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The Impact of Professional Development on Blended Learning on High School Teachers

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Abstract

The purpose of this study was to examine the impact of professional development on blended learning on high school teachers. In order to learn about teacher's feelings about technology training, professional development was delivered in a blended learning environment utilizing the learning management system Schoology with the goal of providing the experience of engaging in same learning environment that their students partake in. The study examined perceptions and explored the impact of blended learning of four high school teachers. Quantitative and qualitative data were collected using an online survey, interviews, and in-person and online observations. Descriptive statistics, in conjunction with the constant comparative method of data analysis, were completed to triangulate all sources of data. Themes of uncertainty and enthusiasm for blended learning professional development emerged, alongside planning and organization, and communication and inquiry for how blended learning has impacted the four teachers in the study.

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CHAPTER ONE – INTRODUCTION

Technology in education is an area of rapid growth. Students are now given the opportunity to bring a device to class and educators are redefining what instruction looks like. One of the difficulties with this fast progression is the constant change that accompanies it. Even teachers who are inclined to explore and implement the new can get caught in the frustration of frequent shifts and growing expectations. Educational leaders are challenged with determining which technologies to adopt, setting expectations for its usage, and implementing a plan for successful integration into their learning community. Those responsible for training our educators are tasked with delivering professional development across the district in a manner that is efficient and effective.

Background to the Problem

Understanding what is necessary to develop a community committed to continuous improvement in education is a complex task. The skill set required of individuals in education is ever evolving and the manner in which they acquire those skills is broad. High quality professional development encompassing opportunities to acquire subject knowledge, engage in continued learning, and receive long-term professional development are the expectations (Bybee & Loucks-Horsley, 2000; Wayne, Yoon, Zhu, Cronen, & Garet, 2008) yet how to operationalize those expectations in the current technology infused educational environment is often overlooked (Gaytan & McEwen, 2010; Wayne et al., 2008).

More commonly, methods that focus on a software or a demonstration of an exemplar are utilized (Harris, Mishra, & Koehler, 2009). Research reveals benefits to incorporating "best practices" into technology focused professional development. Form, duration, collective participation, content, and coherence are all addressed (Bradshaw, 2002; Brand, 1998). In

additional, the literature reviewed shows the importance of differentiated sessions (Hixon & Buckenmeyer, 2009), as well as the value of a community of practice (Schlager & Fusco, 2003).

Purpose

The purpose of this study was to examine the impact of professional development on blended learning on high school teachers. Specifically, this study examined how professional development delivered through a learning management system, in a blended learning environment is perceived. These overall goals of the study offered themselves to two research questions:

1. What are teacher perceptions of teachers engaged in professional development delivered in a blended learning format?
2. What is the impact of blended learning on high school teachers?

I sought to answer these questions through a case study. "Case study is the study of the particularity and complexity of a single case, coming to understand its activity within important circumstances" (Stake, 1995, p. 11). This case study was designed to understand individual experiences within different cases in a similar context; I studied individual teachers experiences in multiple classes in a single school.

Summary

Students, teachers, leaders, and administrators are currently tasked with operationalizing the use of a device in education. Knowledge of technology is now a required skill. Chapter 1 provided an introduction; discussing the speed of development of educational technology with the statement of the problem outlining issues and leadership decisions to be considered. Background to the problem stated the fact that required technology skills are constantly changing and the manner in which teachers develop their abilities is varied. High quality professional

development is expected, however technology focused training often lack the methods proven to be beneficial. The purpose of the study was outlined with two research questions designed to reveal insight into the impact of professional development on blended learning on high school teachers through a case study. A definition of terms relevant to the study was also provided.

Chapter 2 will present current literature regarding professional development as it relates to technology integration and online environments. Key elements of high quality professional development will be outlined including structural and core features and discussed as they relate to "best practices" in technology based professional development. Use of community of practice and key factors of participation, format, and duration in effective online professional development will be described.

Chapter 3 will define the purpose of the study and the methodology will be outlined, providing definition of a case study and details of the case. Data collection methods will be aligned to each research question including survey, interview, and observation with the rationale and procedures for usage detailed. Justification of data analysis methods comprising of descriptive statistics and constant comparative are addressed and how they will be used are described. The approach of pilot testing for reliability will be explained and validity effort of member checking and triangulation will also be discussed.

Chapter 4 will outline the results of the survey in graphic form. Themes evident from coding of transcriptions of interviews and observational data will be identified. Results will be organized by each research question; what are teacher perceptions of teachers engaged in professional development delivered in a blended learning environment, and what is the impact of blended learning on high school teachers. Discussion will be threaded throughout the chapter to examine the research results considering what is presented in the literature.

Chapter 5 will summarize the study; an overview of why the impact of professional development on blended learning was studied, where the literature provided areas of opportunity for research, and how the study was conducted will be outlined. Findings will be reviewed for each research question providing a synopsis of teacher perceptions and impact of blended learning on the research participants will be delineated. Implications for practice will be included. Discussion on what was learned and recommendations will be made. Suggestions for future research will be stated.

Definition of Terms

For the purposes of this study, the following key terms have been identified as they relate to the topic:

Blended Learning – "a formal education program in which a student learns at least in part through online delivery of content and instruction with some element of student control over time, place, path, and/or pace and at least in part at a supervised brick-and-mortar location away from home" (Staker & Horn, 2012, p. 3).

Best Practice – "existing practices that already have a good degree of widely-agreed effectiveness" (Hargreaves & Fullan, 2012, p. 51).

Learning Management System (LMS) – "an LMS is the infrastructure that delivers and manages instructional content, identifies and assesses individual and organizational learning or training goals, tracks the progress towards meeting those goals, and collects and presents data for supervising the learning process of organization as a whole" (Watson & Watson, 2007, p. 5).

CHAPTER TWO – LITERATURE REVIEW

With the shift to mandatory digital standardized testing for most states, such as the Smarter Balanced Assessment, many schools are increasing the number of devices available for students and are working towards one-to-one implementation (Penuel, 2006). In several districts, this increase in hardware available to students has increased their usage in the classroom (Hixon & Buckenmeyer, 2009). However, school administrators and policymakers assumed that having access to technology would be enough to ensure that today's students would learn about and with technology (Harris, Mishra, & Koehler, 2009; Hixon & Buckenmeyer, 2009). Technology skills have become equally important as reading and writing; a student might be able to understand the question and know the answer reading it electronically, but can they effectively communicate that answer on their given device?

This recent surge of one-to-one devices for all students grades K though 12 has increased the need for professional development in the usage of such devices in the classroom and in the integration of technology into the core curriculum (Brand, 1998; Harris et al., 2009). States are beginning to establish and define what technological proficiency of teachers looks like by adopting standards and implementing other incentives to ensure the technology aptitude of educators (Hixon & Buckenmeyer, 2009). "Current curriculum standards [for students] from national organizations now focus on providing relevant, meaningful tasks, developing higher-order thinking skills, and integrating technology as a tool to support learning" (Polly & Hannafin, 2010, p. 557). Successful technology integration approaches recognize that the introduction of new educational technologies changes more than the tool used; there is significant impact on the nature of content area learning, and on the range of pedagogical methods (Harris et al., 2009). Decisions about when to use technology, what technology to use,

and for what purposes cannot be made in isolation of theories and research on learning, instruction, and assessment.

Search Strategy

The literature search for this review was conducted by searching the broad topic of teacher professional development, then narrowing to teacher professional development focused on technology integration, and further narrowing to teacher professional development focused on technology integration though the use of a learning management system. The following keywords were used (separately and, in combination) when searching electronic databases that included *Google Scholar*, *Education Resources Information Center (ERIC)*, and *ProQuest*: professional development, effective professional development, K-12 education, technology integration, educational technology, online professional development, computer mediated professional development, technology mediated professional development, blended learning professional development, learning management system. To ensure that the search would generate an overview of high-quality research concerning teacher professional development focused on technology integration though the use of a learning management system, the search was limited to pieces published in international peer-reviewed journals since 1990. For each piece, specific information was noted, including: (a) authors, (b) year of publication, (c) journal, (d) objectives of the study, (e) important findings and conclusions, (f) keywords, and (g) times cited. The final list consists of 25 pieces (i.e. 24 journal articles and one dissertation), including empirical studies, theoretical pieces, and other types of articles.

The following sections provide a narrative review of the recent technology integration professional development literature. The literature regarding effective professional development will explore the various definitions of high quality effective professional development and the

elements that have come to be known as "best practice". The literature pertaining to technology integration and effective professional development will examine the use of those "best practices" when training is focused around the integration of technology. In addition, the literature will reveal the importance of differentiated instruction in technology centered effective professional development. The literature concerning effective professional development through online environments will discuss the opportunity for an online community defining it as a "community of practice" and outline the potential benefits of that virtual community. Finally, key factors of success when blending the learning environment with face-to-face interactions and online training will be outlined.

Elements of Effective Professional Development

The effectiveness of professional development in the educational institution is an area that has been studied, analyzed, and discussed at great lengths (Birman, Desimone, Porter, & Garet, 2000; Darling-Hammond, 1998; Garet, Porter, Desimone, Birman, & Yoon, 2001; Guskey, 2003; Wayne, Yoon, Zhu, Cronen, & Garet, 2008). Attempting to define effective professional development has provoked research and debate on what constitutes high quality professional development (Hawley & Valli, 1999; Penuel, Fishman, Yamaguchi, & Gallagher, 2007; Timperley, Wilson, Barrar, & Fung, 2008). Darling-Hammond (1998) stated "teachers learn best by studying, doing, and reflecting; by collaborating with other teachers; by looking closely at students and their work; and by sharing what they see" (p. 8). Throughout the years researchers have identified ways to operationalizing high quality professional development, while all might not use the same classification of terms, the consensus that content knowledge, opportunities to learn, continued learning, and long-term professional development are essential components (Bybee & Loucks-Horsley, 2000; Wayne et al., 2008).

Structural Features

Widely adopted as essential components to impactful teacher professional development are the structural features identified as form, duration, and collective participation (Birman et al., 2000; Garet et al., 2001; Guskey, 2003; Hawley & Valli, 1999; Penuel et al., 2007; Wayne et al., 2008). Fellow researchers stated that the study conducted by Garet et al. (2001) was one of opportunity due to the access to a nationally representative sample of teachers who had various professional development experiences and a range of reflective feedback that significantly increased knowledge regarding the elements of effective professional development (Penuel et al., 2007). The work of Garet and colleagues (2001) provided the basis for what would come to be known as "best practices" in teacher professional development (Penuel et al., 2007; Wayne et al., 2008).

In the literature reviewed, two forms of professional development were defined by researchers: traditional and reform. Traditional forms of professional development were workshops, institutes, courses, and conferences. These training sessions often occurred outside of the teacher's own classroom with an expert leading the session(s) at a set time (Hawley & Valli, 1999; Penuel et al., 2007). Reform types of professional development included study groups, teacher network, mentoring, committee or task force, internship, teacher resource center and coaching (Garet et al. 2001; Hawley & Valli, 1999). Reform type sessions were different in that they typically occurred during the school day, either during instruction or during common planning. It was argued that by locating opportunities for professional development within a teacher's regular workday, reform types of professional development may be more likely than traditional forms to make connections with classroom teaching, and they may be easier to sustain over time (Garet et al., 2001; Hawley & Valli, 1999; Penuel et al., 2007). Effective settings for

teachers to learn are ones that provide numerous opportunities for research and inquiry, trying and testing, talking about and evaluating the results of learning and teaching (Darling-Hammond, 1998). As learning is cyclical rather than linear, teachers need to be able to revisit partially understood ideas as they try them out in their everyday contexts (Hawley & Valli, 1999; Timperley et al., 2008).

Duration of a professional development session typically consists of the total number of contact hours and the period over which the activity ranged (Garet et al., 2001; Penuel et al., 2007). "Research indicates that activities of longer duration have more subject-area content focus, more opportunities for active learning, and more coherence with teachers' other experiences than do shorter activities" (Birman et al., 2000, p. 30). To make significant changes to their practice, teachers need multiple opportunities to learn new information and understand its implications for practice. They need to encounter these opportunities in environments that offer both trust and challenge (Brand, 1998; Timperley et al., 2008).

Collective participation involves professional development that is designed for groups of teachers from the same school, grade, or subject/department. Garet et al. (2001) contended that:

> collective participation has numerous advantages. It allows teachers to discuss concepts and issues that occur during their professional development sessions. It also provides teachers the chance to integrate what they learn with other aspects of their instructional content, because teachers from same school, department, or grade are likely to share common curriculum materials, course offerings, and assessment requirements. (p. 30)

The environment in which the effective development of teachers occurs is built around collaborative learning. It is important for teachers to have the opportunity to process their new

learning with others (Brand, 1998; Hawley & Valli, 1999; Penuel et al., 2007; Timperley et al., 2008).

Core Features

In conjunction with the structural features the following core features were identified in effective professional development; content focus, active learning, and coherence (Birman et al., 2000; Garet et al., 2001; Guskey, 2003; Hawley & Valli, 1999; Penuel et al., 2007; Wayne et al., 2008). Labeling these features contributed to enhance knowledge and skills and changes in teacher practice. A focus on content knowledge, active or inquiry-oriented learning approaches in the professional development experience, and a high level of coherence with other reform activities and standards in the teachers' local school contexts exemplify effective professional development (Penuel et al., 2007; Wayne et al., 2008). Research indicated that professional development should focus on deepening teachers' content knowledge and knowledge of how students learn particular content, on providing opportunities for active learning, and on encouraging coherence in teachers' professional development experiences (Birman et al., 2000; Guskey, 2003).

A central dimension of high quality professional development is the degree of content focus (Garet et al., 2001). Focusing on content means targeting a staff development activity on a specific subject area or on a subject-specific teaching method. Teachers do not find generic professional development that focuses on teaching techniques without also emphasizing content to be effective (Birman et al., 2000). Content-specific approaches promote teaching practices that are consistent with the principles of effective teaching but also systematically assist teachers to translate those principles into locally adapted applications (Timperley et al., 2008).

Active learning found in rich professional development settings grows from investigations of practice through cases, questions, analysis, and criticism (Darling-Hammond, 1998; Penuel et al., 2007). Opportunities for active learning can take a number of forms, including the opportunity to observe expert teachers; to plan how new curriculum materials and new teaching methods will be used in the classroom; to review student work in the topic areas being covered; and to lead discussions and engage in written work (Birman et al., 2000; Garet et al., 2001). Timperley et al. (2008) specified that active engagement could be promoted by identifying specific issues that teachers recognized as real and then offering a vision of how they might be solved.

Coherence indicates the extent to which professional development experiences are part of an integrated program of teacher learning – activities that are consistent with teacher goals, built on earlier activities, and involve teachers in discussing their experiences with other teachers and administrators in the school. Activities are also coherent when they support national, state, and district standards and assessments (Birman et al., 2000). A professional development activity is more likely to be effective in improving teachers' knowledge and skills if it forms a coherent part of a wider set of opportunities for teacher learning and development (Garet et al., 2001; Guskey, 2003); is connected to and derived from teachers' work with their students as well as to examinations of subject matter and teaching methods; and is connected to other aspects of school change (Darling-Hammond, 1998; Hawley & Valli, 1999). Schools do not thrive on visions alone, so leaders must ensure that professional learning opportunities are well managed and organized and that appropriate conditions are in place for the extended engagement that in-depth professional learning requires (Guskey, 2003; Timperley et al., 2008; Wayne et al., 2008).

Technology Integration and Effective Professional Development

Schools often have difficulty with the establishment of high quality professional development geared towards the effective integration of instructional technology into teaching practices. The problem is that professional development activities usually implemented are not necessarily guided by "best practices" (Gaytan & McEwen, 2010; Wayne et al., 2008). Five general approaches dominate current and past technology integration efforts; software-focused initiatives; demonstrations of sample resources, lessons and projects; technology-based educational reform efforts; structured/standardized professional development workshops or courses; technology-focused teacher education courses (Harris, Mishra, & Koehler, 2009). To better understand effective ways to integrate technology the framework known as technological pedagogical content knowledge was developed. It emphasizes the connections among technologies, curriculum content, and specific pedagogical approaches (Harris et al., 2009).

Use of Best Practices

In the research reviewed regarding technology based professional development some elements of best practice were addressed. The structural features of form, duration, and collective participation all were discussed. The reform approach of peer coaching allows teachers to observe and help each other with implementation efforts (Bradshaw, 2002); it has been most effective in transforming workshop information into classroom application and practice (Brand, 1998). Concerning duration, it is believed that teachers need to have ongoing support for the implementation of the concepts and skills presented in an initial workshop. Adequate time and equipment for practice should be planned, and assistance needs to be available when teachers encounter problems (Hixon & Buckenmeyer, 2009). Collaborative problem solving and cooperative learning must underpin the approach to technology learning for teachers (Brand,

1998). Collegial study groups organized by grade levels, departments, or special interests will support an ongoing dialogue on technology issues and provide opportunities for collaborative planning and problem solving (Bradshaw, 2002).

Those concerning core features spoke to the importance of content and coherence. Brand (1998) argued that teachers must see the relevance of technology to what they do in the classroom. Training related to technology integration needs to have an instructional focus that guides teachers to think first about their curriculum and then helps them determine how to integrate technology into it. Focusing on skills offers teachers little opportunity to transfer their learning into their classroom. Regardless of where teachers are in the development process, it is crucial for technology-related training to be situated in the individual teacher's context (Hixon & Buckenmeyer, 2009). Preparing teachers for schooling in the emerging information-based society requires a new vision of teaching and associated expectations for staff development. To maintain coherence, administrators must communicate this vision, and they must articulate philosophy regarding how the new technology will be used and how the culture of the school is likely to change (Brand, 1998). Additionally, one of the most effective ways to align professional development with the district vision and goals is to invest in someone with experience in both technology and curriculum. An individual in this position can be a valuable asset in creating, implementing, and directing a global vision for integrating technology into all schools.

Differentiate Professional Development

The five approaches outlined by Harris et al. (2009) were software-focused initiatives; demonstrations; technology-based reform; standardized workshops; and technology-focused courses – established norms that the types of professional knowledge required of teachers for technology integration are the same, regardless of what level or what subject they teach. This

method ignores the variations inherent in different forms of disciplinary knowledge and inquiry as well as the varied pedagogical strategies that are most appropriate for teaching this content.

When designing staff development sessions related to technology, individual differences must be addressed and individual strengths supplemented (Brand, 1998). Professional developers must also recognize that some approaches are more appropriate for individuals at certain levels than others (Hixon & Buckenmeyer, 2009), and should use a variety of instructional strategies to fit various learning styles (Brand, 1998). Teachers have an immense range of abilities and specific developmental needs; it is important to identify interests prior to training so that strengths are supplemented and so that the session(s) are geared towards the audience.

For the individuals responsible for designing and developing technology related professional development it is essential to be cognizant of the developmental nature of technology integration and work to distinguish where individual teachers are in that process and to work closely with individual teachers to constantly reassess teachers' progress and redefine professional development strategies (Hixon & Buckenmeyer, 2009). Polly and Hannafin (2010) identified six principles of learning-centered professional development (LCPD): focus on student learning, teacher-owned, develop knowledge of content and pedagogies, collaborative, ongoing, and reflective. In LCPD teachers participate as learners in model lessons, and learn to facilitate student learning by experiencing specific pedagogies, such as modeling and questioning.

Effective Professional Development through Online Environments

Researchers Schlager and Fusco (2003) argued that professional development was "viewed as a career-long, context-specific, continuous endeavor that is guided by standards, grounded in the teacher's own work, focused on student learning, and tailored to the teacher's stage of career development" (p. 5). Teacher professional development is more than a series of

training workshops, institutes, meetings, and in-service days; it is a process of learning how to put knowledge into practice through engagement in practice within a community of practitioners.

Professional development can be treated as a socio-organizational system that requires:

- communication and close cooperation among stakeholders to assure access for all teachers,
- continuity and cohesion of professional development pedagogy across providers,
- capacity to support sustained adoption and practice,
- sharing of knowledge and prof norms of practice, and
- formation of coherent policies.

Schlager and Fusco (2003) conjectured that fulfilling these requirements is where a local community of practice, and the sociotechnical infrastructure that support it, could play a crucial role in achieving effective professional development district-wide.

Use of Community of Practice

Teachers are beginning to seek participation in communities of practice as environments to support learning (Barab, MaKinster, Moore, & Cunningham, 2001). Community of practice has been defined as a "persistent, sustained social network of individuals who share and develop an overlapping knowledge base, set of beliefs, values, history and experiences focused on a common practice and or mutual enterprise" (Barab, MaKinster, & Scheckler 2003, p. 238). Within a community of practice there is opportunity for individuals to share new ideas, seek solutions to problems, have access to previous discussions, and participate in creating and utilizing a system of support (Vavasseur & MacGregor, 2008).

"Collaboration among individual community members allows them to view one another as part of a collective whole working toward the joint goals of the community and its members"

(Barab et al., 2001, p. 76). The flexibility of the virtual space fosters collaboration and productivity allowing educational communities of practice the ability to create, manage, reuse, and modify workplace artifacts (Schlager & Fusco, 2003). Utilizing an online environment, educators with a broad range of teaching experience and expertise can come together to observe, discuss, and reflect on pedagogical theory and practice anchored to actual teaching vignettes (Barab et al., 2001).

Key Factors to Success in an Online Community

Teachers need to be full participants in, and owners of their virtual space for meaningful interactions to occur (Barab et al., 2001, Barab et al., 2003, Schlager & Fusco, 2003). A community cannot be designed by individuals without experience or by someone other than the community members themselves (Barab et al., 2003). Additionally, teachers need to have a set of online learning and collaboration capabilities that they can own and tailor to meet their own needs and the needs of the community (Schlager & Fusco, 2003).

Online interactions are most successful when they serve as extensions of face-to-face workshops, meetings, and classes (Barab et al., 2003; Duncan-Howell, 2010). With the growth of blended learning opportunities for students there is now a need to examine how face-to-face and online learning opportunities could be effectively used in teacher professional development (Vaughan, 2004). Sense of community and connections develop when individuals are given the opportunity to meet regularly in person, supporting collaboration amongst the participants (Duncan-Howell, 2010). Extending that connection online with blended learning gives teachers the opportunity to expand and sustain this type of discourse and community (Barab et al., 2003; Schlager & Fusco, 2003; Vaughan, 2004).

Summary

The purpose of this review was to explore the literature that addressed effective professional development and what that looked like when focused on technology integration, as well as delivered through online environments. Key elements of high quality professional development serving as the basis for "best practices" included: content knowledge, opportunities to learn, continued learning, and long-term planning. Form, duration, and collective participation were identified as structural features of effective professional development. Traditional forms included workshops/conferences, are outside of the classroom, and usually only occur once with an "expert" leading the session. Reform sessions included mentoring/coaching, occurred during the school day, and included several sessions. Essential to effective training was that the duration of the sessions be on-going, which allowed teachers multiple opportunities to learn. Also vital, was collective participation; professional development needs to be grouped by school, grade, subject, and department so that collaborative learning could occur. Content focus, active learning, and coherence were identified as core features of effective professional development. Content focused professional development targeted specific subject areas or subject specific methods. Active learning happened when teachers are questioning, analyzing, criticizing, and redefining through observation, planning, review, and discussion. Coherence related to how the professional development links with teacher goals, past training, teacher input, alignment with state and national standards, and other aspects of school change.

The review of literature showed that the use of "best practices" in technology related professional development focused on all three structural features of reform, duration, and collective participation, and two of the core features: content, and coherence. Studies found that the reform approach of peer coaching had the largest impact on bringing professional

development training into classroom use. Research indicated that training has to be ongoing and supports need to be made available. The literature also stated that essential for collective participation, trainings should be grouped by level/department so that collective planning and problem solving can occur. Content focus needed to be considered; no matter where teachers were with their technology abilities the professional development must be situated in the individual teacher's context. Key to coherence was that administration must communicate the vision and have resources in place to support it. Also prevalent in the literature read was the importance of differentiated professional development. Sessions must address teacher differences and supplement strengths. It was important to identify interests prior to sessions. The use of the principles identified in LCPD supported differentiation and allowed the teacher to experience the new learning the way the student should.

Literature focused on effective professional development utilizing online environments revealed two themes: the use of a community of practice, and key factors to success. A community of practice was a virtual environment that supports the learning that occurs during professional development sessions. Those involved share a knowledge base, beliefs, and experiences. Participation allowed teachers the opportunity to share new ideas, solve problems, and create and use a system of support. Key factors to success in an online community were that they served as an extension of "face-to-face" groups, and that those participating "owned" it and were full participants.

The search strategies used did not result in literature exploring the use of online environments for effective professional development specifically related to technology integration and the blended learning classroom. There were limited results regarding training teachers in a blended learning environment. There was very little literature addressing the use of

online environments for teachers at the K-12 level. There is a need to explore the use of validated "best practices" related to teaching technology to teachers to help identify ways to support the implementation of one-to-one devices in schools. Additional research can help create a new model of professional development in an era when every student has access to, and uses, a device throughout their day as an essential learning tool.

CHAPTER THREE – METHODOLOGY

The purpose of this study was to examine the impact of professional development on blended learning on high school teachers. Specifically, this study examined how professional development delivered through a learning management system, in a blended learning environment is perceived. These overall goals of the study offered themselves to two research questions:

1. What are teacher perceptions of teachers engaged in professional development delivered in a blended learning format?
2. What is the impact of blended learning on high school teachers?

Because my research questions were meant to produce an insight into participants' perceptions and the influence of the training they receive, a case study methodology was suitable as the framework for the research design.

Research Design

A case study is an extensive data collection used to complete a comprehensive examination of a bounded system (Creswell, 2002). According to Yin (2013), in research, a case study is used to increase what we know of individual, group, organizational, social, political, and related phenomena. Doing case study research is a linear but iterative process, and it is my intention to focus on a "case," yet retain a holistic and real-world perspective.

With this case study I hoped to learn more about individual teachers, their learning, and their confidence level in using a learning management system. "We expect an inquiry to be carried out so that certain audiences will benefit – not just to swell the archives, but to help persons toward further understanding" (Stake, 1978, p. 5). This case study was designed to

understand individual experiences within different cases in a similar context; I studied individual teachers experiences in multiple classes in a single school.

The Case

This case study took place at Berlin High School in Berlin, Connecticut. Berlin was a town in Hartford County that had an approximate population of 20,000 people at the time of the study. Berlin had five schools with an enrollment of roughly 3,000 students. Berlin High School serviced grades nine through 12, and had a projected enrollment for 2015-2016 of 960 students. There were 90 teachers at Berlin High School; 78 general education teachers and 12 special education teachers.

The study included participants from the Math and English departments for a total of four members in the study. The math teacher had been in the profession for more than 18 years and spent four of those years as one of the high school's assistant principals; this was her first year returning to the classroom. One of the English teachers had been teaching for eight years at Berlin High School. She was also a current resident and graduate of Berlin, which gave her a unique perspective of the system. The other two English teachers were new to teaching, within the last five years, with Berlin being the first system they had worked in.

Data Collection Methods

The following methods were used for data collection; a survey, interviews, and observations. Method usage for each question is outlined in Table 1 below.

Table 1.

Data Collection Methods for each Research Question

Research Question	Data Collection Method
1. What are teacher perceptions of teachers	• Survey

engaged in professional development delivered in a blended learning format?	• Interview
2. What is the impact of blended learning on high school teachers?	• Interview • Observations

Bonoma (1985) contended that collecting different kinds of data through a variety of techniques from assorted sources allows for a broad range of coverage that will likely result in a more complete depiction of the unit being studied than would have been achieved otherwise. Furthermore, using multiple collection methods increases the robustness of results because findings can be strengthened through triangulation (Kaplan & Duchon, 1988).

The study included both quantitative and qualitative data collection methods. A survey modeled from several existing instruments was given to each participant after completing professional development that was delivered in a blended learning format that was then followed by interviews. In addition, the same participants were interviewed and observed utilizing blended learning in their classrooms.

Survey

An online survey was given to each teacher who participates in the first session of professional development. Survey research was used to describe trends, to determine individual opinions, and to help identify important beliefs and attitudes of individuals (Creswell, 2002). Surveying is a systematic, standardized approach to collecting information consisting of sampling, inference, measurement, and analysis (Marsden & Wright, 2010), and the best surveys have the following features: specific objectives, straightforward questions, sound choice of sample, and a reliable and a valid survey instrument (Fink, 2003).

With this study I hoped to better understand teacher views and feelings of being trained in a blended learning format by asking for feedback within 48 hours of the training session. I reviewed a number of instruments included in the following dissertations; Evaluation Of Faculty Perceptions Of Online Dental Education In The Kuwait University Faculty Of Dentistry by Hanadi Alenezi, Middle School Educators' Perceptions of Online Professional Development by Kelley E. Theodocion, and Professional Development that Enhances Pedagogy: Perceptions of Teachers in a Rural High School by Audrey Davis Johnson. In addition, I assessed the Berlin Public Schools former professional development survey.

None of the instruments I found were designed in such a way that would adequately address my research question. As such, I developed my own instrument using those that I reviewed as models. The majority of the structure of the survey mirrored Hanadi Alenei's instrument including the following sections, Background Information, Technology Experience, and Faculty Members' Perceptions Of Blended Learning. A final section of Effectiveness Of Professional Development was also included and primarily developed based on Berlin's former professional development survey.

Interview

Both an in person interview, as well as an online interview were conducted. Briggs (1986) stated that "we use interviews in exploring people's beliefs about the future… as well as their recollections of the past" (p. 1). By conducting two rounds of interviews I was able to gather data on reactions to the professional development prior to application in the classroom and after. Interviews provided useful information that may not have been observed. Furthermore, the interviewee had more control over the information received because questions were tailored to

elicit specific responses. Finally, interviews provided participants the opportunity to describe detailed personal information (Creswell, 2002).

The method of interviewing was used in two ways; as a follow up to the survey taken to better understand teacher perceptions of professional development delivered in a blended learning format, as well as to identify the impact of blended learning on high school business teachers. I will conducted an interview in person within a week of the survey being completed and recorded the audio. The interview was brief in nature and asked questions to gain a deeper understanding of teacher views and opinions of receiving professional development through a learning management system. Again, several instruments were reviewed from the following dissertations: *Adult Learners and Blended Learning: A Phenomenographic Study of Variation in Adult Learners' Experiences of Blended Learning in Higher Education* by Paige Leigh McDonald (2012) and *A Phenomenological Study Of Undergraduate Instructors Using The Inverted Or Flipped Classroom Model* by Anna F. Brown (2012). These instruments provided the foundation for which my instrument was built.

The second interview was conducted online through the learning management system *Schoology*. Doing so served two purposes, all communication was automatically documented, and the interview served as an extension of the professional development provided on using the learning management system. "Ross (2001) suggests that in the fast or immediate back-and-forth of electronic communication that parties are actively engaged in interpreting each other's messages and questioning meanings in a way that may enhance understanding" (Salmons, 2009, p. 5). Further, Salmons (2009) believed that researchers could better understand the participant's cyber experience when interviewed online. The interview was scheduled at a set time where both

the interviewee and myself were actively engaged in the interview for a set duration of time; this was after the in-person interview and was over the course of a month's time.

Observation

Observations were conducted both in individual teacher classrooms who had received professional development through a learning management system that were teaching in a blended learning environment, as well as online within the learning management system in an effort to gather open-ended, firsthand information. Advantages of using observation as a method of collecting data consisted of the "opportunity to record information as it occurs in a setting, to study actual behavior, and to study individuals who have difficulties verbalizing their ideas" (Creswell, 2002, pp. 213-214). Acting as a participant observer online allowed me to study the culture, community, and activities of participants interacting with myself and with each other; this provided the holistic opportunity to understand shared practices, meanings, and social contexts, and the interrelations among them (Boellstorff, Nardi, & Pearce, 2012). Utilizing both methods allowed me the opportunity to collect a snapshot of information regarding specific participants as well as gather data over time of each participant and of the collective group.

Classroom observations happened in person after the second professional development session had occurred, each participant that utilized the learning management system in their classroom was observed. Conducting the observation after the second professional development session allowed the participants time to develop their blended learning skills and apply the knowledge they have gained from the training in their classrooms. Data was recorded in descriptive fieldnotes over a period of 20 minutes for each observation. In addition, I acted as a participant observer online through *Schoology*; I partook in the online discussions. These observations were ongoing throughout the period of the study.

Data Analysis Methods

The following methods were used for analysis of the data collected, descriptive statistics and constant comparative.

Descriptive Statistics

Descriptive statistics is a data analysis technique that allows the researcher to describe data with significant numerical indices or in graphic form (Fraenkel, Wallen, & Hyun, 1993). The method offers the ability to summarize overall trends in the data, impart an understanding of how varied scores might be, and supply insight into where one score stands in comparison with others (Creswell, 2002). It is also exploratory in nature and provided the opportunity to gauge opinions and determine how people felt (Healy, & Knight, 2003) about blended learning in a systematic way.

Data from each survey was saved into Google Sheets. Google provided a summary of responses, which is a broad overview of how the group responded to questions. Data was represented in chart and graph form and was interactive providing additional information when hovered over. The statistics described what is, what the data showed.

Constant Comparative

The constant comparative procedure involves the slow development of categories of information through the process of gathering data, sorting it into categories, collecting additional information, and comparing the new information with emerging categories (Creswell, 2002). Constant Comparative is a qualitative data analysis method that emphasizes the value of individual experiences and views, as encountered in real-life situations (Hewitt-Taylor, 2001) and was used for analysis of interviews and observations. Essentially, by organizing the data into

meaningful categories, a full and clear understand what the participant meant emerges (Ruona, 2005).

Upon completion of the initial interview I began to prepare the data in the following manner, each interview was transcribed from the audio recording. Print and electronic files were organized to ensure data was stored at the various stages. Similar steps were completed after the in-person observations were conducted. Transcriptions of each audio recording were created, field notes were edited as needed, and all documentation was filed accordingly. I then engaged in familiarizing myself with the data that had been collected. I listened and watched all recorded material and began to take notes about what I saw and thought was happening in the data. Essential at this stage was actively engaging with the data by asking questions and making comments. Next, I began to generate categories by segmenting sentences and paragraphs. During familiarization, data was viewed creatively so that topics and patterns emerge. During coding, a list of categories and themes arose. I repeated this process with two to three transcripts to generate my initial list of themes. From there, I began to tag the data in the documents. This process was iterative and evolved throughout the research. Finally, I attempted to generate meaning from the data collected with a holistic approach to determine; how the themes fit together, what patterns have emerged across themes, and what further questions need to be explored. Vital to this stage was that the meaning must have an obvious and justifiable link to the data.

Reliability and Validity

Several methods were used in an effort to maintain both reliability and validity throughout the case study. Because all existing surveys and interview questions reviewed were not sufficient in addressing my research question I developed my own instruments modeled after

those examined and therefore pilot testing was completed for reliability. A pilot test of an instrument is a process where a researcher makes changes to an instrument based on feedback from a small number of individuals who complete and evaluate the instrument (Creswell, 2002). Pilot testing helped to identify errors both in the survey, and in the interview question's form and presentation, and allowed for the opportunity to correct errors before the instruments were used (Litwin, 1995).

In an effort to determine the validity of the findings in this study the strategies of both member checking and triangulation were planned to be used. Member checking is an opportunity for members (participants) to check (approve) particular aspects of the interpretation of the data they provided (Merriam, 1998). The participants were to be asked about several components of the study, including whether or not the "description is complete and realistic, if the themes are accurate to include, and if the interpretations are fair and representative" (Creswell, 2002, p. 259). This strategy of disclosing research materials to the participants ensures that the researcher has accurately translated the participant's viewpoints into the data.

Triangulation is the combination of methodologies in the study of the same phenomenon. "Triangulation ensures that the study will be accurate because the information draws on multiple sources of information, individuals, and processes" (Creswell, 2002, p. 259). The use of a surveys, in-person interviews, online interviews, in-person observations, and online observations helped to reflect a range of perceptions, some qualitatively described while others quantitatively represented. "The effectiveness of triangulation rests on the premise that the weaknesses in each single method will be compensated by the counter-balancing strengths of another… triangulation purports to exploit the assets and neutralize, rather than compound, the liabilities" (Jick, 1979, p. 604).

Summary

The purpose of this study was to examine the impact of professional development on blended learning on high school teachers. The research design consisted of a case study of four high school teachers who work for Berlin Public Schools. Three participants were English teachers; the fourth was a Math teacher. My goal was to better understand each teacher regarding their experiences with blended learning professional development, as well as learning more about each individual's self-confidence is using the learning management system *Schoology*.

I used the following methods to collect my data, an online survey, variations of interviews, and in-person and online observation. The survey provided data on background information and technology experiences, faculty members' perceptions of blended learning, and effectiveness of professional development. Each participant was interviewed in person and asked a series of questions regarding support, usage and application of what was taught in professional development, as well as additional needs. Attempts were made to continue discussions online within the learning management system, however there was limited dialogue. In person observations in each teacher's classroom were video taped and documented using field notes. Observation of online content was collected from the learning management system.

Descriptive statistics was used to analyze survey data. The online form provided a summary of responses used to reveal overall trends and provide understanding into variations in responses. The method of constant comparative was used to analyze the interviews and observations. This helped to better understand each participant's individual experiences as they pertain to blended learning and professional development.

Pilot testing of all instruments was completed during the study in an attempt to maintain reliability. An effort was made to engage in member checking for validity, however time

constraints and participant availability became a factor and therefore was not completed. The study was structured to utilize triangulation for validity. Both qualitative and quantitative data was collected through an online survey, in-person interviews, and in-person and online observations.

CHAPTER FOUR – RESULTS & DISCUSSION

Survey results and interview data are outlined and discussed as they pertain to teacher perceptions of teachers engaged in professional development delivered in a blended learning format. The results are presented in two themes, uncertainty and enthusiasm for the potential. Additional interview data, as well as observational data is outlined and discussed as it relates to the impact of blended learning on high school teachers. Again, the results are presented in two themes: planning and organization, and communication and inquiry.

Teacher Perceptions of Professional Development via an LMS

Of the four individuals participating in this case study, half had less than five years experience in the classroom, one had been teaching for six to 10 years, and the other teacher for 16 or more years. Three out of the four participants belonged to the English department; the other belonged to the math.

Uncertainty

Results showed that level of experience with word processing and presentation programs were average to above average, see Figure 1.

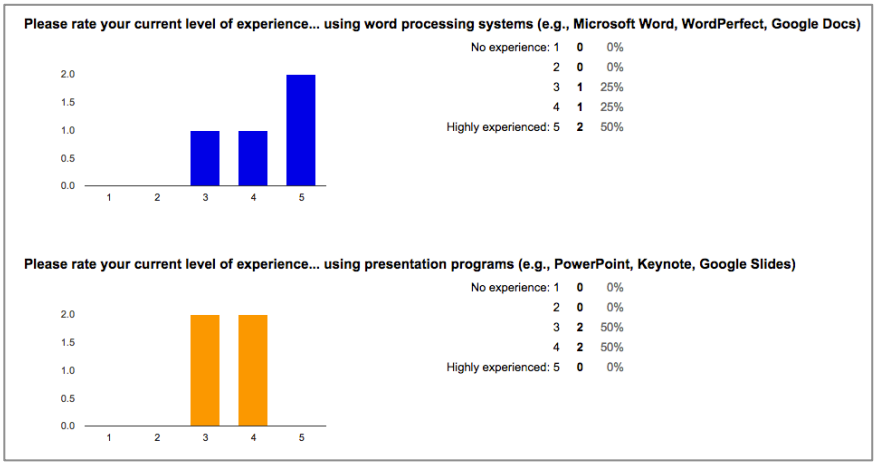

Figure 1. Survey results, level of experience with word processing and presentation programs.

Results for experience with online learning systems were below average, and exposure to blended learning was split 50/50, see Figure 2.

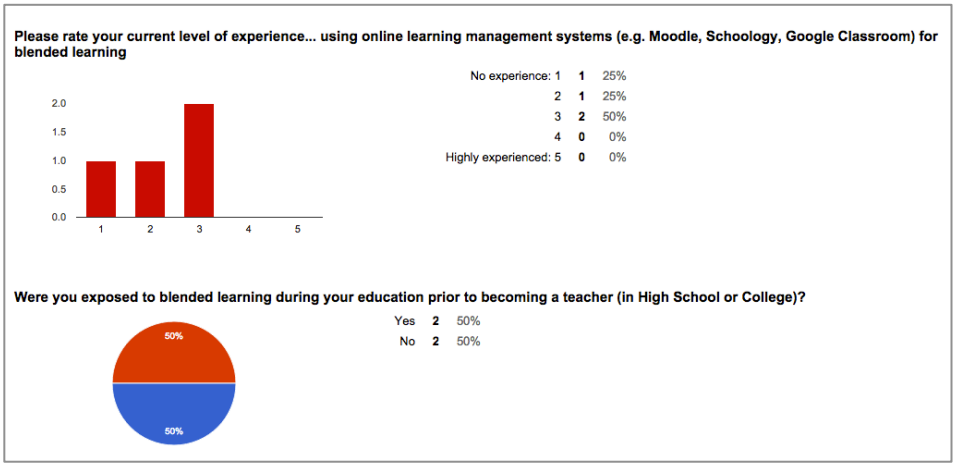

Figure 2. Survey results, level of experience with learning management systems and exposure to blended learning.

Results for confidence in developing an effective blended learning course, and in teaching a successful blended learning course were predominantly below average. This was likely due to the limited experience these individuals had with teaching in a blended learning environment on a regular basis. When interviewed, most of the teachers stated that they didn't know what blended learning was. A definition was included with the survey, however, in our discussion it was revealed that most were unsure they understood the term; one teacher said "to be honest, I don't know what you mean by blended learning environment". A lack of understanding for blended learning significantly impacted responses regarding blended learning and might not necessarily reflect true confidence levels. District decisions created opportunities for blended learning have not been accompanied by articulation of philosophies regarding how the new technology will be used and how the culture of the school will change (Brand, 1998). This was a missed opportunity and contributed to the lack of certainty in abilities. In addition, an exploration

of the framework outlined by Harris (2009), which seeks to combine technology, curriculum content, and specified pedagogical approaches, would be beneficial.

When asked how they felt about teaching in a blended learning environment responses ranged from "apprehensive and frustrated," to "I don't know. I'm excited about it and I think my enthusiasm hopefully rubs off on the kids as well", to "I like it… because I am a young teacher, I feel like it's going to be easy for me to adapt."

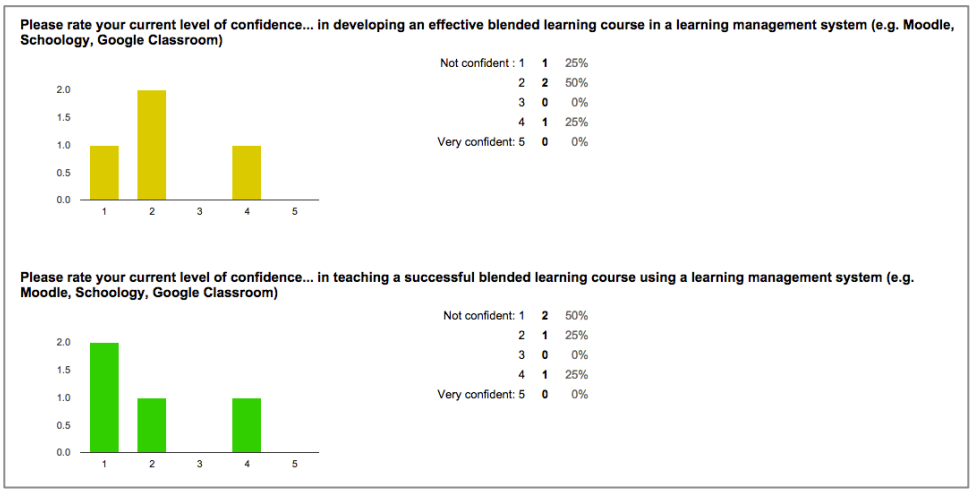

Figure 3. Survey results, level of confidence in developing and teaching blended learning courses.

The range in responses could to be expected. Successful technology integration approaches recognize that the introduction of new educational technologies causes changes to not only the tool used, but to content area learning, and to the pedagogical methods used (Harris et al., 2009). The varied reaction to the new learning management system is likely also due to the changes to instruction now required. The impact of access to a device with a learning management system not only in the high school, but also across the district, is immense. Efforts are being made to revise curriculum and instruction to offer relevant, engaging activities, to develop higher order thinking skills, and to integrate technology as a tool to support learning (Polly & Hannafin,

2010). Time will be necessary for continued evaluation to determine the perception of the new learning environment.

While 75% of the participants enjoyed using a device in their teaching, the group was split equally across the response options (i.e., Disagree, Uncertain, Agree, Strongly Agree) for "I enjoy developing blended learning courses." Interesting to note that no one selected Strongly Disagree.

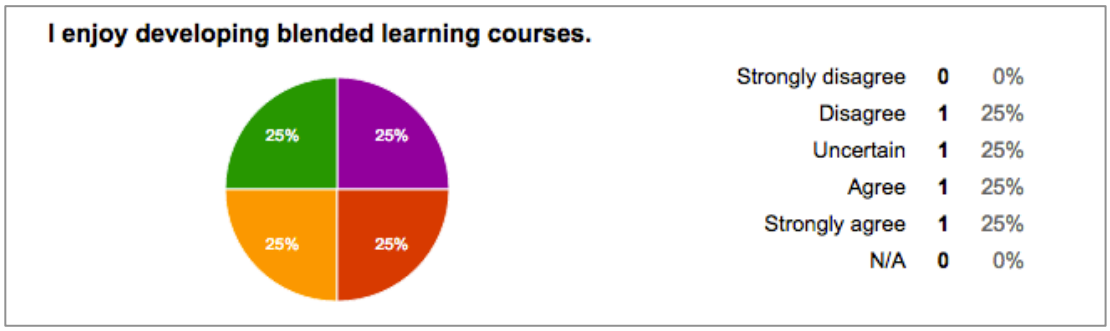

Figure 4. Survey results, enjoyment for developing blended learning courses.

The range in responses might have been due to the fact that these teachers had just begun the process of developing blended learning courses, and that they had minimal practice in it and had not had time to develop an enjoyment for it. The literature reviewed did not address factors that might contribute to gratification in the practice of creating blended learning courses although it did address the importance of collaborative problem solving and cooperative learning when teachers are engaged in technology learning (Brand, 1998). The participants in this study have an opportunity to engage in both through the differentiated workshops provided, the common planning time they are given, and the communication tools available in *Schoology*.

Research showed that effective settings for teachers to learn were ones that provide several instances where research and inquiry, trying and testing, and discussion and reflection can take place (Darling-Hammond, 1998). Teachers at the high school have had multiple

opportunities this school year to partake in professional development focused on the capabilities of the learning management system *Schoology.* Department grouped training sessions, and additional work sessions were planned so that areas could meet, explore, and share skills learned. This structure has allowed teachers to revisit partially understood ideas (Hawley & Valli, 1999), and for systemic planning in professional development offered (Timperley, 2008).

Equally important to consider in why the responses were so varied is the notion of coherence. While the professional development provided was solid in structural features of form, duration, and collective participation (Birman et al., 2000); it was not well defined in the core feature of coherence (Hawley & Valli, 1999). Successful professional development sessions are aligned with all learning and developmental opportunities in the district (Garet et al., 2001; Guskey, 2003), data suggested that this effort might not have been. Two initiatives were put in place this year in Berlin Public Schools: every student has a device, and every student has access to a learning management system. While both were new to the classroom on an everyday basis, utilizing a device in teaching at Berlin High School was not new. Berlin teachers had access to computer labs, laptop carts, and Chromebook carts for several years. Rapid change of the technologies in the district, and frustration was evident; one participant stated "I was an administrator for four years and this is my first year back in the classroom and so much has changed". Another teacher shared that she was:

> having a hard time with technology…It's just who I am, which is weird because in the past I used to be really good with technology, but I think what happens is I've been teaching for eight years now, so you don't have as much support… I don't get much anymore and things are just kind of shifting around me and I'm like "wait for me."

Coherence is designated by the degree to which professional development is part of a cohesive planning for teacher learning (Birman et al., 2000). When other aspects of school change are overlooked and if administration fails to communicate and/or acknowledge all components related to the vision it results an inconsistent response and difficulty in reaching the goal.

When asked about receiving their professional development sessions through a learning management system the response to "I enjoy learning in a blended learning course" showed that two teachers were neutral: one agreed, and one disagreed.

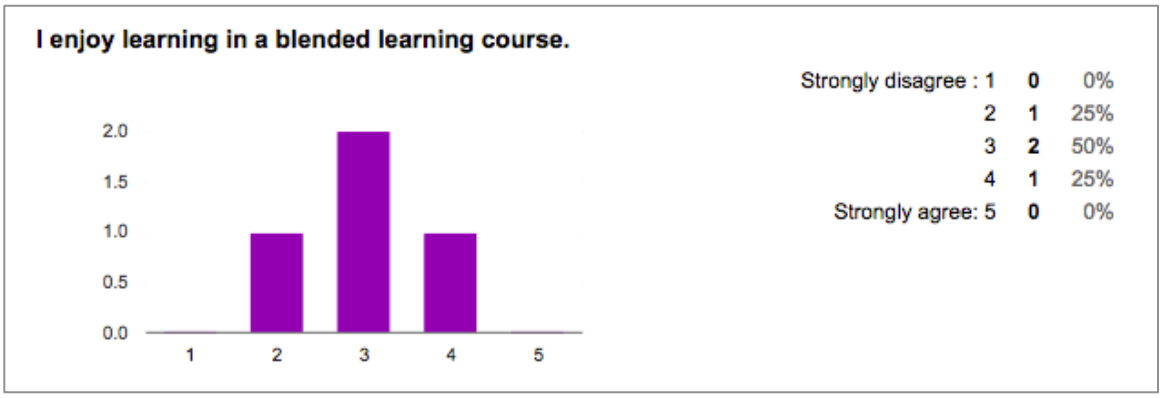

Figure 5. Survey results, enjoyment for learning in a blended learning course.

Again, this was an indication of the uncertainty of the new technology and an area of opportunity for further exploration regarding the potential advantages of blended learning in professional development. The district had set the goal of exposing teachers to the platform K-12 with all technology based professional development delivered through it. This was done, so that teaches could experience the system as students. While the literature did not address in the notion of teachers learning in a blended learning environment, one could only project that the benefits afforded to students in the classroom would be the same for teachers in their professional learning. The opportunities to utilize the system to implement known best practices are immense. In addition to features previously addressed, the learning management system provided the chance to engage in active learning (Penuel et al., 2007), offer and receive ongoing support

(Hixon & Buckenmeyer, 2009), and differentiation (Brand, 1998). Sessions were planned so that teachers could interact with the platform taking assignments and creating various materials. Discussions had been created to encourage teachers to ask questions after workshops had concluded. A technology integration specialist monitored these discussions, answering virtual questions, as well as scheduling in-person help sessions as needed. Training sessions were grouped by abilities, as well as by subject area. Continuing those practices, as well as expanding upon their foundation by developing peer coaching capacities (Bradshaw, 2002), and continuing to shift the focus from developing skills to developing strategies relevant to their individual context would likely result in increased enjoyment of receiving professional development in this manner (Hixon & Buckenmeyer, 2009).

Enthusiasm for the Potential

While the responses were split evenly for enjoyment in developing a blended learning course: two out of the four teachers selected Agree as their response to "I enjoy teaching blended learning courses," and one selected Uncertain.

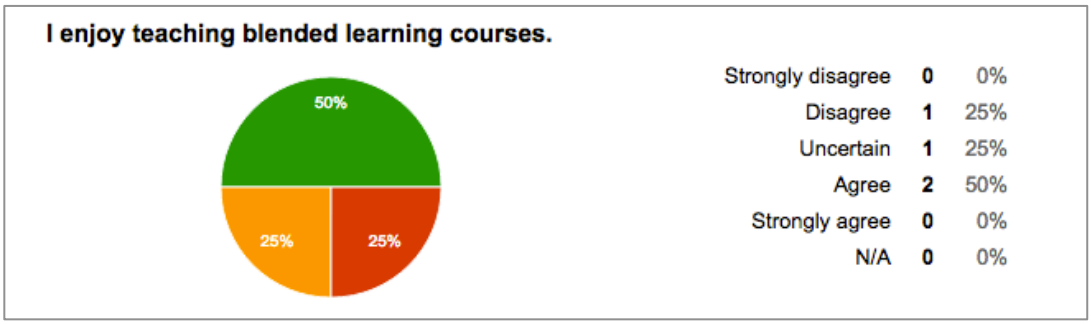

Figure 6. Survey results, enjoyment for teaching blended learning courses.

This led me to believe that their feelings were that they could enjoy utilizing blended learning, that there was potential for liking it. This was further supported by the data collected in Figure 7; the majority of participants selected positive responses to "I believe that blended learning is an

effective learning medium," and to "I intend to teach utilizing blended learning when presented with the opportunity."

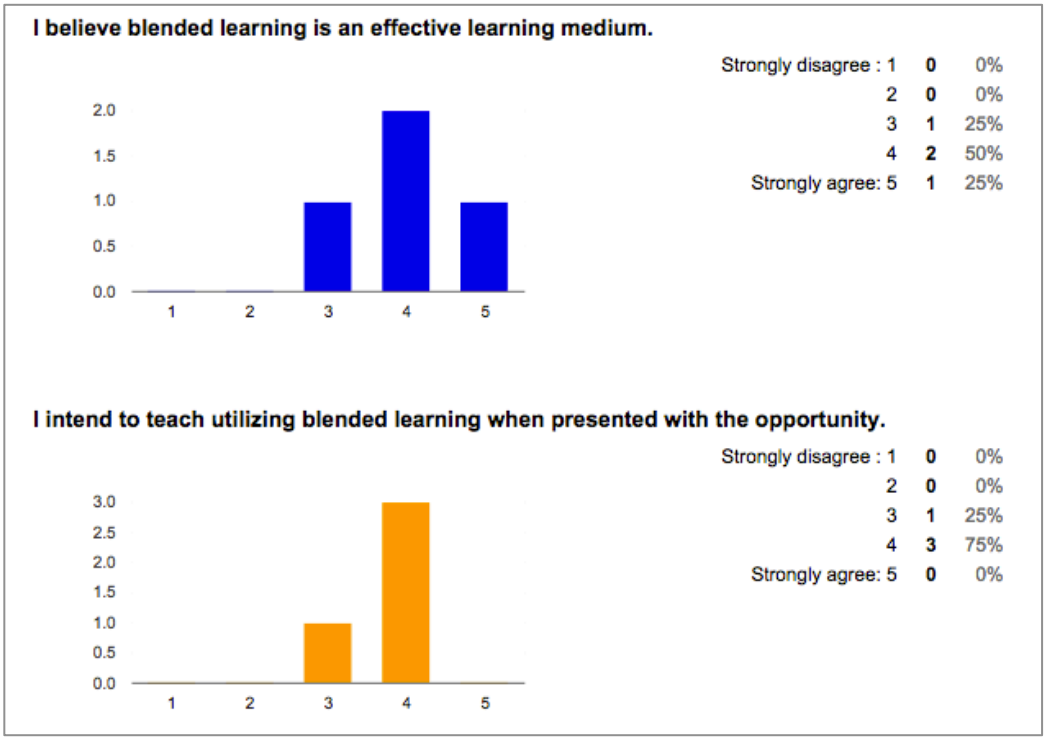

Figure 7. Survey results, belief that blended learning is an effective learning medium, and intention to utilize blended learning.

One teacher spoke about how she loved the benefit of modeling what digital organization should look like, while at the same time, teaching students how to take efficient notes with pencil and paper:

> I tell the kids I said, "You know what, you are going to have to be digitally organized." …we can't forget about the paper and pencil. What I started to do was I am using the ELMO and I am just physically showing the kids how to take notes. This is a skill that they need to be able to write things down and learn things this way, so that way they can be more successful with the technology.

She had come to see that they are equally important stating, “there's value in both.” Her own evolution and successes has resulted in excitement and peeked curiosity.

Another teacher shared that she wanted to take her implementation of *Schoology* to the next level and begin to have students submit assignments through the platform, “How cool, if I could just build it there and they can submit the assignment to me.” This validated the importance of ongoing professional development, and the need to have continued help for the application of the concepts and skills presented in the initial workshop (Hixon & Buckenmeyer, 2009). Not only was this an opportunity for the technology integration specialist to provide ongoing support but it is an area to consider further investigation of; what are knows ways to continue momentum in technology training? The literature reviewed did not address the concept of creating and developing a positive culture for educational technology development. It would be advantageous to examine the research relevant to highly effective professional development and effective tools for building a positive change in a blended learning environment.

Another teacher spoke about her high level of success with *Schoology* and one-to-one devices in some of her classes, her opinions of resistance in others, and her excitement moving forward:

> Interviewer: Have you taken the opportunity then, and you already started to answer this, to incorporate *Schoology* into your classroom?
>
> Interviewee: I have started it. I want to continue to utilize it. I find it's easier to use in English 9. I also teach a lot of senior electives, and I'm still kind of toying with how to use it for my seniors.
>
> Interviewer: Why do you think it's easier for English 9?

Interviewee: I think I see Schoology almost as an organizational tool right now. I feel like freshmen need so much more scaffolding with organization, that's why I have everything for them right there. Where as the seniors really don't need that much handholding. I'll put things up occasionally on Schoology. What I think too, the seniors, it's new to them. Most teachers didn't utilize it last year. But now, the freshmen, it will be ingrained.

Interviewer: You might use it with them when they're seniors heavily because that's just become part of the culture.

Interviewee: Exactly.

Her remarks reminded one of the significance of vision as it related to a technology infused educational system. While the importance of coherence was woven throughout the literature (Hawley & Valli, 1999), how to build and articulate a vision that is transparent in its mission was not prevalent in the articles reviewed. Had the vision been better communicated at Berlin High School the teacher might not have focused energy on developing the platform for seniors and instead celebrated her tremendous successes thus far.

Several teachers talked about their excitement and curiosity for what more they could do with the learning management system. They spoke of utilizing foundational features that were presented in the initial professional development; one English teacher shared, “I’ve been uploading all of the texts that my kids are reading onto *Schoology*”, another English teacher stated “I post pretty much all of my assignments…,” and the math teacher expressed, “I’m uploading a lot of materials on there.” Inquiry about how they might be able leverage *Schoology* with the other digital resources they have been exposed to was also communicated; the math teacher asked, “I mean there are so many math resources, how to use the resources out there like GeoGebra and NCTM have different activities on their websites, how can I go ahead and take

those concepts or those ideas and incorporate them into *Schoology*?" In addition to opportunities to continue their learning through organized professional development (Brand, 1998), teachers have begun to create a community of practitioners (Barab, MaKinster, & Scheckler, 2003), seeking to share knowledge and professional norms of practice. This space has provided the opportunity for individuals to share new ideas, seek solutions to problems, have access to previous discussions, and participate in creating and utilizing a system of support (Vavasseur & MacGregor, 2008). The level of engagement in not only actively building their courses for their students, but in creating dialogue and opportunities to share resources amongst colleagues is a measure of the high level of interest in *Schoology* that has developed at Berlin High School.

Results from the survey regarding the effectiveness of the professional development delivered via a learning management system were largely positive, with results above average for responses to "opportunity to increase my content knowledge," and "opportunity for discussions or questions." All participants selected that they would recommend the workshop to a colleague.

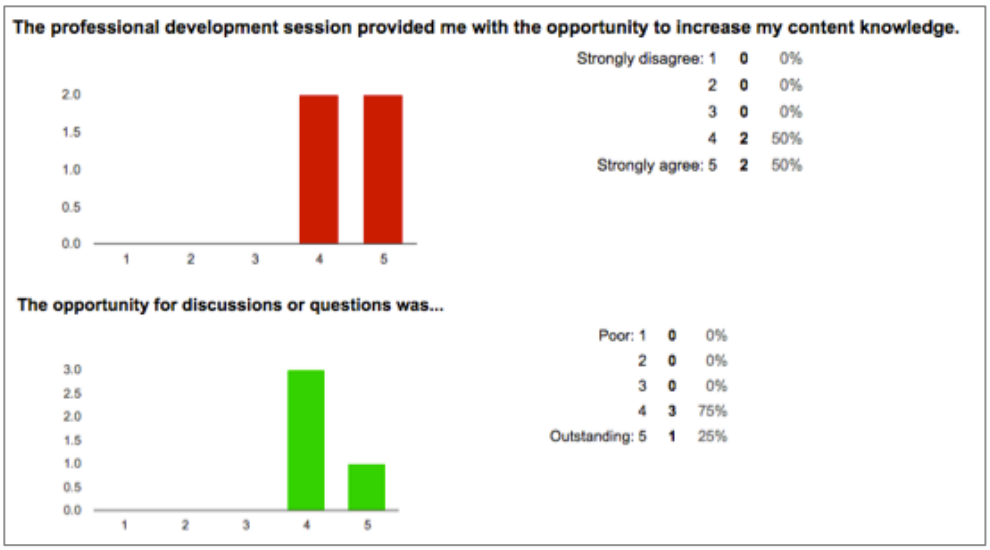

Figure 8. Survey results, opportunity to increase content knowledge, and for discussions and questions.

These results indicate that the sessions provided could be considered high quality; the essential components of content knowledge, opportunities to learn, continued learning, and long-term professional development were all present (Bybee & Loucks-Horsley, 2000; Wayne et al., 2008).

When asked whether the professional development session provided the opportunity to learn practical instructional strategies the majority of participants agreed. One responded neutral and provided the following comment, "the session was good for beginners; however, it did not provide the teachers with practical applications of the technology in the classroom." Regardless of where teachers were in the development process, it was crucial for technology-related training to be situated in the individual teacher's context (Hixon & Buckenmeyer, 2009). As Berlin High School moves forward, a clear articulation of foundational technology skills needs to be outlined with a progression of professional development courses developed to obtain the required skills. Teachers will then be able to identify areas of need and then partake in meaningful, relevant sessions to increase their knowledge.

The interviews revealed that all of the teachers in the study were not receiving additional support to the professional development session online. Most had followed-up with face-to-face interactions with the trainer. None had utilized the resources the trainer had provided in *Schoology*. One teacher stated that she was just "not there yet." This result was not unordinary given the stage of implementation with the learning management system. In order for an online community to be successful, teachers needed to be full participants in, and owners of their virtual space for meaningful interactions to occur (Barab et al., 2001, Barb et al., 2003; Schlager & Fusco, 2003). As teachers have more time with the platform and success with their students their engagement for their own professional learning will increase, as well as their capabilities to utilize the benefits of such a robust system.

Impact of Blended Learning on High School Teachers

All teachers in the study were observed utilizing blended learning in their classroom and with their students. The learning management system was set up so that every course that the teacher teaches was created and automatically enrolled with their students. This was done through synchronization with the district's student management system *PowerSchool*. By connecting the two systems, teachers also had the ability to grade within the *Schoology* and then send the grade to *PowerSchool*.

Planning and Organization

One of the benefits of a learning management system was that it provided an infrastructure to disseminate and control instructional content. By definition,

> a learning management system is the infrastructure that delivers and manages instructional content, identifies and assesses individual and organizational learning or training goals, tracks the progress towards meeting those goals, and collects and presents data for supervising the learning process of organization as a whole. (Watson & Watson, 2007, p. 5)

All teachers spoke of utilizing the system to organize and provide resources for their students. The benefit of organization was universal across all disciplines and was a great entry point for teachers, while first learning how to use a learning management system and teach in a blended learning environment. All teachers in the study had set up their courses in a similar fashion, either by chapter or by unit within a folder structure (see examples in Figure 9 and 10).

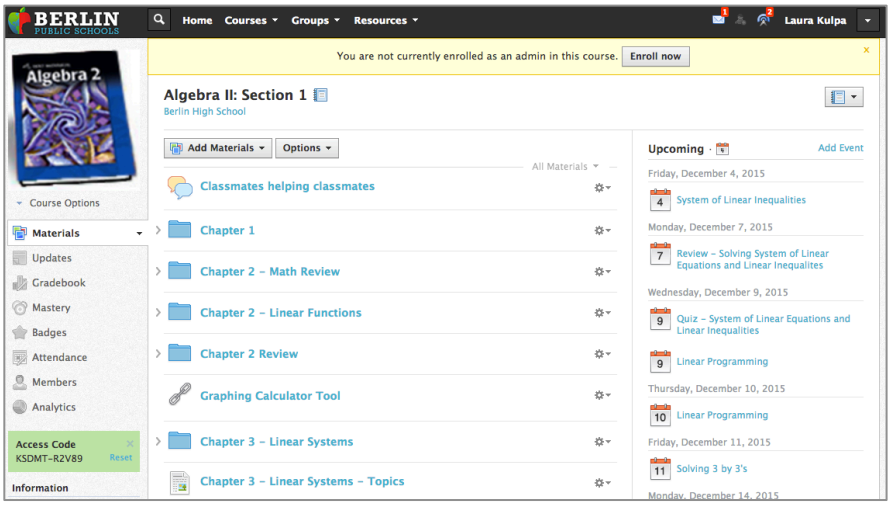

Figure 9. Screenshot within *Schoology* of Algebra II: Section I course materials page.

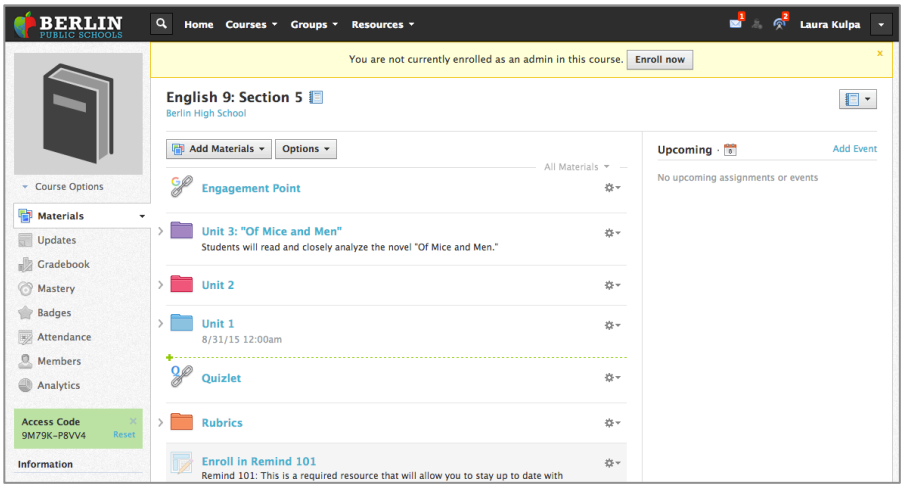

Figure 10. Screenshot within *Schoology* of English 9: Section 5 course materials page.

By maintaining a focus on what the platform can do beyond organization, and structuring professional development to scaffold learning, there is opportunity for use of the system to not only focus student goals and progress, but teacher professional goals and progress as well. What this looks like, and how to operationalize blended learning for effective professional development still needs to be studied (Vaughan, 2004).

One teacher capitalized on using the calendar feature in *Schoology*, as not only as her lesson plan book, but to carry out a district initiative of implementing the use of engagement cards (see Figure 11).

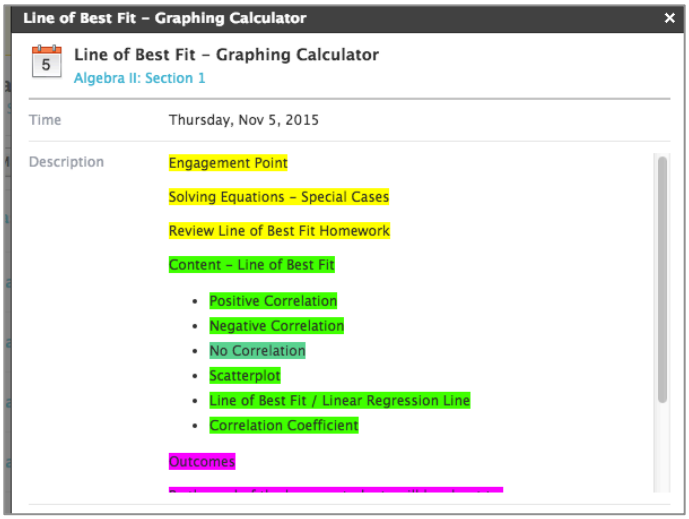

Figure 11. Screenshot within *Schoology* of event in calendar documenting engagement point.

While her original intention was for her own planning and organization, the platform allowed for several additional benefits. The calendar was visible to the students, as well as parents and colleagues. The teacher explained that she displayed the calendar to initiate the discussion of what they had done in previous classes and where they were heading. I observed these behaviors and saw that the visual was helpful to focus the lesson and acted as a reminder to students that the information/timeline was accessible within *Schoology*. Her achievement in merging two district initiatives was one that should be highlighted and shared, it exemplified the possibilities when programs for improvement were aligned and well communicated (Garet et al., 20012; Guskey, 2003). Her application could become a professional norm for the district due to its simplicity and success with her students.

All three English teachers utilized the learning management system at some point throughout their lesson, however, one teacher exemplified what in-class blended learning should

look like. Engagement points were posted in *Schoology* and projected on the SMARTBoard as students entered the classroom. Without direction, students took out their Chromebooks, accessed the activity within *Schoology*, and completed the task. The teacher then transitioned into the lesson for that particular session. All materials were available via *Schoology*, and again, both the teacher and student accessed these for use during instruction (see Figure 12).

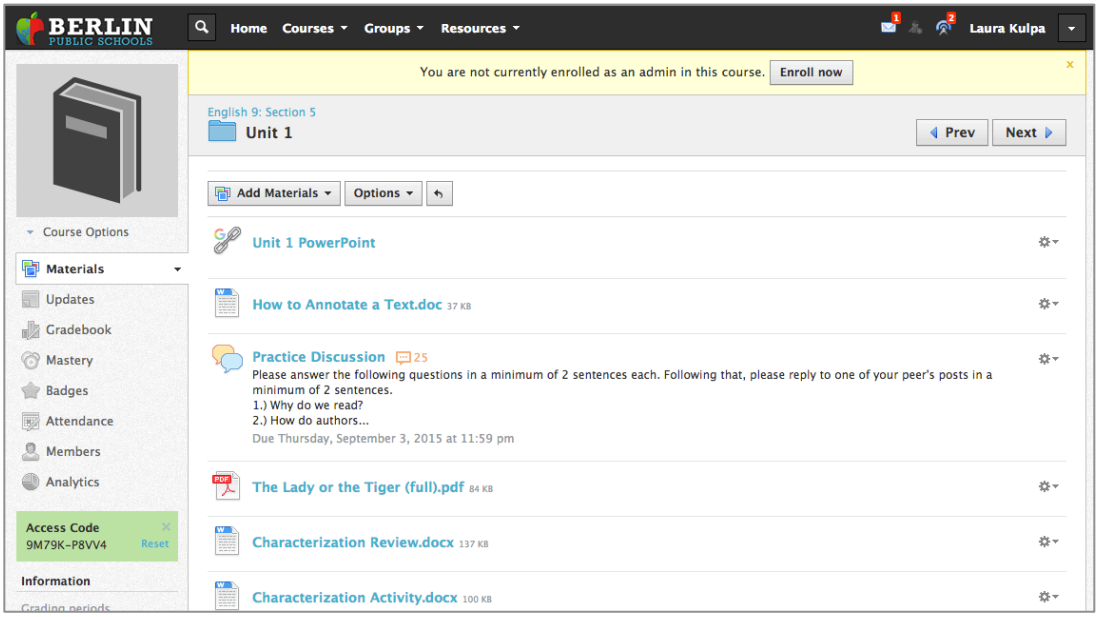

Figure 12. Screenshot within *Schoology* of Unit 1 structure from English 9 course.

Students engaged in group-work, utilizing a paper rubric, and a presentation online. Students then participated in a "share-out" session and discussion within the classroom. Students were instructed to complete an exit-slip within *Schoology* prior to leaving. The teacher reviewed the directions for completion, which were posted in the presentation online. She also reviewed the process for access the exit-slip within *Schoology*.

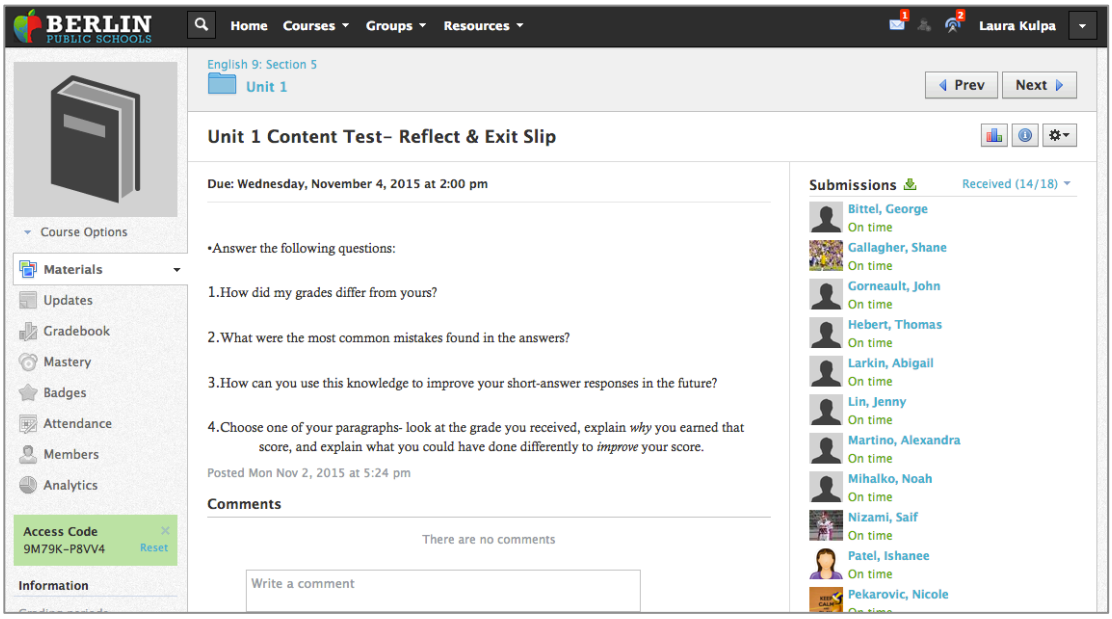

Figure 13. Screenshot within *Schoology* of Unit 1 Exit Slip from English 9 course.

As students worked on the task the teacher handed back tests that were previously taken, she also instructed those who had finished the exit-slip to study for their upcoming vocabulary quiz using a resource posted within *Schoology*.

Not only had *Schoology* become a planning and organizational tool for her prior to class, this teacher was able to integrate all the technology into her lesson and leverage the tools to assist in classroom management, communication, and assessment. The observation peeked my curiosity regarding research of core components of blended learning in a classroom and how they might compare to essential elements of effective professional development; are their similarities? What are the differences? What might we learn from evaluating the two? Professional development requires a form of teaching and looking at it through the lens of what we know to be effective teaching strategies, specifically in a blended environment would prove to be highly useful.

Interestingly, I observed the same lesson given by another teacher. The two teachers had attended the same professional development sessions, collaborated on creating the materials both

electronic and hard copy, and discussed lesson planning. However, delivery of instruction and use of the technology was vastly different. It became evident fairly quickly that the second teacher was lacking classroom management skills, and that the devices became a distractor rather than an asset to the learning. This was an interesting point to consider when evaluating the impact of blended learning. What would be helpful to investigate would be the role teacher tenure plays in the implementation of skills gained in technology based professional development. The literature spoke of the importance of knowing where the teacher was in the development process (Hixon & Buckenmeyer, 2009), a correlation to time in the classroom and the progress of core teaching competencies would be beneficial.

Communication and Inquiry

The flexibility of the virtual space fosters collaboration and productivity allowing educational communities of practice the ability to create, manage, reuse, and modify workplace artifacts (Schlager & Fusco, 2003). I have observed several examples of this through the interview process, as well as observing content within the learning management system. This was a great success given the short time frame of implementation: the system was rolled out district-wide in August of 2015, and the study was completed in November of 2105. It was also an indication of the potential to support needed dialogue of technology issues, and the need to provide opportunities for collaborative planning and problem solving for years to come.

One teacher spoke of her experience with *Schoology* prior to having any formal professional development training. While out on a maternity leave the teacher contacted members of her department and "got advice about uploading things." The accessibility of the learning management system because it was online, and the fact that it was a fairly intuitive program, allowed for early success and the teacher shared that she had created quite a bit of

content before returning to the classroom. Her experience as a community member in a virtual environment allowed her to collaborate and contribute to work towards common goals of the high school even while on leave (Barab et al., 2001). The key to success in this experience was that she was a full participant in the virtual space, and that the work took place on her accord resulting in a meaningful connection (Schlager & Fusco, 2003).

When asked whether they had received any additional support with *Schoology* since the last training, one teacher shared that she sought support from her colleagues through her students. She frequently asked her students, "how are your other teachers using *Schoology* within the classroom?" and based on the feedback she received she then followed up, learning from several different teachers to expand her skill set. Her efforts exemplify what can happen when core features are in place so that support and ongoing dialogue can take place where teachers are working together to collaborate and problem solve (Bradshaw, 2002). The interactions also highlight the importance of balancing online resources with face-to-face support (Duncan-Howell, 2010).

Another teacher spoke of the importance of observing teachers within her department who were having success integrating the platform into their instruction. The professional development that had been provided had been grouped by level, and by department. This was done in an effort to be content-specific to promote teaching practices that were consistent with the principles of effective teaching (Darling-Hammond, 1998), but also to be systematic in assisting teachers to translate those principles into locally adapted applications (Timperley et al., 2008). The teacher stated, "I need to see an English teacher do it. I need to go into an English classroom…" In addition, she stated the need for one-on-one instruction on an ongoing basis. A technology integration specialist was available to teachers at the school; evolving her role to

include training lead teachers in becoming peer coaches would help to transform knowledge gained in training sessions into classroom application and practice (Brand, 1998).

Within *Schoology*, several groups had been created. Unlike courses, groups were created by teachers and administrators based on need and interest. Groups could be used to connect, collaborate, share materials, and observe how others were building within the platform; all elements of an effective community of practice (Barb et al., 2003). All participants in the study were members of various groups ranging from district, to school-wide, to course specific (see Figure 14 and Figure 15).

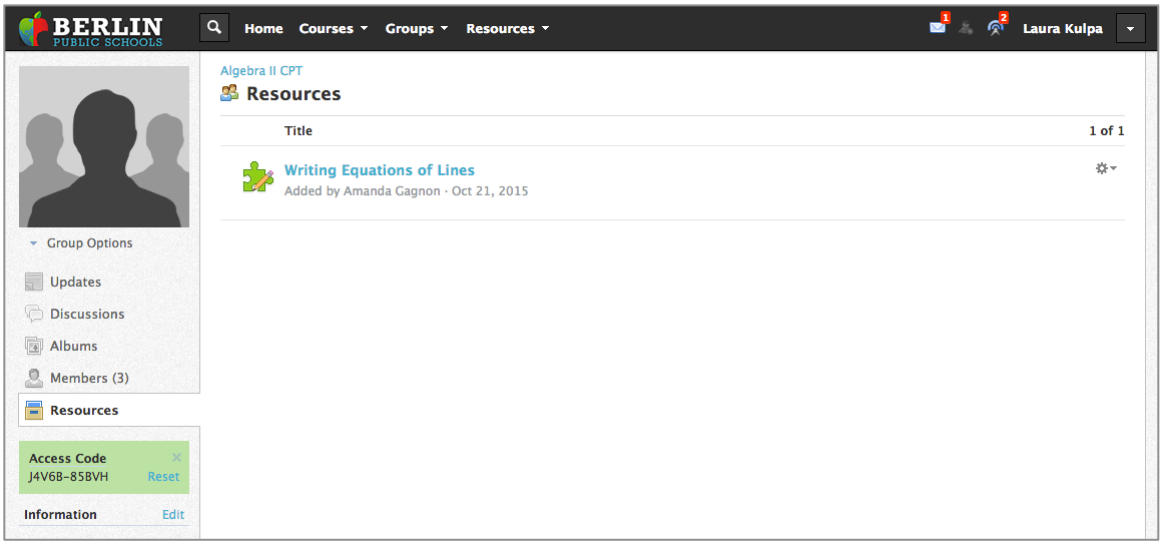

Figure 14. Screenshot within *Schoology* of resources within Algebra II CPT group.

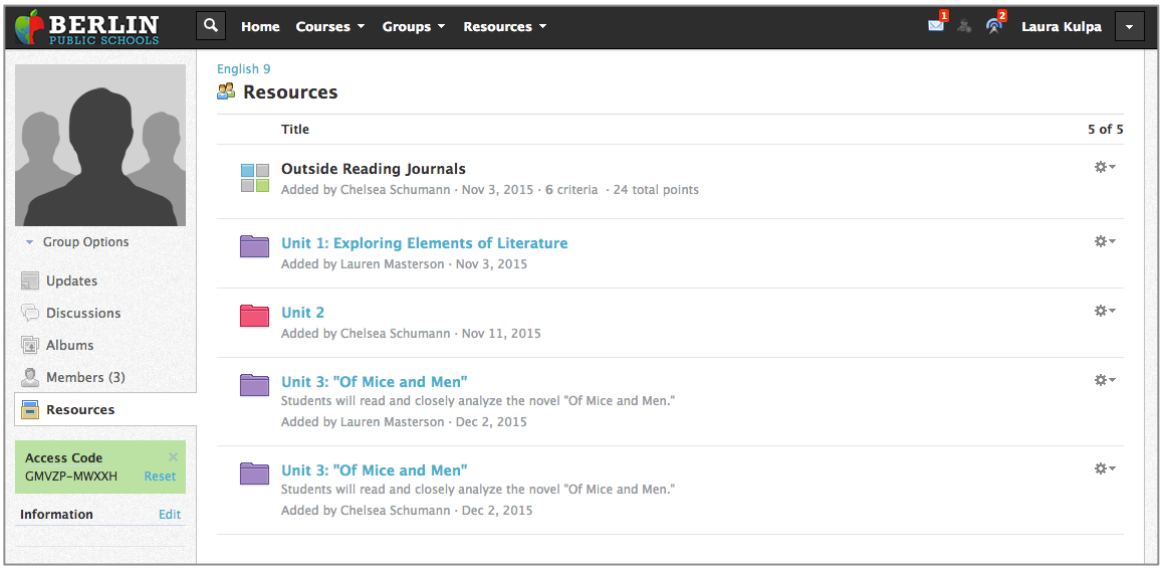

Figure 15. Screenshot within *Schoology* of resources within English 9 group.

The data suggested that a strong foundation had been built to develop true communities of practice, and that these could be leveraged to support their learning (Barab et al., 2001). Evidence showed that individuals were already working together to collectively achieve the goals of their school and of the district. It was exciting to see educators with a range of teaching experiences come together to observe, discuss, and reflect on pedagogical theory and practice to actual teaching vignettes (Barab et al., 2001). It will be interesting to observe how the communities evolve over time and to gauge the benefits participants receive.

Summary

With this study I sought to research the effects and impressions of professional development on blended learning on high school teachers. Data from my first research question; what are teacher perceptions of teachers engaged in professional development delivered in a blended learning format, revealed two themes: uncertainty and enthusiasm. Survey results showed that experience with a learning management system was below average and that two out of fours teachers had been exposed to blended learning prior to teaching. Confidence in

developing and teaching blended learning were below average, and interviews revealed that all teachers in the study were unclear about the definition of blended learning. I believe that the lack of understanding for the term contributed to the uncertainty.

There was a range of responses regarding teacher feelings about teaching in a blended learning environment. Most selected that they enjoyed teaching with a device, but when asked about enjoyment in creating a blended learning course responses were split equally. I believe the uncertainty that the results portrayed was due to several factors. The district undertook two technology-based initiatives this year: one-to-one devices and access to a learning management for every student. These initiatives sat along side several other technology initiatives over the last few years – some of which had been implemented, others that have shifted, and those that have failed. Frustration in lack of coherence from administration led to teacher hesitation.

Despite the caution, data showed an enthusiasm for blended learning. Two teachers selected that they enjoy teaching in a blended learning environment, and when asked teachers spoke of excitement and liking the experience. The majority of teachers stated that they believed that blended learning was an effective learning medium and most intended to teach utilizing blended learning when presented with the opportunity. Teachers shared positive happenings with modeling digital organization, eagerness for gaining additional skills, and anticipation for the future classroom. The benefits of a device with a learning management system for every student became obvious as teachers gained success in integrating the technologies into their classroom, and momentum was inevitable.

Data from my second research question; what is the impact of blended learning on high school teachers, showed two themes as well: planning and organization, and communication and inquiry. Every teacher in the study utilized the learning management system to provide resources

to their students both in and out of the classroom. All created a similar folder structure to provide those resources. The platform provided a space for delivery of content and instruction. Unlike other systems used for teacher organization of curriculum, *Schoology* was a space for teacher and student use and interaction.

One teacher in the study utilized the calendar feature to do her lesson planning. This resulted in benefits she did not intend, but that highlight the capabilities of the system. The level of communication between the teacher and students increased, as well as ownership of learning for students. The transparency within the platform allowed the teacher to maximize usage the tool. Another teacher in the study had begun to master teaching in a blended learning environment and was able to leverage the learning management system to enhance her classroom management. The manner in which she structured the online environment, and the expectations within the classroom, increased engagement and student learning.

Data showed that the implementation of a learning management system and devices had fostered an environment for communication and inquiry amongst teachers. While one teacher was out on leave, she initiated usage of the platform with little to no help. Teachers across disciplines were seeking support from each other to increase their knowledge and skills in using *Schoology*. This had also led to consistency for the student experience. The platform was structured in a way that allowed for natural growth of a community of practice. Teachers within the same discipline had requested to observe each other to better understand how to implement the various technologies into their specific content area. This inquiry had naturally increased communication and had sparked conversation about pedagogy and what that looked like in today's classroom. In addition, the data revealed that all teachers within the study had become members of various groups within *Schoology*. Groups were not created for teachers; these were

made by the members of the online community out of a need for communication and collaboration.

CHAPTER FIVE – CONCLUSIONS & IMPLICATIONS

Technology has become essential in the world of education, acquiring the knowledge and skills necessary for success are now required. In my review of literature no results were found in exploring the use of online environments for effective professional development specifically related to technology integration and the blended learning classroom. The review of literature revealed limited results pertaining to training teachers in a blended learning environment, as well as very few pieces of literature addressing the use of online environments for teachers at the K-12 level. As such, the purpose of my research study was to examine the impact of professional development on blended learning on high school teachers. A case study was conducted of four Berlin High School teachers to learn about their perceptions of professional development and blended learning, as well as how blended learning has impacted their classroom. An online survey, interviews, and in-person and online observations were used to collect data. Data was analyzed using descriptive statistics and the constant comparative method. Pilot testing and triangulation were used to maintain reliability and validity.

Two themes emerged regarding teacher perceptions engaged in professional development delivered in a blended learning format: uncertainty and enthusiasm. All teachers participating in the study shared that they were unsure of the definition of blended learning. As to be expected, if one was unclear as to the definition, confidence in developing blended learning courses and teaching in a blended learning environment was below average. In addition, participants' experience with a learning management system was low. Furthermore, the district had made rapid shifts in adoption of new technologies over the last few years. Some had been successful; others had required additional changes or deeper training. Hesitation had resulted to the lack of coherence. Irrespective of the changes, enthusiasm for blended learning had developed.

Enjoyment for teaching in a blended learning environment was stated with the majority of participants believing that that blended learning was an effective learning medium and that they intended to utilize blended learning in their classrooms.

Two themes arose concerning the impact of blended learning on high school teachers: planning and organization, and communication and inquiry. All teachers created a folder structure for each of their courses to disseminate resources for their students. One participant leveraged the calendar feature for not only her lesson planning, but as a tool for communication and accountability with her students. Another teacher maximized the impact of the learning management system by building her course in a manner that allowed her to structure her lesson so that she could utilize the tool to aid in classroom management. This resulted in increased student engagement and participation. Communication amongst staff had evolved into an organically grown online community of practice. Groups had been created at the district, school, and department level as a place to share resources, participate in discussions, and collaborate in creating instructional materials. Participants in the study expressed interest in peer observations to explore variations of pedagogical approaches to implementing the integration into their content area.

Implications for Practice

The study revealed a need for improved understanding of the meaning of blended learning. The lack of a common agreed upon definition proved to be a barrier in acceptance and perception of technology integration within Berlin Public Schools. Teachers were deeply engaged in a technology rich environment not knowing what it was that they were actively creating. The absence of understanding limited the possibilities for universal success for teachers and students within the district. Better articulation of the district's vision for technology and

creation of a mission that includes how Berlin will define blended learning will allow for clearer communication and greater success in the implementation of technology integration throughout the district. The importance of coherence, systematic opportunities, and long-term professional development are essential.

The study also showed that when a foundation was set, and elements of "best practice" were in place, the opportunity for success was high. Over the course of the last five years Berlin High School had instituted changes in infrastructure, hardware, and support. Those components, paired with suggested "best practices," had created the framework for an environment of change and growth. Variations of traditional workshops, teacher networks, and building based committees, along with multiple opportunities to learn, and trainings grouped by level had all proven to be successful. Efforts to have sessions that were content focused and provided opportunity for active learning had resulted in translation of concepts and skills into application. Expanding upon the current success by developing a stronger system to better distinguish where individual teachers are in their learning, as well as continuing to develop avenues for peer coaching would prove to be highly beneficial. Continuing to define norms and provide opportunities in the online environment will supplement teacher learning. Blended learning training sessions should evolve to provide teachers the opportunity to participate as learners in model blended learning lessons so that they are able to learn to facilitate student learning by experiencing specific pedagogies that have proven to be successful in the blended environment.

Suggestions for Future Research

The research has provoked several questions for future consideration, some narrow, some broad including: how to help those who feel left behind, how to identify those who need assistance with skills non-technology related, how to develop a structure that supports teachers at

all levels, how to create an environment open to the constant changes that come with technology, how to create blended learning courses for specific content areas at specific levels, and how does learning in a blended learning course impact instruction.

My immediate suggestion might be on researching what elements of a learning management system are most beneficial to professional development. I would explore the current system in use at Berlin Public Schools and seek to learn what components and tools teachers find value in and why. I would then expand the research to explore other systems in an effort to develop an understanding of what additional features are available to teacher and then investigating which of those system features might aid in training in a blended learning environment. I would then seek to determine ways to leverage the knowledge gained through the study to work towards systemic implementation.

I would also suggest investigation into what elements of a learning management system are impacting the classroom. For example:

- How has instruction changed?
- Has student engagement increased?
- Has curriculum pacing been effected?
- Has student achievement in common assessments, as well as standardized assessments been impacted?
- What levels utilize what features of the learning management system and why?

I would seek to determine the benefits, as well as the areas of concern that result in the use of a learning management system and then I would work to develop a plan for establishing professional norms by level by content to be utilized as a guide for continuity across a district.

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APPENDICES

Appendix A

Edit this form

Your Blended Learning Professional Development Experience

The purpose of this survey is to gather data concerning teachers' perceptions of professional development delivered in a blended learning format. With the growth of blended learning opportunities for students there is now a need to examine how face-to-face and online learning opportunities could be effectively used in teacher professional development. Your feedback is greatly appreciated. Thank you.

Please check the most appropriate response for the following questions. Please note that for the purposes of this survey blended learning is defined as...

* a formal education program in which a student learns at least in part through online delivery of content and instruction with some element of student control over time, place, path, and/or pace

AND

* at least in part at a supervised brick-and-mortar location away from home.

Your username (**lkulpa@berlinschools.org**) will be recorded when you submit this form. Not **lkulpa**? Sign out
* Required

Background Information & Technology Experience

How many years of teaching experience do you have (please include current year)? *

- ○ 0-5 years
- ○ 6-10 years
- ○ 11- 15 years
- ○ 16 or more

What is your content area? *

- ○ Math
- ○ Science
- ○ Language Arts
- ○ Social Studies
- ○ Reading
- ○ Special Education
- ○ Other: _____

Please rate your current level of experience... using word processing systems (e.g., Microsoft Word, WordPerfect, Google Docs) *

1 2 3 4 5

No experience ○ ○ ○ ○ ○ Highly experienced

Please rate your current level of experience... using presentation programs (e.g., PowerPoint, Keynote, Google Slides) *

1 2 3 4 5

No experience ○ ○ ○ ○ ○ Highly experienced

Please rate your current level of experience... using online learning management systems (e.g. Moodle, Schoology, Google Classroom) for blended learning *

1 2 3 4 5

No experience ○ ○ ○ ○ ○ Highly experienced

Were you exposed to blended learning during your education prior to becoming a teacher (in High School or College)? *

- ○ Yes
- ○ No

Please rate your current level of confidence... in developing an effective blended learning course in a learning management system (e.g. Moodle, Schoology, Google Classroom) *

1 2 3 4 5

Not confident ○ ○ ○ ○ ○ Very confident

Please rate your current level of confidence... in teaching a successful blended learning course using a learning management system (e.g. Moodle, Schoology, Google Classroom) *

1 2 3 4 5

Not confident ○ ○ ○ ○ ○ Very confident

Faculty Members' Perceptions of Blended Learning

I enjoy using a device (laptop, Chromebook, iPAD) in my teaching. *

- ○ Strongly disagree
- ○ Disagree
- ○ Uncertain

- ◯ Agree
- ◯ Strongly agree
- ◯ N/A

I enjoy developing blended learning courses. *

- ◯ Strongly disagree
- ◯ Disagree
- ◯ Uncertain
- ◯ Agree
- ◯ Strongly agree
- ◯ N/A

I enjoy teaching blended learning courses. *

- ◯ Strongly disagree
- ◯ Disagree
- ◯ Uncertain
- ◯ Agree
- ◯ Strongly agree
- ◯ N/A

I enjoy learning in a blended learning course. *

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

I believe blended learning is an effective learning medium. *

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

I intend to teach utilizing blended learning when presented with the opportunity. *

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

Effectiveness of Professional Development

The professional development session provided me with the opportunity to increase my content knowledge. *

1 2 3 4 5

Strongly disagree ○ ○ ○ ○ ○ Strongly agree

The professional development session provided me with the opportunity to learn practical instructional strategies. *

1 2 3 4 5

Strongly disagree ○ ○ ○ ○ ○ Strongly agree

The opportunity for discussions or questions was... *

1 2 3 4 5

Poor ○ ○ ○ ○ ○ Outstanding

The overall quality of the professional development session was... *

1 2 3 4 5

Poor ○ ○ ○ ○ ○ Outstanding

Would you recommend this workshop to a colleague? *

○ Yes
○ No

Additional comments about the session:

☐ Send me a copy of my responses.

Submit

100%: You made it.

Never submit passwords through Google Forms.

Appendix B

Time of interview:

Date:

Place:

Interviewer:

Interviewee:

Thank you for agreeing to be part of my research and for taking the time to speak with me today. With your permission, this interview will be recorded for the purposes of transcribing and analyzing the data for use in my thesis. You can stop the interview at any time for any reason; it should take about 20 minutes.

To get us started, let me tell you about what I am interested in learning. With the shift of every student having a device, and the adoption of a district-wide learning management system, we now have an opportunity to build our capacity in utilizing blended learning. One of the ways we hope to do this is by modeling what effective blended learning looks like in our technology based professional development sessions. You recently participated in professional development delivered through *Schoology* and I'd like to hear about what's happened since.

1. Have you received any additional support with *Schoology* since the last training session?
    a. IF YES
        i. In what format; online, in-person, both?
        ii. Can you tell me a little more about that?
        iii. Do you have a preference for format you receive support?
    b. IF NO
        i. Could you elaborate as to why you think that might be; not offered? not a priority at this time?
        ii. Were you aware of the intention that support would continue to be offered through *Schoology*?

2. Have you worked within *Schoology* to utilize some of the things you learned in the training session?
    a. IF YES
        i. Could you elaborate on what you've been doing?
    b. IF NO
        i. Could you elaborate as to why you feel that might be?

3. Have you taken the opportunity to incorporate *Schoology* into your classroom?
    a. IF YES
        i. How so?
        ii. How do you feel about teaching in a blended learning environment?
    b. IF NO
        i. Could you elaborate as to why you think that might be?
        ii. Do you hope to utilize blended learning in your classroom?
        iii. What do you feel you'd need to be successful?

4. What would be helpful to you in your next technology based professional development session?

I would like to continue to have discussion and offer support via *Schoology* therefore I have created a group for this study. You'll need to accept membership into the Group. I'd also like to set your notifications so that you are aware when I post a question or provide an answer. I anticipate that we'll be active in this Group for about a month.