom 2.0 to share ideas and materials. The alternative hypothesis was that there is a relationship between respondents' level of comfort about giving technology integration advice in the Classroom 2.0 community and the use of Classroom 2.0 to share ideas and materials. The independent variable was the level of comfort participants had about giving technology integration advice to colleagues in the Classroom 2.0 community and the dependent variable was how teachers report using Classroom 2.0.

Level of comfort was statistically significant related to the use of Classroom 2.0, Pearson χ^2(3, *n*=744) =9.175, *p*=.027, phi=.111. The phi statistic indicated little association (Cohen, 1988). Among the respondents that use Classroom 2.0 share ideas and information (*n*=630), 80.5% (*n*=507) felt that they were skilled or experts at giving technology integration advice while only 19.5% (*n*=123) felt they were basic or had no skill at giving technology integration advice. There was evidence to support a relationship between teachers' level of comfort giving technology integration advice within Classroom 2.0 and the use of Classroom 2.0 to share materials and ideas.

Review of Standardized Residuals

Standardized residuals were reviewed to determine which cells contributed to the overall statistically significant relationship. Using an alpha of .083, standard residuals greater than +/-1.73 are considered statistically significant and indicate that a cell contributed to the association between the variables (these cells are highlighted in table 11). Residuals with a positive value indicate that the observed frequency was greater than the expected frequency and residuals with a negative value indicate that the observed frequency was less than the expected frequency. Table 11 gives a synopsis of the standardized residuals for the second chi square test of association.

Level 1: Rates level of comfort with giving advice to colleagues as no skill since joining the Classroom 2.0 community

Based on the examination of the standardized residuals for the cells, there were statistically significantly more teachers that did not use Classroom 2.0 to share materials and ideas who rate their level of comfort with giving advice to colleagues as no skill since joining the Classroom 2.0 community (*SR*=2.3). The proportion of teachers that used Classroom 2.0 to share materials and ideas rated their level of comfort with giving advice to colleagues as no skill since joining the Classroom 2.0 community (*SR*=-1.0) did not contribute to the statistically significant chi square results. Approximately 9.6% of teachers who did not use Classroom 2.0 to share materials and ideas and about 4% of teachers who used Classroom 2.0 to share materials and ideas rated their level of comfort with giving advice to colleagues as no skill since joining the Classroom 2.0 community.

Level 2: Rates level of comfort with giving advice to colleagues as basic since joining the Classroom 2.0 community

According to the examination of the standardized residuals for the cells, the proportion of teachers that did not use Classroom 2.0 to share materials and ideas and rated their level of comfort with giving advice to colleagues as basic (*SR*=1.0) and the proportion of teachers that used Classroom 2.0 to share materials and ideas and rated their level of comfort with giving advice to colleagues as basic (*SR*=-.4), did not contribute to the statistically significant chi square results. Approximately 20.2% of teachers who did not use Classroom 2.0 to share materials and ideas and about 15.6% of teachers who used Classroom 2.0 to share materials and ideas rated their level of comfort with giving advice to colleagues as basic since joining the Classroom 2.0 community.

Level 3: Rates level of comfort with giving advice to colleagues as skilled since joining the Classroom 2.0 community

As indicated by the standardized residuals for the cells, the proportion of teachers that did not use Classroom 2.0 to share materials and ideas and rated their level of comfort with giving advice to colleagues as skilled (*SR*=-.7) and the proportion of teachers that used Classroom 2.0 to share materials and ideas and rated their level of comfort with giving advice to colleagues as skilled (*SR*=.3), did not contribute to the statistically significant chi square results. Approximately 50% of teachers who did not use Classroom 2.0 to share materials and ideas and about 55.4% of teachers who used

Classroom 2.0 to share materials and ideas rated their level of comfort with giving advice to colleagues as skilled since joining the Classroom 2.0 community.

Level 4: Rates level of comfort with giving advice to colleagues as expert since joining the Classroom 2.0 community

The standardized residuals for the cells show that the proportion of teachers that did not use Classroom 2.0 to share materials and ideas and rated their level of comfort with giving advice to colleagues as expert (*SR*=-.9) and the proportion of teachers that used Classroom 2.0 to share materials and ideas and rated their level of comfort with giving advice to colleagues as expert (*SR*=.4), did not contribute to the statistically significant chi square results. Approximately 20.2% of teachers who did not use Classroom 2.0 to share materials and ideas and about 25.1% of teachers who used Classroom 2.0 to share materials and ideas, rated their level of comfort with giving advice to colleagues as expert since joining the Classroom 2.0 community.

Table 11-Level of Comfort with Giving Advice to Colleagues by Professional Practice (Frequencies, Percentages within Columns, and Standardized Residuals)

		Share Materials and Ideas		
Question	Response	No	Yes	Total
How comfortable are you giving technology integration advice to colleagues in the Classroom 2.0 community?	No Skill (1)	*n*=11 (9.6%) *SR*=2.3	*n*=25 (4.0%) *SR*=-1.0	*n*=36 (4.8%)
	Basic (2)	*n*=23 (20.2%) *SR*=1.0	*n*=98 (15.6%) *SR*=-.4	*n*=121 (16.3%)
	Skilled (3)	*n*=57 (50.0%) *SR*=-.7	*n*=349 (55.4%) *SR*=.3	*n*=406 (54.6%)
	Expert (4)	*n*=23 (20.2%) *SR*=-.9	*n*=158 (25.1%) *SR*=.4	*n*=181 (24.3%)

Summary of Research Question Four

In summary, the results suggested a relationship between the ability to communicate professionally about technology integration with colleagues and how K-12 teachers report using social networking. Specifically, a statistically significant relationship was found between how comfortable participants were giving technology integration advice to colleagues in the Classroom 2.0 community based on whether or not respondents used Classroom 2.0 to share materials and ideas. Statistically significantly more teachers that did not use Classroom 2.0 to share materials and ideas rated their level of comfort with giving advice to colleagues as no skill since joining the Classroom 2.0 community (Table 8, Level 1). A statistically significant relationship was

not found between the amounts of time participants usually spent writing or responding to the content on the Classroom 2.0 social network based on whether or not respondents used Classroom 2.0 to share materials and ideas.

Summary

Chapter four presented the findings of this study results. Descriptive statistics on the sample were presented first. Then, the analyses related to each research question were presented.

A logistic regression analysis was conducted to predict if teachers use Classroom 2.0 as a way to participate in professional development based on the three composite groups created using factor analysis; Active Learning, Content Specific, and Coherent and Integrated with Teachers' Daily Lives. The findings indicate that the higher the score was for Coherent and Integrated and Content Specific, the more likely it was that a teacher would use Classroom 2.0 for professional development. Active Learning was not statistically significant; therefore, the odds for using Classroom 2.0 as a source of professional development (as compared to not using Classroom 2.0 as a source of professional development) are similar regardless of the score on the variable.

Using multiple chi square tests of associations, three statistically significant relationships were found between technology integration practices and how K-12 teachers report using social networking. Frequency of integration was statistically significant related to the use of Classroom 2.0, Pearson χ^2 (4, *n*=767) =118.682, *p*

<.001, phi=.393. Among the respondents that used Classroom 2.0 to seek information that would enhance their professional practice, 56.1% (*n*=409) of them used the integration skills that they learned on the Classroom 2.0 Web site weekly or daily while only 18.6% (*n*=136) used their learned integration skills less than once a month or never.

Level of integration was found to be statistically significant related to the use of Classroom 2.0, Pearson χ^2 (3, *n*=781) =28.67, *p* <.001, phi=.194. Among the respondents that used Classroom 2.0 to seek information that would enhance their professional practice, 87.9% (*n*=638) of them felt that they had become skilled or experts at integrating technology in their classroom since they joined the Classroom 2.0 community while only 12.2% (*n*=88) of them believed that they still had very basic or no skills.

Growth in technology integration was also statistically significant related to the use of Classroom 2.0, Pearson χ^2 (2, *n*=781) =60.842, *p* < .001, phi=.282. Among the respondents that used Classroom 2.0 to seek information that would enhance their professional practice, 57.8% (*n*=422) of them felt that they had become better at integrating technology in their classroom since they joined the Classroom 2.0 community while 34.1% (*n*=249) believed that they had not become better at integrating technology in their classroom since they joined the Classroom 2.0 community.

A chi square test of association was conducted to determine if the frequency at which teachers reported collaborating on technology integration projects with colleagues in the Classroom 2.0 community varied depending on whether respondents used

Classroom 2.0 connect with other educational professionals. Results showed that frequency of integration was statistically significantly related to the use of Classroom 2.0, Pearson χ^2(4, *n*=757) =46.503, *p* <.001, phi=.248. Approximately 92% of the respondents that do not use Classroom 2.0 to connect with other professionals reported that they never or less than once a month collaborate on technology projects with colleagues in the Classroom 2.0 community.

Finally, two chi square tests of associations were conducted to determine if the ability to communicate professionally about technology integration (specifically; how much time participants usually spent writing or responding to the content on the Classroom 2.0 social network and how comfortable participants are giving technology integration advice to colleagues in the Classroom 2.0 community) varies depending on whether respondents use Classroom 2.0 to share materials and ideas. Amount of time spent writing and responding to content was not statistically significant related to the use of Classroom 2.0, Pearson χ^2(1, *n*=757) =.382, *p*=.537, phi=.022. There was no evidence to support a relationship between the amounts of time teachers spent writing and responding to content on Classroom 2.0 and the use of Classroom 2.0 to share materials and ideas.

Level of comfort was statistically significant related to the use of Classroom 2.0, Pearson χ^2(3, *n*=744) =9.175, *p*=.027, phi=.111. Among the respondents that use Classroom 2.0 share ideas and information (*n*=630), 80.5% (*n*=507) felt that they were skilled or experts at giving technology integration advice while only 19.5% (*n*=123) felt they were basic or had no skill at giving technology integration advice. There was

evidence to support a relationship between teachers' level of comfort giving technology integration advice within Classroom 2.0 and the use of Classroom 2.0 to share materials and ideas.

CHAPTER V- DISCUSSIONS AND CONCLUSIONS

Introduction

The purpose of this study was to examine the relationship between how teachers' reported using the social network Classroom 2.0 for personal professional development and the criteria for effective professional development, teachers' integration practices, and teachers' ability to collaborate and communicate with colleagues. An online survey was used to collect quantitative information from members of the Classroom 2.0 social network community. The data was then analyzed to determine if there were relationships among the variables.

The gathered and analyzed data were used to answer the following questions:

1. Is there a relationship between the criteria for effective professional development and how K-12 teachers report using social media community in education?
2. Is there a relationship between technology integration practices and how K-12 teachers report using social media community in education?
3. Is there a relationship between the frequency of collaboration with colleagues and how K-12 teachers report using social media community in education?
4. Is there a relationship between the ability to communicate professionally about technology integration with colleagues and how K-12 teachers report using social media community in education?

This chapter reviews the findings of the research study followed by a discussion of each question. Then, recommendations for future research are made. Finally, a conclusion of the research study is presented.

Research Question One- Discussion

According to researcher Laura Desimone, studies on the effects of professional development would be more valuable if a core conceptual framework were used. Among the proposed key components of her framework, she lists 1) content focus, 2) active learning, 3) coherence, 4) duration, and 5) collective participation (2009). Other studies report similar findings (Darling-Hammond et al, 2009; Garret et al, 2001; Huang, Yang, Yueh-Min, & Hsiao, 2010) and agree that that teacher professional development should be : 1) sustained and intensive, 2) collaborative, 3) connected to practice, 4) content specific and 5) hands-on.

According to the results of this study, the majority of survey respondents are using Classroom 2.0 as a form of professional development. Approximately three-quarters of respondents felt that the Classroom 2.0 social network community was sustainable while almost all of the participants felt that an online community was capable of facilitating professional learning. When asked to select the one main reason that they use Classroom 2.0, the majority of the survey participants responded that they use Classroom 2.0 to learn new knowledge and deepen understanding or gather information and share resources.

According to researchers, the use of technology to support social learning environments is best when a) learners have a need to know, b) learners feel a since of responsibility, c) there is a readiness to learn, d) the learning is task-centered, e) learners have an intrinsic motivation, and f) participants are free to share their unique knowledge and competencies (Zalon, 2008; Huang, Yang, Yueh-Min, & Hsiao, 2010; Baker-Doyle & Yoon, 2011). These results revealed that teachers are voluntarily using Classroom 2.0 to learn new knowledge and deepen their understanding to gather information and share resources, this research suggest that teachers are intrinsically motivated to take responsibility for their own learning and creating.

Research Question One: Criteria for Professional Development

The first research question addressed in this study asked: Is there a relationship between the criteria for effective professional development and how K-12 teachers report using social media community in education? A logistic regression analysis was conducted to determine whether three predictors of effective professional development (Coherent and Integrated with Teachers' Daily Lives, Content Specific, and Active Learning) could predict if teachers use Classroom 2.0 as a way to participate in professional development. According to the findings from this study, there was evidence that a relationship existed between the criteria for effective professional development and how K-12 teachers reported using social media networks. Specifically, there was a relationship between the criteria that a professional development is content specific and

coherent and integrated with teachers' daily lives based on whether or not teachers reported using Classroom 2.0 as a form of professional development.

Years of research studies have lead to the assumption that content focus may be one of the most influential aspects of teacher professional development (Guskey & Kwang Suk, 2009; Garet et. al., 2001; Ingvarson, Meiers & Beavis, 2005; Penuel, Fishman, Yamaguchi & Gallagher 2007; Birman, Desimone, Porter, & Garet, 2000; Desimone, 2009). Evidence connects subject specific professional development with improvements in teaching practices and teacher knowledge and skills (Desimone, 2009).

In this study, several questions were asked to determine if respondents felt that they received knowledge and skills in the areas of: curriculum, instructional methods, approaches to assessment, and technology instruction. According to the Content Specific results, teachers agreed or strongly agreed that they gained knowledge and skills in the area of curriculum, that they gained knowledge in the area of instructional methods, and that they gained knowledge in the area of technology instruction after using the Classroom 2.0 social network. The results of the logistic regression indicated that Content Specific made significant contributions to the prediction. The odds for using Classroom 2.0 as a source of professional development (as compared to not using Classroom 2.0 as a source of professional development) were higher for every point of increase in the Content Specific category.

Previous research studies have led to the belief that coherence is an important aspect of teacher professional development. Teachers must perceive their professional

development experience as a connected program of learning where individual activities connect to one another and those activities are part of a larger goal (Birman, Desimone, Porter, & Garet, 2000). In addition, knowledge presented in professional development must be consistent with not only teachers' personal knowledge and beliefs, but also with that of schools, districts, and states policies (Desimone, 2009).

For this study, questions were asked to determine if respondents felt that the professional development they received on Classroom 2.0 was consistent with their own curriculum/professional goals, based on previous learning, followed up by activities that build on what has been learned, aligned with state and district standards, and allotted for meaningful discussion with other teachers. The findings for Coherent and Integrated with Teachers' Daily Lives revealed that many teachers agreed or strongly agreed that the personal professional development that they received from Classroom 2.0 was consistent with their personal goals, that the personal professional development was based on previous learning experiences, and that the personal professional development allotted for meaningful discussion. The results of the logistic regression indicated that Coherent and Integrated with Teachers' Daily Lives made significant contributions to the prediction. The odds for using Classroom 2.0 as a source of professional development (as compared to not using Classroom 2.0 as a source of professional development) were higher for every point of increase in Coherent and Integrated with Teachers' Daily Lives.

For Active Learning, several questions were asked to determine if respondents had the opportunity to observe or be observed, plan classroom implementation,

present or demonstrate learning, participate in meaningful learning, and examine or review student work. The results show that very few of teachers agreed or strongly agreed that they had the opportunity to present or demonstrate a lesson in Classroom 2.0, that they examined or reviewed student work, and that they had the opportunity to observe expert teachers or be observed. According to the binary logistic regression, the active learning category was not a significant predictor of whether respondents would use Classroom 2.0 as a source of professional development. The odds for using Classroom 2.0 as a source of professional development (as compared to not using Classroom 2.0 as a source of professional development) are similar regardless of the score on the variable.

Although the results of this study found that active learning is not a significant predictor of whether respondents would use Classroom 2.0 as a source of professional development, researchers have linked active learning the effectiveness of professional development (Birman, Desimone, Porter, & Garet, 2000; Desimone, 2009; Darling-Hammond & McLaughlin, 1995). Teachers show increased gains when they are allowed to observe or be observed, participate in meaningful discussion, receive feedback, and review student work samples on the topics being covered (Desimone, 2009; Thompson, 2008; Huang, Yang, Yueh-Min, & Hsiao, 2010; Baker-Doyle & Yoon, 2011). Web 2.0 tools allow teacher to be active rather than passive learners (Thompson, 2008; Huang, Yang, Yueh-Min, & Hsiao, 2010; Baker-Doyle & Yoon, 2011).

Research Question Two- Discussion

Researchers believe that teachers must be comfortable using and learning with technology before they can successfully prepare students that can effectively use technology skills (Keengwe, Onchwari, & Wachira, 2008; Shelly, Gunter, & Gunter, 2010). According to the data collected in this study, almost half of teachers prefer a mixed method professional development that has more online than face-to-face time, the majority of Classroom 2.0 users spend less than an hour each day reading/browsing content and writing/ responding to content. Over half of respondents use the integration skills that they learned from the Classroom 2.0 Web site daily or weekly, while very few of respondents use the integration skills that they learned less than once a month or never. The majority of the respondents feel that they have become expert or skilled integrators since joining the Classroom 2.0 site, while only a small percent feel that they have no skill or are basic. The results of this study indicates that over half of respondents feel that Classroom 2.0 has helped them become better technology integrators and about a third report that they have not become better technology integrators since joining Classroom 2.0.

In a 2010 study of the relationship between teachers' technology integration ability and usage, Hsu (2010) reported that a positive correlation existed between ability and usage. Teachers that perceived themselves as higher level integrators used more technology integration in their classroom. The majority of Classroom 2.0 perceived themselves as expert or skilled integrators and over one-half of the respondents integrate technology into their classroom on a weekly or daily basis. Based on

responses given, the majority of Classroom 2.0 respondents are comfortable with using and learning from technology, which means they have the prerequisite skills needed to integrate technology into their curriculum (Keengwe, Onchwari, & Wachira, 2008; Shelly, Gunter, & Gunter, 2010).

Research Question Two: Technology Integration Practices

Is there a relationship between technology integration practices and how K-12 teachers report using social media community in education? Three chi square tests of associations were conducted to determine if technology integration practices (specifically; frequency of integration, level of integration, and growth) relate to depending on whether respondents use Classroom 2.0 to seek information that will enhance their professional practice. The results of the study suggested that there is relationship between technology integration practices and how K-12 teachers report using social media networks.

Key findings, in this study, among technology integration practices include: (1) Despite using Classroom 2.0, teachers that were not trying to enhance their professional practice were not using the integrations skills that they learned in their classroom. (2) Greater instances of teachers that were not trying to enhance their professional practices by using the Classroom 2.0 perceived themselves as basic level integrators. (3) Teachers that were not trying to enhance their professional practices were not seeing growth or were not sure if any growth in their integration level has occurred. Although teachers are not using Classroom 2.0 as a structured professional

development, they still need a specific goal or focus. They must have a desire to change their professional practices (Keengwe, Onchwari, and Wachira, 2008).

In order to effectively use the knowledge gained in professional development, teachers must focus on the knowledge of the subject matter content and how students learn specific content (Garet et. al., 2001). In a 2-year study that aimed to teach teachers to integrate technology into their curriculum using face-to-face and virtual resources, researchers found that teachers rarely interacted in the virtual environment. The teachers seldom communicated with each other or used resources that were posted in the virtual environment. The majority of the teachers reported not using the Web site because they didn't want to waste time on the site without having a specific goal (Cifuentes, Maxwell, & Bulu, 2011). Researchers also found that workshops on integrating technologies into existing curriculum were well received by teachers once they established pedagogical reasons for using technology, explored applications in their classrooms, and shared insights regarding implementation issues (Cifuentes, Maxwell, & Bulu, 2011).

Research Question Three- Discussion

Social networking sites can function as a place where teachers can share classroom happening, reflect on their classroom practices, and then go back to the classroom and make improvements all without the stigma of failure (Greenhow, 2009). However, according to the findings of this study, less than 2% of respondents use Classroom 2.0 to connect with people, to feel a sense of camaraderie, and discuss

issues. The majority of teachers reported that they never or less than once a month use Classroom 2.0 to collaborate on technology integration projects. The users of Classroom 2.0 do not report a frequent use the social network as a tool to collaborate with their peers.

Research Question Three: Collaboration and Social Education Networks

Is there a relationship between the frequency of collaboration with colleagues and how K-12 teachers report using social media community in education? A chi square test of association was conducted to determine if the frequency at which teachers reported collaborating on technology integration projects with colleagues in the Classroom 2.0 community varied depending on whether respondents used Classroom 2.0 to connect with other educational professionals. The results of the study suggested that there is a relationship between the frequency of collaboration with colleagues and how K-12 teachers report using social media networks. Specifically, a relationship was found between the frequency at which teachers report collaborating on technology integration projects with colleagues in the Classroom 2.0 community and whether or not respondents use Classroom 2.0 connect with other educational professionals.

In 2010, a study was conducted on using teacher social media networks as a means of bringing about reform. The study results showed that social media networks played a significant role in either supporting or limiting reform efforts. Researchers reported that grade levels with greater frequency of collaboration between members reported greater depth of reform than grade levels with less frequency of collaboration.

Teachers in the grade levels with greater collaboration cited ownership and a sense of empowerment as the main reasons that they were able to successfully collaborate (Daly, Moolenaar, Bolivar & Burke, 2010).

Key findings, in this study, among the frequency of collaboration with colleagues include: a) more teachers that did not use Classroom 2.0 to connect with other educational professionals never collaborated on technology integration projects with colleagues in the Classroom 2.0 community, b) fewer teachers that did not use Classroom 2.0 to connect with other educational professionals collaborated on technology integration projects with colleagues in the Classroom 2.0 community less than once a month, and c) less teachers that did not use Classroom 2.0 to connect with other educational professionals collaborated on technology integration projects with colleagues in the Classroom 2.0 community once a month. In other words, teachers that are not using Classroom 2.0 to connect with other professionals are not using the social network to collaborate with other educational professionals.

Research Question Four- Discussion

Social communities can be used as a place where teachers receive professional support, guidance, and possibly inspiration (Duncan-Howell, 2010) as well as a place to promote knowledge building and reflection (Sutherland, Howdard, & Markauskaite, 2010) through the use of professional communication. According to the results of this study, over a third of the respondents felt that they were skilled or expert at giving technology integration advice on the Classroom 2.0 Web site and felt that discussions

about curriculum activities and resources were most engaging. A vast majority of the Classroom 2.0 users have the ability as well as an interest in communicating professionally about technology with their colleagues.

Research Question Four: Professional Communication and Social Education Networks

Is there a relationship between the ability to communicate professionally about technology integration with colleagues and how K-12 teachers report using social media community in education? Two chi square tests of associations were conducted to determine if the ability to communicate professionally about technology integration (specifically; how much time participants usually spend writing or responding to the content on the Classroom 2.0 social network and how comfortable participants are giving technology integration advice to colleagues in the Classroom 2.0 community) varied depending on whether respondents used Classroom 2.0 to share materials and ideas. The results suggested a relationship between the ability to communicate professionally about technology integration with colleagues and how K-12 teachers report using social media networks. Specifically, a statistically significant relationship was found between how comfortable participants are giving technology integration advice to colleagues in the Classroom 2.0 community based on whether or not respondents used Classroom 2.0 to share materials and ideas.

Key findings among comfort with giving technology integration advice include: there were more teachers that did not use Classroom 2.0 to share materials and ideas that rated their level of comfort with giving advice to colleagues as no skill. That means

a greater number of teachers that were not confident in their ability to give technology integration advice did not use Classroom 2.0 to share materials and ideas. These findings correspond to Hsu's (2010) study in which teachers who perceived themselves as higher level integrators used more technology integration.

Much of the literature on teacher education calls for professional development that is sustained or longer in duration (Desimone, 2009; Thompson, 2008; Baker-Doyle & Yoon, 2011 Darling-Hammond et al, 2009; Garret et al, 2001; Huang, Yang, Yueh-Min, & Hsiao, 2010). Professional development that is sustained over long periods of time allows for more in-depth professional discussions and for teachers to tryout activities in their classrooms and received feedback (Garet et. al., 2001).

A statistically significant relationship was not found between the amount of time participants reported that they spend writing or responding to the content on the Classroom 2.0 social network based on whether or not respondents use Classroom 2.0 to share materials and ideas. The lack of statistical significance may be explained by the scale used to determine time. The scale used was: less than one hour each day, 1-3 hours each day, or more than 3 hours each day. A more appropriate scale would have been less than one hour each week, 1-3 hours each week, or more than 3 hours each week.

Implications

The first implication for the results of this study is that the use of social media networks for personal professional development is best when there is content specificity

and cohesion with teachers' personal and professional goals. In a 2010 study of three social media networks designed for teachers, researchers found that 53% of participants freely participated in discussions on topics that interested them. Participants wanted professional development that was relevant to their needs and focused on classroom strategies. The results of the survey also revealed that teachers wanted to be in charge of selecting the topic of their professional development. The survey respondents were looking for professional support of their immediate needs (Duncan-Howell, 2010).

A second implications for the results of this study is that the users of a social network for personal professional development must purposeful in their reasons for using the social network, users must perceive themselves as capable of learning, and they must have the willingness to commit to learning. Ultimately, the commitment, behavior, and investments of individual teachers will determine the frequency, growth, and level of technology integration that teachers will demonstrate (Keengwe, Onchwari, and Wachira, 2008).

A third implication for the results of this study is that increased sense of ownership for the material on Classroom 2.0 would result in greater frequency of collaboration. In 2010, a study was conducted by Daly, Moolenaar, Bolivar and Burke, teachers in the grade levels with greater collaboration cited ownership and a sense of empowerment as the main reasons that they were able to successfully collaborate. Also, the use of Classroom 2.0 to collaborate must be purposeful; using a social

network to collaborate requires a great sense of community (Martinez, 2010) so teacher must set out connect and share with other educators.

The final implication for the findings in this study is that teacher' perceptions of their integration abilities will determine whether or not they use social media networks to communicate professionally with colleagues.

Recommendations for Future Studies

Based on the findings of this study, several recommendations can be made for future research on using social media community in education as a form of personal professional development:

- Additional research should be conducted regarding the establishment of social media networks specifically for the purpose of personal professional development.
- Case studies should be conducted to determine if teachers' perceptions of their technology growth is concurrent with where they need to be according to the standards of technology integration.
- Further research should also be conducted on using social media networks to improve teachers' professional communication and collaboration with their peers.
- To examine the issue of sustainability, research should be gathered to determine if teachers are using social media networks on their own or as a requirement.

- More research should be done concerning the correlation between technology savvy people and their use of social media community in education for professional development.
- Finally, research should be conducted to determine what impacts teachers use of social media community in education (i.e. user friendly, easy access, etc.).

Several recommendations can also be made for future studies of teachers that use Classroom 2.0 as a form of professional development. First of all, according to the results of the logistic regression, fewer teachers than expected took advantage of the active learning opportunities that are built into the Classroom 2.0 site. This could be explained by Ryberg and Christiansen's (2008) "ladder of participation and mastering" (p. 210) for online social media networks. On the first step of the ladder, users lurk and mimic the behavior of the community. Users then move to gradually mastering content. Next, the user gains confidence in his/her ability and becomes a legitimate member of the social community. Finally, the user begins teaching others and becomes an asset to the community (Ryberg & Christiansen, 2008). As members of the community become more acclimated to the site, they should become more active. Future research should be conducted to determine why more users are not using the Classroom 2.0 Web site to observe examples of technology integrated lessons, review posted examples of student work, plan and implement lessons based on what they have seen, and uploading examples of their integration attempts despite the fact that these opportunities are available.

Secondly, fewer teachers than expected reported using the technology integration skills that they learned from the Classroom 2.0 site daily or weekly (54%, *n*=422). According to researchers Keengwe, Onchwari, and Wachira, although numerous barriers to technology integration have been identified (i.e. lack of computers and software, insufficient and inadequate training, absence of time and funding, no technical support, scarce administrative support) the true challenge of integrating technology into the classroom is determined by the commitment, behavior, and investments of individual teachers (2008). Additional research should be conducted to determine the levels of commitment, behavior, and investments of individual teachers as it relates to their use of Classroom 2.0 to enhance their integration practices; specifically their growth and frequency of integration.

Next, the findings show that many teachers were not taking advantage of the collaborative nature of social media networks. The majority of teachers reported that they never or less than once a month use Classroom 2.0 to collaborate on technology integration projects. However, this could be explained by a 2009 study that examined K-12 educators' use of social networking and content sharing tools. In the study, researchers reported that survey respondents said that they mainly used social networking sites to connect with family and friends but some reported using the sites to communicate with colleagues or stay abreast of Web 2.0 technologies (Schmucki, Hood, & Meell, 2009). Future studies should be conducted to determine what can be done to increase the rate of collaboration among colleagues in social media networks.

Finally, the infrequency of using Classroom 2.0 communicate professionally about technology integration with colleagues (79.7%never or less than once a month, *n*=623) was surprising when compared to the number of respondents that rated their ability to give technology integration advice on the Classroom 2.0 site as skilled or expert (76.7%, *n*=599). In a study designed to help beginning teacher develop their professional identity though the use of face-to-face and virtual dialogue, Mantei and Kervin (2011) found that active participation in professional communication allowed beginning teachers to 1) develop strong connections between teaching context and their role within the community, 2) retrieve and reflect upon key points of conversation, and 3) seek out other teachers to ask questions or extend previous dialogue. Future studies should be done to determine if a relationship exists between the ability to communicate about technology and the use of social media networks to collaborate about technology.

Limitations

The following additional limitations to this study are noted:

1. A low survey response rate of 4% may reduce confidence in the data.
2. A statistically significant relationship was not found between the amount of time participants reported that they spend writing or responding to the content on the Classroom 2.0 social network based on whether or not respondents use Classroom 2.0 to share materials and ideas. The lack of statistical significance may be explained by the scale used to determine time. The scale used was: less than one hour each day, 1-3 hours each day, or more than 3 hours each day. A

more appropriate scale would have been less than one hour each week, 1-3 hours each week, or more than 3 hours each week.

Conclusion

The findings and analysis presented in this study can profoundly impact the development and users of social media networks for the purpose of personal professional development. First of all, social media networks that are designed for personal professional development should be content specific as well as coherent and integrated with teachers' personal and professional goals. Secondly, social media networks that are designed for personal professional development must allow and encourage increased levels of ownership for the presented material. Also, teachers' perceptions of their integration abilities will determine whether or not they use social media networks to communicate professionally with colleagues. Finally, the users of a social network for personal professional development must purposeful in their reasons for using the social network, users must perceive themselves as capable of learning and they must have the willingness to commit to learning.

APPENDIX A: PARTICIPANT REQUEST

Dear Mr. Hargadon:

I am a graduate student at the University of Central Florida working under the supervision of Dr. Glenda Gunter and Dr. Debbie Hahs-Vaughn. As part of my dissertation work, I am researching the use of social networks as a form of personal professional development. Specifically, I would like to examine teacher's beliefs about their ability to learn and continuously use technology integration skills in a social networking setting. The research questions for this study address teacher's use of social networks for professional development, classroom technology integration practices, and beliefs about collaborative learning and communication in social networks.

It is my understanding that you are the creator of Classroom 2.0 and I would like to ask the educators of your Classroom 2.0 community to complete a brief electronic questionnaire. I need your help obtaining the email addresses of the community members.

Please know that any information you provide was kept completely confidential. None of the participants' names was used in the analysis of the data. The results of the survey will be aggregated. This survey is completely voluntary and any person that wishes not to participate was deleted from the distribution list and not contacted again.

A paper copy of the electronic questionnaire that participants will receive has been attached for you to review. If you have any questions or concerns, please feel free to call or email me.

As a thank you for your help, I will provide you with a copy of the raw data collected from the survey. I look forward to your response to this email. Once you respond, I will contact you via email with more details. You careful consideration in this matter is greatly appreciated.

Thank you,

Brandi Evans Smith
bevanssmith@knights.ucf.edu
(xxx)-xxx-xxxx

APPENDIX B: REQUESTS TO USE AND MODIFY EXISTING SURVEY INSTRUMENTS

Subject line: Request to use and modify your 2006 survey

Dear Dr. Diane Hui:

I am a graduate student at the University of Central Florida working under the supervision of Dr. Glenda Gunter and Dr. Debbie Hahs-Vaughn. As part of my dissertation work, I am researching the use of social networks as a form of personal professional development. I would like to request permission to modify and use questions 3-10 of the *Short Survey for Online Community* that you created as part of your dissertation work.

I look forward to your response and thank you in advance for your help. If you have in questions please feel free to call (xxx) xxx-xxxx or email bevanssmith@knights.ucf.edu.

Sincerely,

Brandi Evans Smith
Graduate Student
University of Central Florida

Subject line: Request to use and modify 2009 survey

Dear Dr. Cynthia Mierzejewski:

I am a graduate student at the University of Central Florida working under the supervision of Dr. Glenda Gunter and Dr. Debbie Hahs-Vaughn. As part of my dissertation work, I am researching the use of social networks as a form of personal professional development. I would like to request permission to modify and use four questions from the professional development section of the *Teacher Questionnaire* that you created as part of your dissertation work.

I look forward to your response and thank you in advance for your help. If you have in questions please feel free to call (xxx) xxx-xxxx or email bevanssmith@knights.ucf.edu.

Sincerely,

Brandi Evans Smith
Graduate Student
University of Central Florida

Subject line: Request to use and modify your 2009 survey

Dear Dr. Sherri Snider:

I am a graduate student at the University of Central Florida working under the supervision of Dr. Glenda Gunter and Dr. Debbie Hahs-Vaughn. As part of my dissertation work, I am researching the use of social networks as a form of personal professional development. I would like to request permission to modify and use questions 1-5 and 10-11 of the survey that you created as part of your dissertation work.

I look forward to your response and thank you in advance for your help. If you have in questions please feel free to call (xxx) xxx-xxxx or email bevanssmith@knights.ucf.edu.

Sincerely,

Brandi Evans Smith
Graduate Student
University of Central Florida

APPENDIX C: QUESTIONNAIRE NOTIFICATION LETTER

Subject line: Social Network Questionnaire Notice

October 26, 2010

Dear Educator:

I am a graduate student at the University of Central Florida working under the supervision of Dr. Glenda Gunter and Dr. Debbie Hahs-Vaughn. As part of my dissertation work, I am researching the use of social networks as a form of personal professional development. I obtained your email address from Classroom 2.0.

In a few days, you will receive an email from me with instructions and a link for completing an online questionnaire. The questionnaire gathers information about your perceptions of using social networks, such as Classroom 2.0, for professional development, to improve classroom technology integration practices and as a form of collaborative learning and communication with colleagues.

Your feedback is important. A response from you would be highly valued and appreciated. You need currently to be a classroom teacher to complete this survey. When the questionnaire arrives, please fill it out prior to November 26, 2010.

Thank you in advance for your help. If you have in questions please feel free to call (xxx) xxx-xxxx or email bevanssmith@knights.ucf.edu.

Sincerely,

Brandi Evans Smith
Graduate Student
University of Central Florida

APPENDIX D: QUESTIONNAIRE COVER LETTER

Subject line: Social Network Questionnaire

October 28, 2010

Dear _____:

A few days ago you received notice that you should expect an email with a link for an online questionnaire concerning the use of social networks as a form of personal professional development. It is my understanding that you are an educator that uses the Classroom 2.0 social network. I am contacting you to seek your opinions regarding the use of social networks for professional development, to improve classroom technology integration practices, and as a form of collaborative learning and communication with colleagues.

I am conducting this study as part of my dissertation work at the University of Central Florida. As a respected educator, your input is very important. However, your participation in this survey is voluntary. Please know that any information that you provide was completely confidential, your identity will not be linked to the completed survey. If you do not wish to participate, please let me know by replying to this email and I will remove you from my distribution list.

Below is the link to the questionnaire. Click on the link or copy and paste the link into your browser's address bar to begin the questionnaire. Please complete the questionnaire by November 26, 2010.

_____

If you wish to learn more about this study before completing the questionnaire please feel free to email me at bevnassmith@knights.ucf.edu.

Thank you in advance for your help.

Sincerely,

Brandi Evans Smith
Graduate Student
University of Central Florida

APPENDIX E: QUESTIONNAIRE FOLLOW-UP LETTERS

Subject line: Social Network Questionnaire Reminder

November 3, 2010

Dear _____,

Last week, you received an email with a link to a questionnaire concerning how teachers are using social networks for personal professional development. I am conducting this study as part of my dissertation work at the University of Central Florida. The data collected from this questionnaire was used to determine the relationship between social network use and personal professional development, classroom technology integration practices, and collaborative learning and communication with colleagues.

To complete the questionnaire, click on the link or copy and paste the link into your browser's address bar. Please complete the questionnaire by November 26, 2010.

_____

Your opinions are very valuable to this study. Thank you in advance for your help. If you have in questions please feel free to call (xxx) xxx-xxxx or email bevanssmith@knights.ucf.edu.

Sincerely,

Brandi Evans Smith
Graduate Student
University of Central Florida

Subject line: Social Network Questionnaire Reminder

November 17, 2010

Dear _____,

Three weeks ago you received an email with a link to a questionnaire concerning how teachers are using social networks. I have not yet received your completed questionnaire. I have however, received numerous responses from educators that have a strong opinion regarding the use of social networks for personal professional development.

I am conducting this study as part of my dissertation work at the University of Central Florida. I am writing to you again because as a teacher that uses a social network for professional purposes, your opinion and input is especially important to me. Although I have sent questionnaires to other people that use the Classroom 2.0 community, it is only by hearing from nearly everyone in the sample that I can be sure that the results are truly representative.

Simply click on the link below or copy and paste the link into your browser's address bar to begin the questionnaire. Please complete the questionnaire by November 26, 2010.

_____

If you have in questions please feel free to call (xxx) xxx-xxxx or email bevanssmith@knights.ucf.edu.

Thank you in advance for your help.

Sincerely,

Brandi Evans Smith
Graduate Student
University of Central Florida

Subject line: Social Network Questionnaire FINAL Reminder

November 23, 2010

Dear _____:

During the last month you should have received several emails requesting your input on the use of social networks. I am conducting this study as part of my dissertation work at the University of Central Florida. This is an important study because the data collected from this questionnaire was used to determine the impact social network use has on personal professional development, classroom technology integration practices, and collaborative learning and communication with colleagues.

I have sent this email because I have not yet received your responses, and I wanted to make sure that you were provided with the opportunity to complete my questionnaire. It is the opinion of quality educators such as you that are most valuable.

To complete the questionnaire, click on the link below or copy and paste the link into your browser's address bar to begin the questionnaire. Please complete the questionnaire by November 26, 2010.

_____

As a respected educator your input is very important to. Please know that any information that you provide was greatly appreciated and completely confidential.

Thank you in advance for taking the time to complete this questionnaire today. If you have in questions please feel free to call at (xxx) xxx-xxxx or email at bevanssmith@knights.ucf.edu

Sincerely,

Brandi Evans Smith
Graduate Student
University of Central Florida

APPENDIX F: INFORMED CONSENT

October 28, 2010,

Dear Fellow Educator:

My name is Brandi Evans Smith and I am a doctoral student at the University of Central Florida working under the supervision of Dr. Glenda Gunter and Dr. Debbie Hahs-Vaughn.

You are being asked to participate in my dissertation research which will examine teachers' beliefs about their ability to learn and continuously use technology integration skills in a social networking setting.

As a participant in the study, you are asked to complete an online questionnaire that consists of 39 questions and will take approximately 10 minutes to complete. You do not have to answer any question that you feel uncomfortable answering. You may choose not to participate in this research, and you have the right to withdraw consent at any time without consequence.

There are no known risks to completing this survey nor are there are any direct benefits or compensation to participants. However, by participating in this study you have the indirect benefit of helping course developers design technology professional development courses that meet the need of teachers.

Your responses was analyzed and reported anonymously to protect your privacy. The results of this survey will be compiled so that no one was individually identifiable. The result may be shared with the creator of Classroom 2.0, course developers, published in scholarly journals, or presented at professional conferences.

If you have any questions or comments about this research study, please contact Brandi Evans Smith at bevanssmith@knights.ucf.edu or (xxx)-xxx-xxxx; you may also contact my faculty supervisors, Dr. Glenda Gunter at ggunter@mail.ucf.edu and Dr. Debbie Hahs-Vaughn at dhahs@mail.ucf.edu.

Research at the University of Central Florida is conducted under the oversight of the UCF Institutional Review Board. Questions or concerns about research participants' rights may be directed to the UCF IRB office, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246. The telephone number is 407-823-2901."

Sincerely,

Brandi Evans Smith
Graduate Student

If you have read the procedures described above and voluntarily agree to participate in the procedure click START to begin the survey; otherwise, press EXIT. If you would like a copy of the final study, please feel free to email me at bevanssmith@knights.ucf.edu

APPENDIX G: QUESTIONNAIRE

Survey of an Online Social Network

Section A: Traditional Professional Development and Integration

START HERE
Indicate your answers for questions 1-4 by marking the appropriate box.

1. Have you ever taken any traditional professional development courses (i.e. workshops, in-services, or college courses) to learn how to integrate technology into your classroom?
   - ☐ Yes
   - ☐ No
   - ☐ Not Sure

2. How often do you use the technology integrations skills that you learned in your traditional professional development course(s) in your classroom?
   - ☐ Daily
   - ☐ Weekly
   - ☐ Once a month
   - ☐ Less than once a month
   - ☐ Never

3. How often do you collaborate on technology integration projects with colleagues (i.e. other teachers, technology coach, etc.) in your school?
   - ☐ Daily
   - ☐ Weekly
   - ☐ Once a month
   - ☐ Less than once a month
   - ☐ Never

4. How comfortable are you giving technology integration advice to colleagues in your school?

   No Skill- I am familiar with technology integration concepts, but I am afraid of giving bad advice
   Basic- I can give some advice, but the advice might not be very helpful.
   Skilled- I can give advice on integrating any technology that I have used.
   Expert- I can give advice on the integration of any technology because I know where to find the answers.

Please Continue…

Section B: Using Social Networks to Support Professional Development

CONTINUE HERE
Indicate your answers for questions 5-14 by marking the appropriate box.

5. What is the main reason that you joined the Classroom 2.0 social network? Please select one.
   - ☐ To share the emotional stresses related to teaching
   - ☐ To use the safety of an online environment to discuss issues that I cannot discuss with teachers in my school
   - ☐ To avoid the feeling of isolation/ connect with people
   - ☐ To learn new knowledge and deepen understanding
   - ☐ To feel a sense of camaraderie (to causally chat with other teachers)
   - ☐ To gather information and share resources
   - ☐ Other (please specify) _____

6. What mode of communication do you prefer to use when participating in professional development?
   - ☐ Online
   - ☐ Face-to-face
   - ☐ Both, with more online
   - ☐ Both, with more face-to-face

7. How long have you used the Classroom 2.0 social network?
   - ☐ Less than a month
   - ☐ 1-6 months
   - ☐ 7-12 months
   - ☐ 1-2 years
   - ☐ 2-3 years

8. How much time do you usually spend reading/browsing the content on the Classroom 2.0 social network?
   - ☐ Less than one hour each day
   - ☐ 1-3 hours each day
   - ☐ More than 3 hours each day

9. How much time do you usually spend writing or responding to the content on the Classroom 2.0 social network?
   - ☐ Less than one hour each day
   - ☐ 1-3 hours each day
   - ☐ More than 3 hours each day

10. Which of the following topics do you find the most engaging on Classroom 2.0? Please select one.
   - ☐ Discussion about curriculum activities and resources
   - ☐ Discussions about pedagogy (the science of teaching)
   - ☐ Discussions about social relationships
   - ☐ Mentoring new teachers/ or teachers new to technology integration
   - ☐ Other (please specify) _____

11. Which of the following factors is most closely related to whether or not you will respond to a post on Classroom 2.0? Please select one.
   - ☐ If the topic is interesting or relevant to my interest
   - ☐ If the discussion has received other responses
   - ☐ If I know the writer of the post
   - ☐ If I consider the length of the post to be appropriate (not too long or short)
   - ☐ If I need help or advice on the same topic
   - ☐ If I am knowledgeable about the topic and can offer sound advice

12. Would you consider the Classroom 2.0 social community sustainable (i.e., able to continue for a relatively long period of time)?
   - ☐ Yes
   - ☐ No
   - ☐ Not Sure

13. Do you think that an online social community can facilitate professional learning?
    - ☐ Yes
    - ☐ No
    - ☐ Not Sure

14. Why do you use Classroom 2.0? Please mark "Yes" or "No" to indicate whether or not you use Classroom 2.0 to do the following:

Find curriculum materials/resources	☐ Yes	☐ No
Participate in professional development	☐ Yes	☐ No
Mentor or being mentored	☐ Yes	☐ No
Keep current in my profession	☐ Yes	☐ No
Connect with other educational professionals	☐ Yes	☐ No
Share materials and ideas	☐ Yes	☐ No
Seek emotional support	☐ Yes	☐ No
Connect with students	☐ Yes	☐ No
Seek information to enhance professional practice	☐ Yes	☐ No

Please Continue…

Section C: Social Networks and Technology Integration Skills

CONTINUE HERE
Indicate your answers for questions 15-19 by marking the appropriate box.

15. How often do you use the technology integration skills that you learned on the Classroom 2.0 social network?
    - ☐ Daily
    - ☐ Weekly
    - ☐ Once a month
    - ☐ Less than once a month
    - ☐ Never

16. How often do you collaborate on technology integration projects with colleagues in the Classroom 2.0 community?
    - ☐ Daily
    - ☐ Weekly
    - ☐ Once a month
    - ☐ Less than once a month
    - ☐ Never

17. How would you rate your level of technology integration **since you joined the** Classroom 2.0 community?
    No Skill- I am familiar with technology integration concepts, but I rarely ever or have never used any of them.
    Basic- I occasionally integrate technology.
    Skilled- I integrate technology routinely and effectively.
    Expert- I can train others

18. How comfortable are you giving technology integration advice to colleagues in the Classroom 2.0 community?
    No Skill- I am familiar with technology integration concepts, but I am afraid of giving bad advice
    Basic- I can give some advice, but the advice might not be very helpful.
    Skilled- I can give advice on integrating any technology that I have used.
    Expert- I can give advice on the integration of any technology because I know where to find the answers.

19. Has the use of the Classroom 2.0 social networking site helped you to become better at integrating technology in your classroom?

    ☐ Yes

    ☐ Not Sure

    ☐ No

Please Continue…

Section D: Traditional and Social Network Professional development

CONTINUE HERE
In this section you will rate extent to which you agree or disagree with each statement based on the **most recent** traditional professional development course (i.e. workshops, in-services, or college courses) that you have taken to learn more about technology integration AND your personal professional development taken via Classroom 2.0.

SD=Strongly Disagree
D=Disagree
U=Undecided
A=Agree
SA=Strongly Agree

20. ACTIVE LEARNING	Traditional Professional Development					Classroom 2.0				
	SD	D	U	A	SA	SD	D	U	A	SA
I had the opportunity to observe expert teachers or be observed teaching.										
I had the opportunity to plan classroom implementation.										
I gave a presentation or demonstration of a lesson.										
I participated in meaningful discussion.										
I examined and reviewed student work.										

21. COHERENT AND INTEGRATED WITH TEACHERS' DAILY LIVES	Traditional Professional Development					Classroom 2.0				
	SD	D	U	A	SA	SD	D	U	A	SA
The goals of the professional development were consistent with my goals.										
The PD was based on previous learning experiences.										
The PD was followed up with activities that built upon what was learned.										
The content and pedagogy was aligned with state and district standards.										
I was encouraged to participate with other teachers.										

22. FOCUSED ON SPECIFIC CONTENT	Traditional Professional Development					Classroom 2.0				
	SD	D	U	A	SA	SD	D	U	A	SA
I gained knowledge and skills in the area of curriculum.										
I gained knowledge and skills in the area of instructional methods.										
I gained knowledge and skills in the area of approaches to assessment.										
I gained knowledge and skills in the area of technology instruction.										
My knowledge of content was deepened.										

Section E: Demographic Information

CONTINUE HERE
Indicate your answers for questions 23-29 by marking the appropriate box.

23. Age
    - ☐ 20-29
    - ☐ 30-39
    - ☐ 40-49
    - ☐ 50-59
    - ☐ 60 or over

24. Gender
    - ☐ Male
    - ☐ Female

25. Race
    - ☐ Non-Hispanic White
    - ☐ Hispanic or Latino
    - ☐ Black or African American
    - ☐ Asian or Asian American
    - ☐ Hawaiian or Other Pacific Islander
    - ☐ American Indian or Alaska Native
    - ☐ Other (please specify) _____

26. What country are you currently employed in?
    (Participants will select from a drop down menu with all the countries reported on Classroom 2.0 listed.)

27. Highest level of education
    - ☐ Bachelor's Degree
    - ☐ Master's Degree
    - ☐ Specialist's Degree
    - ☐ Doctoral Degree
    - ☐ Other (please specify) _____

28. Current PreK-12 teaching assignment. Please select the one that most closely matches your current position.
    - ☐ I am NOT a PreK-12 classroom teacher
    - ☐ Early Childhood
    - ☐ Elementary Education (K-5)
    - ☐ English
    - ☐ Mathematics
    - ☐ Reading/ Language Arts
    - ☐ Social Studies/ History
    - ☐ Science
    - ☐ Art/ Music/ Physical Education/ theater
    - ☐ Technology/Social Media/Librarian
    - ☐ Other (please specify) _____

29. Including this year, how many years have you been teaching?
    (Participants will select from a drop down menu with the numbers 1-45, and more than 45 years listed.)

Please Continue…

CONTINUE HERE

Thank you for completing this questionnaire. Your responses will assist in examining teacher's use of social networks for personal professional development. If you have any suggestions or other information that you would like to share, please do so in the space provided below.

When you have completed the questionnaire, please click FINISHED.

Finished

APPENDIX H: SURVEY MODIFICATIONS

A Short Survey for Online Community

Original Question	Original Response Scale	Modified Question	Modified Response Scale
• Why did you join the [INSERT LIST NAME] list?	a. Gather information and share resources b. Be a member of a teaching community to connect with people c. Learn new Knowledge and deepen understanding d. Have a casual chat with other teaching colleagues e. Others (Please Specify):	• What is the main reason that you joined the Classroom 2.0 social network?	☐ To share the emotional stresses related to teaching ☐ To use the safety of an online environment to discuss issues that I cannot discuss with teachers in my school ☐ To avoid the feeling of isolation/ connect with people ☐ To learn new knowledge and deepen understanding ☐ To feel a sense of camaraderie (to causally chat with other teachers) ☐ To gather information and share resources Other (please specify)

Original Question	Original Response Scale	Modified Question	Modified Response Scale
• In which mode of communication do you prefer engaging in professional development activities?	a. Online b. Face-to-face c. Both, with more online communication d. Both, with more face-to-face communication e. Others (please specify):	• What mode of communication do you prefer to use when participating in professional development?	☐ Online ☐ Face-to-face ☐ Both, with more online ☐ Both, with more face-to-face
• How much time do you usually spend each day in browsing/ reading or writing/ responding within this specific online community?	a. Less than one hour each day b. 1-3 hours each day c. More than 3 hours each day d. Others (please specify):	• How much time do you usually spend reading/ browsing the content on the Classroom 2.0 social network? • How much time do you usually spend writing or responding to the content on the Classroom 2.0 social network?	☐ Less than one hour each day ☐ 1-3 hours each day ☐ More than 3 hours each day

Original Question	Original Response Scale	Modified Question	Modified Response Scale
• Which of the following do you find particularly engaging online?	a. Curriculum activities and teaching resources b. Concepts and belief about pedagogy and socio-educational issues c. Political discussion d. Social relationship e. Mentoring new teachers f. Others (please specify):	• Which of the following topics do you find the most engaging on Classroom 2.0? Please select one.	☐ To share the emotional stresses related to teaching ☐ To use the safety of an online environment to discuss issues that I cannot discuss with teachers in my school ☐ To avoid the feeling of isolation/ connect with people ☐ To learn new knowledge and deepen understanding ☐ To feel a sense of camaraderie (to causally chat with other teachers) ☐ To gather information and share resources ☐ Other (please specify) ____

Original Question	Original Response Scale	Modified Question	Modified Response Scale
• What ONE factor might determine the type of postings to which you would most often respond?	a. Whether or not the topic is interesting or relevant to own interest b. Whether or not the discussion has received a lot of ongoing responses c. Whether or not I know the writer d. Whether or not the writing style appeals to own e. Whether or not the length of posting is appropriate f. Others (please specify):	• Which of the following factors is most closely related to whether or not you will respond to a post on Classroom 2.0? Please select one.	☐ If the topic is interesting or relevant to my interest ☐ If the discussion has received other responses ☐ If I know the writer of the post ☐ If I consider the length of the post to be appropriate (not too long or short) ☐ If I need help or advice on the same topic ☐ If I am knowledgeable about the topic and can offer sound advice
• Would you consider this online community a sustainable one (i.e., ongoing for a relatively long period of time)?	a. Yes b. Not at all c. Others (please specify):	• Would you consider the Classroom 2.0 social community sustainable (i.e., ongoing for a relatively long period of time)?	☐ Yes ☐ No ☐ Not Sure ☐

Original Question	Original Response Scale	Modified Question	Modified Response Scale
• Do you think that online community can improve teacher retention (i.e., to provide support to new or re-entering teachers), and if so, at the same time facilitate professional learning (i.e., to keep high professional standard)?	a. Yes b. Not at all c. Others (please specify):	• Do you think that an online social community can facilitate professional learning?	☐ Yes ☐ No ☐ Not Sure

Teacher Questionnaire

Original Questions	Modified Questions	Modified Response Scales
• How often have you participated in district-led workshops in technology use?	• Have you ever taken any traditional professional development courses (i.e. workshops, in-services, or college courses) to learn how to integrate technology into your classroom?	☐ Yes ☐ No ☐ Not Sure
• How often have you been able to practice the newly acquired technology skills?	• How often do you use the technology integrations skills that you learned in your traditional professional development course(s) in your classroom?	☐ Daily ☐ Weekly ☐ Once a month ☐ Less than once a month ☐ Never
• How often have you conferred with a technology coach or other staff member dedicated to assist with instructional technology? • How often are you able to collaborate with other teachers on aspects of technology use?	• How often do you collaborate on technology integration projects with colleagues (i.e. other teachers, technology coach, etc.) in your school?	☐ Daily ☐ Weekly ☐ Once a month ☐ Less than once a month ☐ Never

Survey

Original Questions	Modified Questions
• Do you use online communities for any of the following professional reasons?	• Why do you use Classroom 2.0? Please check ALL that apply.
• In your experience, which of the following have you found to be hindrances to using online communities in meeting your professional needs?	• Have you found any of the following to be a hindrance to your use of Classroom 2.0 for personal professional development?

REFERENCES

ALA. (2007). Standards for the 21st century learner. Retrieved February 17, 2010, from http://www.ala.org/ala/mgrps/divs/aasl/guidelinesandstandards/learningstandards/AASL_Learning_Standards_2007.pdf

Arnold, N., & Paulus, T. (2010). Using a social networking site for experiential learning: Appropriating, lurking, modeling and community building. *Internet and Higher Education*, *13*(4), 188-196.

Baker-Doyle, K. J., & Yoon, S. A. (2011). In search of practitioner-based social capital: A social network analysis tool for understanding and facilitating teacher collaboration in an us-based stem professional development program. *Professional Development in Education*, 37(1), 75-93.

Bakia, M., Means, B., Gallagher, L., Chen, E. & Jones, K. (2009). Evaluation of the enhancing education through technology program final report. Retrieved, May 6, 2009, from http://www.ed.gov/about/offices/list/opepd/ppss/reports.html

Birman, B., Desimone, L., Porter, A., & Garet, M. (2000). Designing Professional Development That Works. *Educational Leadership*, 57(8), 28.

Bower, M., Hedberg, J. G., & Kuswara, A. (2010). A framework for web 2.0 learning design. *Educational Media International*, 47(3), 177-198.

Boyd, D., & Ellison, N. (2007). Social network sites: Definition, History, and Scholarship. *Journal of Computer-Mediated Communication*, *13*(1), 210-230. doi:10.1111/j.1083-6101.2007.00393.x.

Briman et. al., (2009). *State and local implementation of the "No Child Left Behind Act." Volume VIII—teacher quality under "NCLB": Final report.* US Department of Education. (ERIC Document Reproduction Service No. ED504212)

Brooks, K. (2008). Social networking sites. *Quill*, *96*(1), 24-26. Retrieved from Academic Search Premier database.

Burbank, M & Kauchak, D. (2003). An alternative model for professional development: investigations into effective collaboration. *Teaching and Teacher Education, 19*(5), 499-519.

Cifuentes, L., Maxwell, G. & Bulu, S. (2011). Technology integration through professional learning community. *J. Educational Computing Research, 44*(1) 59-82.

Cohen, J. (1988). Statistical power analysis for the behavioral sciences. Hillsdale, NJ, Lawrence Erlbaum.

Cox, E. (2009). The collaborative mind: Tools for 21st-century learning. *MultiMedia & Internet@Schools*, *16*(5), 10-14. Retrieved from Academic Search Premier database.

Culp, K., Honey, M., & Mandinach, E. (2005). A retrospective on twenty years of education technology policy. Jounal of Educational Computing Research. 32(3), 279-307.

Daly, A., Moolenaar, N., Bolivar, J., & Burke, P. (2010) Relationships in reform: The role of teachers' social networks. *Journal of Educational Administration*, 48(3), 359 – 391.

De Lay, A. (2009). Behold! The power of teacher collaboration. *The Agricultural Education Magazine, 82*(1), 7-8. Retrieved February 26, 2010, from Education Full Text database.

Darling-Hammond, L., & McLaughlin, M. (1995). Policies that support professional development in an era of reform. *Phi Delta Kappan*, 76(8), 597.

Desimone, L.M. (2009) .Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. *Educational Researcher*, 38 (3), 181-199.

Dexter, S., Doering, A. & Riedel, E. (2006). Content area specific technology integration: A model for educating teachers. *Journal of Technology and Teacher Education. 14* (2), 325-345.

Drexler, W., Baralt, A., & Dawson, K. (2008). The teach web 2.0 consortium: A tool to promote educational social networking and Web 2.0 use among educators. *Educational Media International, 45*(4), 271-283. doi:10.1080/09523980802571499.

Driscoll, M. (2000). Psychology of learning for instruction (2nd ed.). Massachusetts: Allyn & Bacon A Pearson Education Company.

Duncan-Howell, J. (2010). Teachers making connections: Online communities as a source of professional learning. *British Journal of Educational Technology*, *41*(2), 324-340. doi:10.1111/j.1467-8535.2009.00953.x.

Duncan, S. (2010). Intentional and embedded professional development: Four steps to success. *Exchange: The Early Childhood Leaders' Magazine Since 1978*, (191), 70-72.

Dyril, K. (2009). Collaborative technologies. *District Administration*, *45*(5), 24. Retrieved from Academic Search Premier database.

Grahame, M. (2008). Continuing thoughts on social networking. *American Journal of Distance Education, 22*(3), 127-129. doi:10.1080/08923640802241067

Greenhow, C. (June-July 2009). Tapping the wealth of social networks for professional development research windows. *Learning & Leading with Technology, 36*(8), 10-11. Retrieved February 26, 2010, from Computer Database via Gale: http://find.galegroup.com.ezproxy.lib.ucf.edu/gtx/start.do?prodId=CDB&userGroupName=orla57816

Garet, M., Porter, A., Desimone, L., Birman, B., & Yoon, K. (2001). What makes professional development effective? Results from a national sample of teachers. *American Educational Research Journal. 38*(4), 915-945.

Gray, L., & Lewis, L. (2009). Educational technology in public school districts: Fall 2008 (NCES 2010–003). *National Center for Education Statistics, Institute of Education Sciences*, U.S. Department of Education. Washington, DC.

Guskey, T. (2002). Does it make a difference? Evaluating professional development. *Educational Leadership.* 45-51.

Guskey, T. (2002). Professional development and teacher change. Teachers and teaching: Theory and Practice 8(3/4), 381-391.

Guskey, T., & Kwang Suk, Y. (2009). What works in professional development?. *Phi Delta Kappan*, *90*(7), 495-500. Retrieved from Professional Development Collection database.

Helsing, D., Howell, A., Kegan, R., Lahey, L. (2008). Putting the" development" in professional development: Understanding and overturning educational leaders' immunities to change. *Harvard Educational Review, 78*(3), 437

Huang, J. S., Yang, S. H., Yueh-Min, H., & Hsiao, I. T. (2010). Social learning networks: Build mobile learning networks based on collaborative services. *Journal of Educational Technology & Society*, 13(3), 78-92.

Hui, Diane Wai Yi (2006). Engagement in supporting new teachers: A role for computer-mediated communication in teacher learning within informal professional communities. Ph.D. dissertation, Washington University, United States -- Missouri. Retrieved March 30, 2010, from Dissertations & Theses: Full Text.(Publication No. AAT 3238654).

Hsu, s. (2010). The relationship between teacher's technology integration ability and usage. Journal of Educational Computing Research, 43(3), 309-325.

Hur, J., & Brush, T. (2009). Teacher participation in online communities: Why do teachers want to participate in self-generated online communities of K-12 teachers? *Journal of Research on Technology in Education*, *41*(3), 279-303. Retrieved from ERIC database.

Ingvarson, L., Meiers, M., and Beavis, A. (2005). Factors affecting

the impact of professional development programs on teachers' knowledge, practice, student outcomes & efficacy. Education Policy Analysis Archives, 13(10). Retrieved June 12, 2011, from http://epaa.asu.edu/epaa/v13n10/.

ISTE. (2007). Nets for students 2007. Retrieved February 17, 2010, from http://www.iste.org/Content/NavigationMenu/NETS/ForStudents/2007Standards/NETS_for_Students_2007.htm

ISTE (2009). NETS for students. Retrieved November 23, 2009, from http://www.iste.org/Content/NavigationMenu/NETS/ForStudents/NETS_for_Students.htm

Jones, C., Ramanau, R., Cross, S., & Healing, G. (2010). Net generation or digital natives: Is there a distinct new generation entering university? *Computers & Education*, 54(3), 722-732.

Keengwe, J., Onchwari, G & Wachira, P. (2008). Computer technology integration and student learning: Barriers and promise. *Journal of Science Education and Technology. (17)*6, 560-565.

Laferriere, T., Lamon, M., & Chan, C. (2006). Emerging e-trends and models in teacher education and professional development. teaching education (Columbia, S.C.), 17(1), 75-90. Retrieved February 10, 2010, from Education Full Text database.

Lee, J., Grigg, W., & Donahue, P. (2007). The nation's report card: Reading 2007. Retrieved February 8, 2010, from http://nces.ed.gov/nationsreportcard/pdf/main2007/2007496.pdf

Linn, G., Gill, P., Sherman, R., Vaughn, V. & Mixon, J. (2010). Evaluating the long-term impact of professional development. *Professional Development in Education*, doi:10.1080/19415250903109288

Luehmann, A., & Tinelli, L. (2008). Teacher professional identity development with social networking technologies: learning reform through blogging. *Educational Media International, 45*(4), 323-333. Retrieved February 10, 2010, from Education Full Text database.

Mantei, J. & Kervin, L. (2011). Turning into teachers before our eyes: The development of professional identity through professional dialogue. *Australian Journal of Teacher Education, 36(*1), 1-17.

Marcoux, E., & Loertscher, D. (2009). Achieving teaching and learning excellence with technology. *Teacher Librarian*, *37*(2), 14-22. Retrieved from ERIC database.

Martinez, M. (2010). How a new generation of teachers will change schools. *Phi Delta Kappan*, *91*(7), 74-5. Retrieved from Education Full Text database

Mierzejewski, C. (2009). The impact of professional development on technology integration in high school classrooms. Ed.D. dissertation, Immaculata College, United States -- Pennsylvania. Retrieved March 30, 2010, from Dissertations & Theses: Full Text.(Publication No. AAT 3393705).

McNamara, C. (2010). K-12 teacher participation in online professional development. *ProQuest LLC*, Retrieved from EBSCO*host.*

Nasah, A., DaCosta, B., Kinsell, C., & Seok, S. (2010). The digital literacy debate: an investigation of digital propensity and information and communication technology. *Educational Technology Research & Development*, 58(5), 531-555.

National Center for Education Statistics. (2009). The nation's report card: Reading 2009. Retrieved May 17, 2010, from http://nces.ed.gov/nationsreportcard/pdf/main2009/2010458.pdf

107th Congress. (2002). Public law 107-110. Retrieved February 11, 2010 from, http://www2.ed.gov/policy/elsec/leg/esea02/107-110.pdf

Oreilly, T. (2007). What is web 2.0: Design patterns and business models for the next generation of software. *Communications & Strategies, 1*(17). Retrieved February 16, 2010, from SSRN: http://ssrn.com/abstract=1008839

Partnership for 21st Century Skills. (2010). Framework for 21st century learning. Retervied February 17, 2010, from http://www.p21.org/documents/P21_Framework_Definitions.pdf

Penuel, W., Fishman, B., Yamaguchi, R., & Gallagher, L. (2008). What makes professional development effective? Strategies that foster curriculum implementation. *American Educational Research Journal, 44*(4), 921-958.

Rock, J., & McCollum, A. (2009). English companion ning. *Journal of Adolescent & Adult Literacy*, *53*(1), 87-89. Retrieved from Academic Search Premier database.

Ryberg, T., & Christiansen, E. (2008). Community and social network sites as technology enhanced learning environments. *Technology, Pedagogy and Education*, *17*(3), 207-219. Retrieved from ERIC database.

Sawchuk, S. (2008). Sites mimicking social networks set up for staff development. *Education Week*, *28*(1), 1, 18. Retrieved February 26, 2010, from Education Full Text database.

Sawchuk, S. (2009). Teacher training goes in virtual directions. *Education Week*, *28*(26), 22-4. Retrieved February 26, 2010, from Education Full Text database.

Schmucki, L., Hood, J., Meell, S. (2009). Preliminary findings: A survey of K-12 educators on social networking and content-sharing tools. Retrieved December 1, 2009, from http://www.mmseducation.com/SiteData/docs/K-12%20Survey%20%5bCompatibility%20Mode%5d/93a0222d21e5fb00a926add947b4a9de/K-12%20Survey%20%5bCompatibility%20Mode%5d.pdf

Schunk, D. (2004). Learning theories an educational perspective (4th ed.). New Jersey: Pearson Education, Inc.

Serwach, J. (2003). 20 years after 'a nation at risk': Why national education reform failed. Retrieved August 31, 2009, from http://www.umich.edu/~urecord/0203/Mar17_03/04.shtml

Shelly, G., Cashman, T., Gunter, R. & Gunter, G. (2010). Teachers discovering computers integrating technology and digital media in the classroom (6th ed.). Massachusetts: Thomas Course Technology.

Simkins, M., & Schultz, R. (2010). Using web 2.0 tools at school. *Leadership*, *39*(3), 12-38. Retrieved from Academic Search Premier database.

Snider, S. (2009). A critical analysis of rural teachers' usage of online communities. Ph.D. dissertation, Southern Illinois University at Carbondale,

United States -- Illinois. Retrieved March 30, 2010, from Dissertations & Theses: Full Text.(Publication No. AAT 3390876).

Sutherland, L., Howard, S., & Markauskaite, L. (2010). Professional identity creation: Examining the development of beginning preservice teachers' understanding of their work as teachers. *Teaching & Teacher Education*, *26*(3), 455-465. doi:10.1016/j.tate.2009.06.006.

Thompson, J. (2008). Do not be afraid to explore web 2.0. *Education Digest*, *74*(4), 19-22. Retrieved from Academic Search Premier database.

Tu, C., Blocher, M., & Ntoruru, J. (2008). Integrate web 2.0 technology to facilitate online professional community: EMI special editing experiences. *Educational Media International, 45*(4), 335-341. Retrieved February 10, 2010, from Education Full Text database.

Vogel, C. (2009). A call for collaboration. *District Administration*, *45*(5), 22-25. Retrieved from Academic Search Premier database.

U.S. Department of Education. (1994). goals 2000: educate America act. Retrieved August 31, 2009, from http://www.ed.gov/legislation/GOALS2000/TheAct/intro.html

U.S. Department of Education. (1998). *Goal 2000: reforming education to improve student achievement executive summary*. Retrieved August 31, 2009, from http://www.ed.gov/pubs/G2KReforming/g2exec.html.

U.S. Department of Education. (2004). Elementary & secondary education part d — Enhancing education through technology. Retrieved August 31, 2009, from http://www.ed.gov/policy/elsec/leg/esea02/pg34.html

U.S. Department of Education. (2004b). Putting a world-class education at the fingertips of all children. Retrieved August 31, 2009, from http://www.ed.gov/about/offices/list/os/technology/reports/e-learning.html

U.S. Department of Education. (2004c). Elementary & secondary education title IX general provisions. Retrieved December 1, 2009, from http://www.ed.gov/policy/elsec/leg/esea02/pg107.html

U.S. Department of Education. (2006). National education technology plan. Retrieved August 31, 2009, from http://www.ed.gov/about/offices/list/os/technology/plan/2004/site/edlite-default.html

U.S. Department of Education. (2009). American recovery and reinvestment act of 2009: Using ARRA funds to drive school reform and improvement. Retrieved August 31, 2009, from www.ed.gov/policy/gen/leg/recovery/guidance/uses.doc

U.S. Department of Education. (2009b). Guidance on enhancing education through technology (ed tech) program funds made available under the American recovery and reinvestment act of 2009. Retrieved August 12, 2009, from www.ed.gov/programs/edtech/guidance-arra.doc

U.S. Department of Education. (2010). Elementary & secondary education

ESEA reauthorization: A blueprint for reform. Retrieved February 26, 2010, from http://www2.ed.gov/policy/elsec/leg/blueprint/index.html

Webster-Wright, A. (2009). Reframing professional development through understanding authentic professional learning. *Review of Educational Research, 79*, 702-739.

Zalon, M. (2008). Using technology to build community in professional associations. *The Journal of Continuing Education in Nursing, 39*(5), 235-240. Retrieved February 10, 2010, from Education Full Text database.