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Factors Influencing Degree of Implementation of Technology in a Georgia High School

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Abstract

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BS, Georgia State University, 1997

Project Study Submitted in Partial Fulfillment

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Abstract

Based on an external school review, a large suburban high school outside a southeastern United States metropolitan area was not in compliance with state technology standards. The school leadership team concluded that because teachers were not effectively integrating technology for teaching, student achievement may have been negatively influenced. The purpose of this nonexperimental project study was to measure relationships among factors influencing degree of implementation of technology (ITC) in the classroom using Dewey's experiential theory with an emphasis upon constructivism as a theoretical framework. A modified survey, Technology and Professional Development Survey of Georgia High School Teachers, was distributed to all teachers in the local school (N = 109). The 8 research questions addressed the relationship between the dependent variable, Degree of ITC, and the independent variables: teacher disposition, instructional support, availability of technology, teacher collaboration, access and use of computers at home, teacher's level of education, number of years of teaching experience, and teacher participation in the Georgia Technology Initiatives. Using multiple regression and Chi-Square analysis, this quantitative investigation identified significant relationships between degree of ITC and both teacher disposition (B = .279, r = .473, p = .002) and instructional support (B = .249, r = .403, p = .012). These findings lead to professional development for increasing the use of technology for improving compliance with state technology standards, thus promoting positive social change through improved teaching and learning.

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Dedication

I would like to dedicate this project study to my late mother, Dale Marie Wilson Eckman; my late aunt, Darlene Ann Wilson; and my late grandmother, Norma Wilson Gulley. These strong women taught me the importance of strength, courage, family, faith, and education.

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I would like to thank my loving husband, Kam Steele, for his continued support throughout my educational endeavors. I would like to thank my amazing children, Tucker, Camden, Wyatt, and Rhett, for their patience and understanding as I pursued my dream to complete my doctorate degree. Finally, I would like to express my appreciation to Dr. Anissa Harris for coaching and encouraging me through the doctoral journey.

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Section 1: The Problem

Introduction

The problem I addressed with this study is a large suburban high school outside a Southeastern metropolitan area not being in compliance with the state technology standard implied by School Keys. The results of the Georgia Assessment of Performance on School Standards (GAPSS) review conducted in October of 2014 presented this gap in practice to the administration and faculty in a schoolwide faculty meeting (Faculty Meeting, personal communication, October 2014). In this nonexperimental project study, I sought to investigate the factors influencing degree of implementation of technology in the classroom (Degree of ITC) in this local high school. The research questions for this project study reflect the purpose of identifying the relationships among Teacher Disposition toward ITC, Instructional Support for ITC, Availability of Technology for ITC, Teacher Collaboration regarding ITC, Access and Use of Computers at Home for ITC, teacher's level of education, number of years of teaching experience, and teacher participation in the Georgia Technology Initiatives on Degree of ITC. A survey using the Likert scale served as the tool for collecting the quantitative data based on teachers' perceptions related to the variables identified as barriers to the ITC in research literature. The theoretical framework of this project study was constructivism with an emphasis on Dewey and his role in encouraging learner inquiry in educational reform (Oliverio, 2013). The emphasis of the expected performance levels in regard to the state technology standard supports the constructivists' idea that knowledge is actively constructed

(Ültanir, 2012). The use of technology provides learners with the knowledge and skills necessary to meet global demands; therefore, the objective of this project study was to improve compliance with technology standards through the increased use of technology in the classroom. The project can bring about social change by providing a method for technology-focused professional learning, fostering compliance with state technology standards.

Educational systems continually strive to meet the needs of society. Badia and Sigalés (2013) advocated for a review of educational goals and curriculum along with further research on training to meet these demands for educational advances in relation to informational and communication technologies. An accountability system is necessary to ensure improvement as educational advances arise and the changing needs of society drive educational reform. Educational leaders are held accountable to provide the education that produces functioning members of our democratic society that contribute to the economy. The accountability system in education trickles down from the national to the state and finally to the local level and to the classroom. However, Usluel and Uslu (2013) confirmed that "teachers are in a key position in the adoption of innovations" (p. 52). Because teachers play such an important role in the infiltration of innovations like technology, I focused on identifying factors that influence degree of ITC for this project study.

From their findings, dos Santos, Schlünzen, and Schlünzen (2016) indicated the importance of teacher training with the use of technology in a constructivist,

contextualized, and meaningful manner. One policy that recognized the importance of the integration of technology in the classroom was the National Educational Technology Plan (NETP) adopted by the U.S. Department of Education in 2010 to promote the integration of technology in the curriculum and in instruction (U.S. Department of Education, 2010). This accountability system for public schools required school systems to provide equal opportunities for students to meet proficiencies outlined by initiatives. Another approach school systems across the nation have taken to close the achievement gap among America's students and teacher effectiveness is the Common Core State Standards standards-based movement (Leko, Brownell, Sindelar, & Kiely, 2015). Policies to support ITC continue to be developed at a federal, state, and local level in response to the demands of an increasingly changing society.

President Barack Obama signed the Every Student Succeeds Act of 2015 (ESSA), a law ending the No Child Left Behind (NCLB) policy. ESSA is committed to equal opportunity for students by continuing to focus on the key areas such as equity for disadvantaged students, high academic standards, technology, teacher effectiveness, and graduation rates (U.S. Department of Education, 2015). These initiatives are in the form of national plans intended to ensure that technology is being effectively implemented into the academic setting to improve student learning and foster continuous improvement. The 2016 NETP, which replaced the 2010 policy and is aligned with the ESSA, outlines a vision for technology in education across the nation. The policy recognizes the importance of the equitable accessibility, increased integration, and effective

collaboration in regard to technology. The revised NETP of 2016 is the national plan and vision for supporting learning through technology:

> *Future Ready Learning: Reimagining the Role of Technology in Education*, articulates a vision of equity, active use, and collaborative leadership to make everywhere, all-the-time learning possible. While acknowledging the continuing need to provide greater equity of access to technology itself, the plan goes further to call upon all involved in American education to ensure equity of access to transformational learning experiences enabled by technology. The principles and examples provided in this document align to the Activities to Support the Effective Use of Technology (Title IV A) of Every Student Succeeds Act as authorized by Congress in December 2015. (U.S. Department of Education, 2016, p.1)

The Georgia Department of Education (DOE) designed School Keys, a standards-based school assessment, as a way to assess school performance in regard to compliance of state standards. This comprehensive evaluation tool consists of eight broad strands that are broken down into more specific standards along with rubrics indicating performance levels of each school (Georgia DOE, 2013c). Onsite assessments using School Keys provides data for driving school improvement. All stakeholders share responsibilities in improving student achievement through compliance with these standards.

Definition of the Problem

Local Problem

This study was prompted by the evaluation of school performance at a local high school by the GAPSS using School Keys. The problem was that the high school in this project study was failing to comply with state technology standards based on the results of the school GAPSS review using School Keys' standards for assessment. The school's only compliance deficiency was with the technology-based standards—all other standards were met or exceeded—and although the administration, faculty, and staff were aware of the compliance issue, there was no formal plan to address the deficiency. School Keys was designed to evaluate individual school performance based on student achievement data, classroom observations, interviews, surveys, and the study of documents. This tool was developed based on Robert Marzano's 2003 meta-analysis along with other frameworks supported by research and was intended as a diagnostic for school performance (Georgia DOE, 2013c). The adoption of the state standards in School Keys was intended to support school improvement across the state to meet global demands.

The large suburban high school in this study was failing to integrate technology in the classroom. The problem was that this local high school was not in compliance with the technology standard advocated by the state of Georgia through the implementation of School Keys. The percentages related to the use of technology within this high school reported by the GAPSS committee during the school review process were 40% for

teacher technology integration and 21% for student technology use (Georgia DOE, 2013c). Levin and Schrum (2013) suggested that "vision, leadership, school culture, technology planning and support, professional development, curriculum and instructional practices, funding, and partnerships" support successful technology integration (p. 36). The purpose of this study was to identify potential relationships among factors that may influence degree of ITC within classrooms of the local high school in order to address the issue of compliance with the state technology integration objective.

Local, state, and national technology policies require a certain level of hardware and software availability for classroom teachers to meet the instructional and learning objectives established by the local administration. Personal communication with teachers within the school system revealed that some schools have access to excessive amounts of technology and others lack access or funding to obtain, upgrade, or maintain existing software and hardware. During a collaborative planning meeting after the first 6 weeks of school, a special education teacher at the local high school voiced concern about the lack of availability of technology and meeting implied technology standards (Teacher A, personal communication, September, 2014). These access inequities may impede compliance with state technology standards and even the district's own technology initiatives for its learners.

Investigating these inequities and other factors related to technology integration provided insight into the compliance concerns at the local high school as they may influence classroom instruction, environment, and student performance. Furthermore,

analyzed data may lead to assessing the current technology accessibility and distribution for this local school to determine what resources exist for classrooms to equitably achieve state initiatives regarding technology as well as other factors influencing degree of ITC. The district would then also have data on which to base future planning and programming decisions related to technology and its integration for compliance with district and state standards compliance.

Rationale

Evidence of the Problem at the Local Level

The Secretary of Education, Arne Duncan, along with the Office of Educational Technology released the NETP in 2010. This long-range plan was devised to increase student achievement through the integration of technology, increase accessibility of technology for teaching and learning, and promote the use of technology in the implementation of state education reform initiatives (U.S. Department of Education, 2010). One strategy the state of Georgia implemented in 2013 as part of a school improvement movement was School Keys. Evidence of the problem can be seen through the percentages related to the use of technology within this local high school reported by the GAPSS committee. During the school review process, the school in this project study scored 40% for teacher technology integration and 21% for student technology use (Georgia DOE, 2013c). These findings resulted in an overall score of *Not Evident* for for School Keys' Instruction Standard 7 as it relates to the area of the integration of technology in teaching and learning.

School Keys includes eight strands: Curriculum Planning, Assessment, Instruction, Planning and Organization, Family and Community Engagement, Professional Learning, Leadership, and School Culture (Georgia DOE, 2013c). These strands were intended to improve schools across the state by providing a focus for faculty, staff, and administrators in conjunction with the state curriculum. With each strand is a set of performance standards and rubrics containing a 4-point scale of performance levels: *Exemplary*, *Operational*, *Emerging*, and *Not Evident* that provide the data for supporting school improvement (Georgia DOE, 2013c). Based on the onsite evaluation, each standard is assigned a performance level score based on the collective findings of the review committee.

Sincar (2013) found that despite the efforts of initiatives developed across school districts, school administrators find challenges in the integration of educational technology such as technology training, resistance, resources, equity, and bureaucracy. These barriers can slow down social change within a school by making it difficult for stakeholders to create an equitable school system and to comply with state initiatives. As defined by Thunman and Persson (2013), an equitable school system is one that offers the same opportunities to all students for achieving learning goals despite their social and financial background. An equitable school system is a necessity because "the school is a natural key resource in the development of the knowledge society as a producer of skills necessary for the future work force and as such, the school itself becomes an important object of change" (Thunman & Persson, 2013, p. 157). The efforts of stakeholders to

create equitable school systems across Georgia can be seen in the implementation of School Keys.

GAPSS review results. To evaluate the current performance of schools in Georgia based on the expectations of School Keys, a GAPSS team spends 2 to 3 days in each building collecting the necessary data to rank the school in each standard on the 4-point scale of performance levels within the rubric. The team consists of external personnel from across the district. The diagnostic process includes the study of documented student achievement, group interviews with teachers of the same content area, classroom observations, faculty and staff surveys, and other documents related to the curriculum. The analysis of all the data results in a score of Exemplary, Operational, Emerging, or Not Evident based on the accumulation of the ratings of the observers.

In a faculty meeting, the results for the GAPSS review in October of 2014 were shared with teachers in the local high school in this study. The percentages calculated from the ratings of each GAPSS team member along with the resulting score for each School Keys standard were communicated through a PowerPoint presentation. Out of the 48 standards scored, this suburban high school scored Exemplary, Operational, and Emerging on all standards exempt for one. The school scored Not Evident on Instruction Standard 7: integrates appropriate current technology into teaching and learning (Georgia DOE, 2013c). The performance level of Not Evident reads: "Technology is either absent or only used mechanically to reinforce students' acquisition of basic skills." (Georgia DOE, 2013c, p. 24). This score was a result of the compilation of the ratings given by the

10 observers on the GAPSS team. A rating of 40% was given for teacher technology integration while a score of 21% was assigned for student technology use. The summary of scores for all criteria for the past three GAPSS reviews for the school in the study was also shared with the faculty by the administration and can be seen in Table 1. The results of the School Keys scoring summary indicated the lack of compliance with the state technology standard.

Table 1

Percentage of School Key Scores for Years 2009, 2012, and 2014 by Performance Levels

	Percentage by Year		
Performance Level	2009	2012	2014
Exemplary	10	30	35
Operational	62	48	60
Emerging	27	18	2
Not Evident	1	5	2

Teacher concerns. Teacher concerns were voiced in a content area collaborative planning meeting in September, 2014 at this large suburban high school. This discussion revolved around barriers in meeting local initiatives and school wide expectations involving technology use for learning and assessing students. During dialogue with a special education teacher in the meeting, the teacher expressed distress in attempting to meet state standards related to technology. The teacher found it difficult to meet the

state's performance standard regarding a science technology skill because she did not have accessibility to the required technology to teach the skill. (Teacher A, personal communication, September 2014). Teacher B had difficulty administering benchmark assessments required by school and district leaders for examining growth in student achievement to meet district initiatives. The concern was that there was limited accessibility to the two computer labs because she must share the computer lab with nearly 150 other teachers within the building (Teacher B, personal communication, September, 2014). In expressing her frustrations, she added that using student computer labs as instructional tools for enrichment to comply with school initiatives is an option she cannot even consider because of the lack of accessibility to the computer labs. The investigation in this local project study provided insight as to factors contributing to the lack of access to technology.

On an earlier occasion, I discussed the availability of resources with a high school English teacher from different school within the school district. She gave a detailed account of the resources at her disposal for implementing technology within the classroom and shared some experiences she had for integrating the excessive amounts of technology at her disposal. She indicated that she could vary instruction because of the projector screen in the front of her classroom that converts to a SMART Board and the laptops assigned to the students for the school year (Teacher C, personal communication, August, 2014). The conversations with the two teachers during the meeting indicated the limited accessibility of technology within the large local high school. The other

conversation implied the possibility of the imbalance of technology across the district. Availability of resources is a common theme in the implementation of technology among research sources; however, there are other barriers to the implementation of technology in the classroom. Understanding the factors contributing to the local school's compliance issue will assist the stakeholders in creating alignment with these important technology standards.

Evidence of the Problem from the Professional Literature

One response to the issue of accountability within education has become the development of academic standards. Standards are one way stakeholders can ensure what students know and what they are able do. Current state performance standards include the implementation of technology for student learning. The sixth grade science curriculum description includes the infiltration of technology into the curriculum (Georgia DOE, 2013b). Without access to instructional technology it is difficult for teachers to include technology in their lesson plans which indicates the possibility of a problem at the local level. Sundeen and Sundeen (2013) concluded that a lack of funding and decreased budgets have affected the acquisition of technology in many rural school districts.

As stated in the Eighth Grade Characteristics of Science Georgia Performance Standards, students will "use appropriate technology to store and retrieve scientific information in topical, alphabetical, numerical, and keyword files, and create simple files" (Georgia DOE, 2013b, p. 4). This state standard called for the use of subject-specific electronics like computers, tablets, or other data logging technology devices in

order for students to demonstrate their understanding of the standard. The state performance standards are aligned with the National Research Council's National Science Education Standards (Georgia DOE, 2013b). Technology must be implemented in the classroom for schools to meet both state standards and national policies. Merrill (2013) implied that there is an imbalance of federal funding for computer sciences, physical sciences, engineering research indicating that the stimulus funds from the American Recovery and Reinvestment Act (ARRA) of 2010 are going to biological and medical sciences. Lack of funding, lack of connectivity, and lack of integration of Information and Communication Technology (ICT) were perceived as the most critical barrier to using ICT by secondary teachers in India (Prasad, Lalitha, & Srikar, 2015). Laferriere, Hamel, and Searson (2013) showed "evidence that overcoming barriers is to be envisioned as an ongoing exercise for essential conditions to exist" (pg. 471).

Demands on all public schools to effectively integrate technology continue to increase with updated legislation such as the 2016 NETP. Requiring states to uphold technology standards in all of the schools across the nation in return places pressure on the administrators to promote the implementation of technology among their faculty. Technology training, resistance, resources, equity, and bureaucracy are the five major themes Sincar (2013) found to challenge practices of administrators in regard to technology leadership. This demand applies to all public schools despite the challenges they may face in the acquisition of necessary resources. The availability technology in classrooms and schools can prevent local school systems from meeting local, state, and

national standards. However, for those schools that have the resources available to them there are other factors that influence the degree of implementation of technology. Hechtner and Vernette (2013) showed that although 80% of the teachers indicated that technology was accessible, one-fourth of the participants were feeling frustrated by other barriers preventing effective implementation of technology. As indicated by early childhood teachers, lack of support, lack of confidence, lack of equipment, and class conditions were barriers to computer usage in the classroom (Nikolopoulou, & Gialamas, 2015). For schools to promote compliance with state technology standards, steps must be taken to identify the factors influencing degree of implementation and a plan needs to be executed to address the factors.

Definitions

Georgia Assessment of Performance on School Standards (GAPSS): A review process for collecting data on school performance to support school improvement initiatives. School Keys serves as the tool for assessment of school performance during the GAPSS review process. This analysis process provides schools with detailed data regarding their progress in fully implementing School Keys (Georgia DOE, 2012).

Implementation of Technology in the Classroom (ITC): The use of computers, tablets, personal technology devices, SMART Boards, probeware, or any other electronic devices used for instruction and learning. According to teachers, the usefulness of technology can be defined in terms such as “easiness,” “time,” “economy,” and “upgrading standards of living” (Usluel & Uslu, 2013, p. 52).

No Child Left Behind Act (NCLB): National education policy adopted in 2001 intended to increase student achievement through the enforcement of sanctions for schools that did not meet Annual Yearly Progress (AYP) requirement (Schroeder, 2015).

School Keys: "The foundation of Georgia's data-driven system of school improvement and support" (Georgia DOE, 2013c, p. 5). Since 2005, this tool has served to assess school performance through a school review process using standards.

Significance

Accountability has become a buzz word in education over the past decade. As a result of the pressures of accountability, standards, initiatives, and policies are used to guide and direct federal, state, and local educational systems. The formulation and implementation of standards were intended to catalyze improvement in the nation's educational system. Badia and Sigales (2013) emphasized the importance of the review of the curriculum and educational goals in order to make necessary revisions to meet new social demands in regard to the training and support of the integration of ICT. These revised standards are intended to impose a student-centered curriculum that fosters the application of education to real-life situations. The experiences the students have in a student-centered classroom contribute to their learning.

Experiential learning is one aspect of the constructivist theory. The basis of constructivism is the acquisition of knowledge through situations (Carroll, 2013). Because of access to unlimited amounts of information and problems in every discipline, Savery (2015) suggests that students "experience a problem-based learning approach and

engage in constructive solution seeking activities" (p. 12). Moreover, technology is a necessity within the learning environment for teaching these 21st century skills. Teachers that see technology as an integral part of their instruction as well as an effective tool for student learning are willing to offer support, hands-on help, and encouragement when their colleagues are trying new technology ideas (Larson, 2013). The significance of my research was to identify the factors making it difficult for teachers to use technology within their classroom so that the factors can be addressed at the school level and beyond to the state and national level. Carroll (2013) stated that "technology in classrooms provides the opportunity to facilitate the hidden processes of learning to be made explicit, therefore providing a platform for the individual to actively shape their thinking" (p. 9). For technology to be implemented into the curriculum to meet local, state, and national standards, barriers such as teacher familiarity with the standards, proper training, and accessibility of resources must be addressed.

This project study was intended to determine the barriers of the integration of technology and bring about social change for the local school and larger educational context by presenting possible solutions for improving compliance with initiatives regarding technology. The survey instrument for this study was used to collect data based on teacher responses related to teacher characteristics, instructional support, and the availability of technology. The analysis of the findings resulted in possible implications for addressing the factors influencing degree of ITC. This study was a useful tool for teachers, administrators, and local district leaders making decisions in relation to

increasing compliance with technology standards. In this study, I aspired to provide additional social influence by seeking to identify possible means for increasing the implementation of technology within classrooms across the district in the form of professional learning to improve compliance with local, state, and national standards and communicate standards and classroom strategies for effective implementation of technology as well as provide educators with alternative options for accessing technology.

Research Questions and Hypotheses

Because of the relationship between student-learning experiences and technology use within the classroom in complying with technology initiatives, the theoretical framework for this study was based on constructivism and Dewey's (1938) approach to education emphasizing the need for students to construct knowledge through inquiry and experiences. Herman and Pinard (2015) confirmed that Dewey's work is still evident in the educational setting and teachers that implement inquiry-based learning improve teaching and learning strategies that allow the necessary experiences for globally important issues. Dewey's idea that people develop knowledge from inquiry supports the use of technology for teaching and student learning to meet local, state, and national initiatives (1938). Barriers can limit the opportunity for inquiry necessary for all students to develop skills needed to meet the adopted standards. The failure of the local high school to meet the state technology standard specified by the Georgia DOE's School Keys led to the development of the guiding question, what factors influence degree of

implementation of technology in the classroom? The dependent variable of this study was the Degree of ITC in a local Georgia high school, while the independent variables were Teacher Disposition toward ITC, Instructional Support for ITC, Availability of Technology for ITC, Teacher Collaboration regarding ITC, Access and Use of Computers at Home for ITC, teacher's level of education, number of years of teaching experience, and teacher participation in the Georgia Technology Initiatives. Teachers can provide authentic learning experiences within the classroom that are both implied by Dewey's contribution to constructivism and comply with local, state, and national technology standards when barriers to the ITC have been removed.

According to Thunman and Persson (2013), "an equitable school system means in essence that all students irrespective of their social and financial background have the same opportunities to achieve learning goals in school" (p. 157). Investigating issues related to failure to implement technology within the classroom and offering possible solutions to increasing integration of instructional technology promoted compliance with local, state, and national technology standards. Ültanir (2012) defined the main idea of Dewey's (1938) contribution to the constructivist theory as the development of understanding through engaging activities. This theory supports the idea that keeping standards is vital in education and its effectiveness. Increasing use of technology allows teachers to implement classroom activities that comply with standards related to technology and support the constructivist learning theory while developing skills necessary for the 21st century. Therefore, I developed this study to address the failure of

a local high school to integrate technology necessary to meet state technology standards supported by the theories of constructivism.

This project study was guided by the following research questions (RQ). The indicated statements are the appropriate null (H_0) and alternative (H_a) hypotheses that were accepted or rejected during this proposed study:

RQ 1: How does Teacher Disposition toward ITC relate to Degree of ITC?

H_01: Teacher Disposition toward ITC does not relate to Degree of ITC.

H_a1: Teacher Disposition toward ITC does relate to Degree of ITC.

RQ 2: How does Instructional Support for ITC relate to Degree of ITC?

H_02: Instructional Support for ITC does not relate to Degree of ITC.

H_a2: Instructional Support for ITC does relate to Degree of ITC.

RQ 3: How does Availability of Technology for ITC at school relate to Degree of ITC?

H_03: The Availability of Technology for ITC at school does not relate to Degree of ITC.

H_a3: The Availability of Technology for ITC at school does relate to Degree of ITC

RQ 4: How does Teacher Collaboration regarding ITC relate to Degree of ITC?

H_04: Teacher Collaboration regarding ITC does not relate to Degree of ITC.

H_a4: Teacher Collaboration regarding ITC does relate to Degree of ITC.

RQ 5: How does Access and Use of Computers at Home for ITC relate to Degree of ITC?

$H_0 5$: Access and Use of Computers at Home for ITC does not relate to Degree of ITC.

$H_a 5$: Access and Use of Computers at Home for ITC does relate to Degree of ITC.

RQ 6: How does the teacher's level of education relate to Degree of ITC?

$H_0 6$: Teacher's level of education does not relate to Degree of ITC.

$H_a 6$: Teacher's level of education does relate to Degree of ITC.

RQ 7: How does the number of years of teaching experience relate to Degree of ITC?

$H_0 7$: Number of years of teaching experience does not relate to Degree of ITC.

$H_a 7$: Number of years of teaching experience does relate to Degree of ITC

RQ 8: How does teacher participation in the Georgia Technology Initiatives relate to Degree of ITC?

$H_0 8$: Teacher participation in the Georgia Technology Initiatives does not relate to Degree of ITC.

$H_a 8$: Teacher participation in the Georgia Technology Initiatives does relate to Degree of ITC.

The quantitative data collected to identify the factors influencing Degree of ITC determined the barriers keeping the large suburban high school in this study from being in compliance with the state standard related to technology.

In this study, I analyzed the relationship between the five independent variables and the Degree of ITC. Hypotheses 1-5 were tested with a multiple regression analysis to determine which factors are predictors of teacher Degree of ITC. Because the independent variables in Hypotheses 6-8 are nominal data, the relationship between the independent and dependent variables were assessed with a nonparametric analysis, the Chi-Square Goodness of Fit test.

Review of the Literature

The purpose of this study was to identify potential relationships among factors that may influence degree of ITC of a large suburban high school. The problem was that this local school was failing to comply with the state technology standards. The lack of technology integration may additionally affect classroom instruction, environment, student achievement, and school improvement. In this study, I assessed the potential barriers of the ITC for this local school to determine possible solutions for teachers to equitably achieve technology initiatives while providing learning experiences using technology. National, state, and local technology policies require certain level of hardware and software implementation for classroom teachers to meet the inquiry-based instructional and learning objectives established by the educational leaders for improving learning outcomes. These policies are aligned with Dewey's constructivist theory that

there should be “inquiry in education” (Oliverio, 2012, p. 56). Because of the relationship between (a) Dewey’s emphasis on inquiry and experiential learning in education and (b) current policies emphasizing the use of technology for fostering experiences and inquiry that improve learning, I chose Dewey’s constructivist theories as the framework for this project study. In my research, several themes such as teacher skills and knowledge, accessibility of technology, teacher training, and leadership surfaced as factors that strongly influenced degree of ITC. Identifying and addressing the research-based factors that can affect the degree of ITC and understanding the significance of creating inquiry-based learning experiences supported by constructivism guided the framework and development of this project study.

Theoretical Framework

Because I investigated the possible factors that influence teacher compliance with creating a learning environment where the learners use technology to build knowledge and develop skills, the theoretical framework for the study was learner-centered constructivism with a focus on the contributions of the constructivist theorist, Dewey (Hechter & Vernette, 2013). The revision of educational reform policies like the NETP have led to the implementation of standards in education intended to increase student learning and improve teacher instruction. Dewey (1938) advocated the view that “through examinations of relations which exist between means (methods) employed and conclusions attained as their consequence, reasons are discovered why some methods succeed and other methods fail” (p. 12). The pedagogical landscape must support the

demands of society placed on the learner. In response to these demands, the 2016 NETP recognized the need to ensure the equity of access to technology; however, “the plan goes further to call upon all involved in American education to ensure equity of access to transformational learning experiences enabled by technology” (p. 1). Teacher pedagogy must support the type learning required to meet the standards. Among these initiatives are technology standards that hold teachers accountable for student learning. Technology standards that promote instructional practices that provide experiences for learners that while using technology allow them to develop the knowledge and skills necessary to be successful in the 21st century.

Snape and Fox-Turnbull’s (2013) experiences indicated that “technology education is one of the most effective learning areas for engaging student interest” (p. 53). If schools are failing to comply with technology standards and students are not afforded the learning experiences through the use of technology, then a change needs to take place. Crawford (2013) pointed out that “pedagogical change needs to occur at teacher and school level and policy change needs to occur at school and government level” (p. 718). The objective of this study was to identify the factors affecting degree of ITC in a large suburban school. The findings of this study identify to what extent specific factors possibly contribute to the gap in compliance with the state standards. Reviewing these factors juxtaposed to the framework of constructivistic learning revealed data that provides the stakeholders with the information needed to create compliance and better support student learning.

Constructing knowledge and skills. The theory of constructivism supports the use of experiences to give students the opportunity to construct knowledge and skills. Dewey (1938) stated:

> An experience is always what it is because of a transaction taking place between an individual and what, at the time constitutes his environment, whether the latter consists of persons with whom he is talking about some topic or even, the subject talked about being also a part of the situation; or the toy with which he is playing; the book he is reading (in which his environing conditions at the time may be England or ancient Greece) or the tone of voice in which they are spoken. It includes equipment, books, apparatus, toys, games played. It includes the materials with which an individual interacts, and, most important of all, the total social set-up of the situations in which a person is engaged. (p. 41)

According to Dewey, experiences themselves are the vehicle that transports knowledge to actual learning. All environmental factors, therefore, are contributing factors; I examined research-based factors contributing to the compliance concerns for technology integration in a local school. Gathering data to provide a clear vision of the local school situation and then applying the knowledge within the constructivist principles enhances student learning as well as compliance to standards.

This study was based on evidence that the local high school was not properly using or integrating technology. This practice creates a lack of compliance with district and state mandates, but it also restricts the students' ability to have experiential learning

activities that support constructing knowledge and skill development. The purpose of this project study was to measure relationships among factors influencing degree of ITC. I identified relationships among factors that need to be addressed to improve compliance with technology standards intended to increase student experiences through technology. The constructs such as teacher disposition, instructional support, availability of technology, teacher collaboration, and use of technology at home are those factors that have been identified through literature to affect the use of technology to create experiences in the classroom. These constructs were the basis of the research questions intended to encourage social change by improving compliance with technology standards and empowering students with knowledge and skills learned through experiences with technology. Mayer (2015) asserted that in order for educators to effectively foster democratic values, purposes, and practices in the classroom setting, educational policy makers must promote practices that effectively improve the understanding of these values, purposes, and practices, as well as assist in ensuring the developed expertise in these areas. Using technology within the classroom as expected by state standards offers students real-world experiences necessary to develop 21st century skills. Ültanir (2012) noted that one of the common themes of constructivism is "the idea that development of understanding requires the learner to actively engage in meaning-making" (p. 196). Through the classroom experiences with computers, the Internet, projectors, probes and other electronic devices, students are able to use inquiry learning to develop an understanding of the curriculum along with build necessary technological skills.

It is evident that constructivists' learning theories continue to have a place in education because the changes in the curriculum designed to meet global demands also incorporate the ideas of constructivism. The need to shift the focus from teacher-centered classrooms to the student-centered classroom can be seen in the emphasis of using technology within the classroom through state standards. Dos Santos et al. (2016) established the importance of contextualized training for teachers to use technology in a constructionist and meaningful approach. These practices require learning to be an active process where students construct knowledge. Schwab (2012) indicated that the number of job opportunities in science, technology, engineering, and math (STEM) continue to grow, but students in postsecondary education are not continuing their education in these majors and unfortunately schools are only seeing 40% of students graduate that choose a major related to a STEM field. The demand for graduates to be job-ready drives the need for an increase in the implementation of technology in the classroom and for the compliance of local, state, and national technology standards. With the necessary resources and training, public school systems can offer students experiences in the STEM field.

Inquiry based learning. The education reformist, Dewey, emphasized the need for schools to create opportunities for students to learn through experiences (Oliverio, 2012). Dewey (1938) stated, "Continuity and interaction in their active union with each other provide the measure of the educative significance and value of an experience" (pp. 44-45). Dewey's idea that students learn from experiences supports the investigation of

the problem of compliance of local, state, and national technology initiatives within school systems. Dewey's philosophy of learning defines children as inquirers (Oliverio, 2012). This inquiry based learning is supported by the compliance of technology standards in the educational system and can be applied across all content areas in education. Carroll (2013) conducted a study of the use of technology in literacy and concluded that the combination of the constructivist idea of learning through situational experiences and direct instruction can improve engagement for boys in learning literacy. With constructivist pedagogies encouraging hands-on experiences, the integration of technology in science can provide learners with the ability to construct meaningful understanding of science (Hechter & Vernette, 2013). The lack of compliance of technology standards and limited use of technology decreases the opportunities for inquiry experiences supported by constructivists' theories for students to develop skills needed to meet the adopted technology initiatives.

The objective of this study was to create compliance with state standards through identifying relationships among factors and addressing the factors that influence the degree of implementation of technology within the classroom. Crawford (2013) advocated that pedagogical change in relation to the expected integration of technology in the classroom through compliance with policies "needs to filter through the educational settings if learning and teaching is to occur in a contemporary and relevant way that replicates real-life and authentic practice" (p. 719). Constructivism along with Dewey's (1938) learning theories provide the framework for understanding the need for the

implementation of technology in the classroom and compliance of local, state, and national technology standards.

Local, State, and National Problem

Recently released legislation that expanded the federal government's role in ensuring an increase in student achievement through state compliance was the NETP of 2016. "The NETP focuses on using technology to transform learning experiences with the goal of providing greater equity and accessibility" (U.S Department of Education, 2016, p. 3). Since the 2010 NETP, learning has taken on new forms with the use of technology and with the latest update of the NETP learning is becoming more personalized.

The Georgia DOE continues to respond to the demand of initiatives through the implementation of Georgia performance standards approved in 2004 and School Keys in 2013 requiring the infiltration of technology into the curriculum. Instructional Standard 7 of School Keys states, "Integrates appropriate current technology into teaching and learning" (Georgia DOE, 2013c, p. 26). Teachers and schools are held to this technology standard in the state of Georgia. The large suburban high school outside a Southeastern metropolitan area in this study was not in compliance with this standard. In this study, I sought to gather teacher perceptions about constructs related to the integration of technology as I investigate the possible factors contributing to incompliance. The findings lead to effective implications that may equip teachers to equitably achieve the local, state, and national technology standards within the classroom. Dewey's (1938) idea

of experiential learning was the theoretical framework of this study, as it applies to building knowledge in the classroom leading to student learning.

An Effective Learning Environment

One variable of student achievement is developing and maintaining an effective learning environment. Fraser (2015) indicated that past research provides consistent evidence that the classroom environment is associated with student outcomes that it should not be ignored. The needs of the learner shift with trends in society, influencing the learning environment. Nissim, Weissblueth, Scott-Webber, and Amar (2016) reported that "a specially-designed environment, equipped with innovative technology, can significantly influence student perceptions of the extent of their motivation and commitment to learning, their creative skills, and the possibility that they will attain higher grades" (p. 8). Thunman and Persson (2013) explained that schools must change in response to the skills and knowledge required for the future workplace. One way to teach 21st century skills such as higher order thinking, communication, and critical thinking is through instructional technology. The use of technology such as computers, LCD projectors, and other interactive tools has the ability to "transform modern education and student learning" (Sundeen & Sundeen, 2013, p. 9). Although resources like PowerPoint can result in better student products, it does not mean the software meets the needs of the learner in regard to the integration of technology or fosters a student-centered learning environment (Lawson, 2013). However, there are many teaching practices that integrate technology as well as foster higher order thinking or critical

thinking skills that are intended to meet the needs of learners. Schwab (2012) showed that Late Nite Lab systems used to simulate laboratory experiences, "give students an experience that takes scientific concepts out of the abstract, giving them real-world context" (p. 340). The use of Late Nite Lab systems over software like PowerPoint promotes inquiry learning and simulates real-life experiences supported by constructivism. Programs like Late Nite Lab systems can meet the learning needs for students through the use of technology.

Technology can also assist in creating an effective learning environment for all learners. Schaaf (2013) explained that "assistive technology is critical for education of students with disabilities" (p. 6). While technology adds to the array of teaching strategies that can be used in the classroom, Pellerin (2013) argued that "technology cannot be viewed as 'the' magic solution to learning difficulties, or one that will remove all learning barriers" (p. 47). Internet access along with the integration of technology can offer the support needed in the learning community to improve instruction and student achievement. Schaaf found that disabled students often benefited from the use of hardware and access to specific websites by being able to work at their own pace. Unfortunately, if teachers are not using these resources in the classroom the needs of all students may not be met and teachers are not complying with local, state, and national initiatives designed to ensure equitable learning opportunities for all students.

Barriers to Implementing Technology

The goal of this study was to identify the relationship among factors limiting the ITC and make recommendations that provide educational leaders with insight into some of the many barriers that teachers feel affect their integration of technology and help teachers meet the challenges the use of technology creates. Laferrière, Hamel, and Searson (2013) suggested equitable access, skilled personnel, implementation planning, ongoing professional learning, technical support, curriculum framework, student-centered learning, assessment and evaluation as barriers to educational setting in regard to technology. Chien (2013) concluded that the availability of computers, skill level, lack of time, software applications, technical or administrative support, and resources were limiting factors even when the teachers indicated a degree of enthusiasm and optimism. Based on the literature and data from the local high school, my research questions were designed to reflect the relationship between the degree of ITC and the possible extrinsic circumstances such as access to resources, leadership, and collaboration as well as intrinsic factors such as teacher skills, beliefs, and attitudes.

Barrier framework. Ertmer (1999) offered a framework for categorizing barriers to technology integration by identifying them as either first-order barriers or second-order barriers. Chin-Chung and Ching Sing (2012) advocated the earlier view of Ertmer, identifying external factors influencing the integration of technology such as lack of adequate access, time, training and institutional support as first-order barriers. Those internal factors that were seen to hinder the ITC such as “teachers’ pedagogical beliefs,

technology beliefs, and teachers' willingness to change" were identified as second-order barriers (Chin-Chung & Ching Sing, 2012, p. 1057). In addition, Chin-Chung and Ching Sing (2012) proposed that "the lack of design thinking skills and disposition may be the third-order barrier for technology integration" (p. 1059).

Classroom observation notes and lesson plans were among the artifacts used to identify the degree of compliance with state standards during the GAPSS review at the local high school in this study. Minimal integration of technology was seen in the observation period during the GAPSS review and lesson plans did not indicate an acceptable degree of compliance to the state technology standard intended for the improvement of schools in Georgia (Georgia DOE, 2013c). However, it was not evident through the GAPPS review as to why teachers in the local high school in this study are not implementing technology; the review merely gives feedback to what is being observed in the learning environment. Lee and Lee (2014) indicated an increase of self-efficacy beliefs for technology integration in preservice teachers with greater ability for lesson planning and higher positive attitudes toward technology. I was able to identify the barriers to integrating technology in this local high school and address the factors. These findings provide implications for social change within this local high school that will lead to an increase in compliance with technology standards.

Teacher disposition. Teacher beliefs and attitudes have an effect on degree of ITC. Usluel and Uslu (2013) pointed out that "teachers found technology as an innovation useful in terms of "easiness," "time," "economy," and "upgrading standards of

living" (p. 52). It is unrealistic to think that all teachers have positive beliefs and attitudes towards using technology in the classroom. These negative beliefs and attitudes can become a barrier to the integration of technology in the classroom imposed on teachers through standards related to technology. Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, and Sendurur (2012) confirmed teachers' own beliefs and attitudes to be the strongest barriers in the ITC. Usleuel and Uslu (2013) also recognized the important role teachers play in the adoption of innovations. Blackwell, Lauricella, and Wartella (2014) confirmed attitudes of early childhood educators towards the value of technology on student learning had the strongest effect on the use of technology in the classroom. Unfortunately, teachers that do not see the significance of technology are likely to resist the effective use of technology within the classroom. O'Bannon and Thomas (2014) indicated that teachers over the age of 50 were less supportive of mobile phones in the classroom and did not find mobile phone features useful for school-related activities. Pyle and Esslinger (2013) advocated the view that most physical education teachers see the positive influence technology can have in the curriculum but may not know how to implement technology without taking time away from other activities thus resulting in negative perceptions about the use of technology. Collaboration among educators may assist in breaking down negative beliefs and attitudes towards using technology in the classroom. In this study, teacher beliefs and attitudes (Factor 1: Teacher Disposition) was be measured against the dependent variable (Factor 5: Degree of ITC).

Instructional support. Other possible barriers to the integration of technology are limited knowledge and lack of skills. Even when technology is accessible, teachers' limited knowledge and lack of skills to effectively implement technology within the classroom continues to be a barrier. Thunman and Persson (2013) pointed out that more young teachers using information and communication technology in comparison to veteran teachers because of their more recent training in technology. Hechter and Vernette (2013) reported two main survey findings from their research in Manitoba, Canada. One was that administrators are making efforts to provide classrooms with the most up-to-date technology. Secondly, "teachers are unclear on effective ways to integrate these technologies into their teaching and have a low comfort level with their personal knowledge and use of these new technologies" (Hechter & Vernette, 2013, p. 87). If the resources are available, it is at the teacher's discretion as to how and when technology is infiltrated into their classroom; however, he or she is expected to comply with local initiatives, state standards, and federal policies. Koh, Chai, and Tay's (2014) study showed experience in technology use and beliefs in teaching led to increased construction of technological pedagogical content knowledge (TPACK). To ensure that teachers make efforts to increase their understanding of the use of current technology and improve upon their skills in the use of technology, states are incorporating the integration of technology in teacher evaluations. Pyle and Esslinger (2013) confirmed that teacher candidates in Kentucky are currently being evaluated in technology. Accountability initiatives like these are intended to encourage teachers to increase their knowledge and

skills in regard to technology across the nation thus resulting in compliance with state technology standards. Degree of ITC was measured against the element of Instructional Support for ITC (Factor 2) in this study.

Availability and access of technology. Local, state, and national standards were designed with technology in mind to assist in meeting the initiatives of policies such as NCLB and NETP for increasing student learning. However, research indicated the accessibility and distribution of technology varies from district to district across the nation. Sincar (2013) reported that the lack of resources is challenge for principals. These challenges demand a closer look at the accessibility and distribution of resources for ensuring equitable opportunities for teachers to address standards holding them accountable for student achievement.

The effects of the recent economic downturn are evident in education. Even with signs of slow growth, budget cuts and decreased funding continue to globally plague schools. According to Thunman and Persson (2013), the student to computer ratio for a rich independent upper secondary school is 1.6 to 1, while the ratio in a poor public school is 2.5 to 1 in Sweden. Sundeen and Sundeen (2013) proclaimed that “decreased funding and budgetary restraints have a direct impact on technology acquisition in many rural school districts” (p. 9). The effects of the lack of access to resources have been seen at the post-secondary level also, students lack motivation to study a basic technical subject because they have not had been previously afforded the opportunity to use computers (Ganah, 2012). Some schools appear to have excessive access to technology

and others lack access or funding to obtain, upgrade, or maintain existing software and hardware. These inequities may affect the implementation of technology along with the school's compliance with national and state technology standards and even the school district's technology standards for its learners. In this study, the Availability of Technology at school (Factor 3) and access and use from home (Factor 6) relative to Degree of ITC were measured with the dependent variable, Factor 5: Degree of ITC.

Teacher collaboration. The lack of teacher collaboration regarding ITC was another technology implementation barrier identified by literature. Larson (2013) observed "technologically savvy and innovative teachers who were not sharing their expertise with their less proficient colleagues due to lack of time" (p. 44). Teachers encounter many challenges in technology integration that can be overcome. Kale and Goh (2012) suggested an increase in professional development where teachers can observe, practice, and discuss the use of technology in their content areas. Creating a learning community where fellow teachers can share strategies that colleagues can use to integrate technology into the instructional process is one way to address such challenges. Teacher Collaboration (Factor 4) was measured against Degree of ITC (Factor 5) in my study.

Implementation of Technology

The need for the accessibility of resources for teachers to meet local, state, and national initiatives supports the idea of creating situations to support student learning through technology. Dewey's constructivist ideas encourage the use of hands-on tools for

developing an understanding of phenomena especially for science (Hechter & Vernette, 2013). An imbalance of the use of technology within a school can limit the opportunity for inquiry necessary for students to develop skills needed to meet the adopted standards. Constructivists "shift the focus from knowledge as a product to knowing as a process" (Ültanir, 2012, p. 196). Leung and Unal (2013) explained that the use of more advanced tools allows inquiry-based activities like Webquests provide differentiation and foster learning through collaboration. Learner-centered activities using technology and the World Wide Web foster constructivism.

Dos Santos et al. (2016) reported the importance of contextualized training for teachers to use technology in a constructionist and meaningful manner. The building of knowledge through learning activities is the foundation of the constructivist theory (Carroll, 2013). From their study, Nissim et al. (2016) reported an 80 percent increase in higher grades, class engagement, creativity, and motivation based on the perceptions of preservice student teachers exposed to an innovative technology-supported learning environment. Unfortunately, classrooms like those in Manitoban, Canada continue to battle barriers in integrating technology such as access, lack of resources, and funding (Hechter & Vernette, 2013). These research findings have resulted in the development of my research questions regarding the various factors that could possibly be influencing degree of ITC.

The relationship between the idea that technology is instrumental in students developing knowledge and skills and the findings reported by the GAPSS team that the

integration of technology was Not Evident according to School Keys, supports my choice of constructivism as the framework of my study. Classroom practices involving technology-based activities make it possible for students to build the necessary knowledge base from their experiences and empower teachers to meet the local, state, and national technology initiatives. It was important to identify the factors influencing the ITC for this large suburban school since addressing the barriers may bring about social change. The constructs that were studied in my research stem from the ideals of education reformist and constructivist Dewey. The constructs I chose to study support more constructivist-like practices for student learning through experiences in the classroom using technology. Moreover, the instrumentation selected for this study was created from research-based constructs and then factor analyzed, resulting in the existing factors that it currently culls. Additional information on the development of the instrument and its connection to the literature is provided in Section 2.

Implications

One direction of the project for offering possible solutions to increasing implementation of technology in the classroom is to provide professional development. Professional development can be used for the communication of local, state, and national technology standards to assist educators in increasing compliance and developing 21st Century skills. Based on the findings, professional development is used for instructional technology training. Another solution was to suggest opportunities for collaborative planning among teachers. Specific time set aside during common planning periods may

give teachers an opportunity to share ideas for integrating technology within the classroom. One other avenue for the project was to communicate ways for classroom teachers to share technology within the building to increase the ITC. For instance, schools lacking projectors and interactive boards in every classroom may place the available technology on a cart and allow teachers to sign up for the technology on the days they plan to integrate it into their instructional practices. Yet another project direction was to encourage teachers to find alternative ways to acquire instructional technology. There is funding available for teachers through grants offering monies specifically for technology-based classroom practices. There are also programs offered through manufacturing companies allowing teachers to use some of the newest innovations in exchange for a detailed feedback and evaluation of the technology. Lastly, another implication was for teachers to electronically share lesson plans for effective use of students' personal technology. The lesson plans can be downloaded to a content specific Dropbox or Google Docs for easy access by all teachers. The findings of this study drove the project direction to address the local problem.

Summary

In order to comply with national and state technology policies as well as meet district instructional and learning objectives, classroom teachers must include technology in their instructional practices. The teachers in a large school district outside a large metropolitan area were failing to implement technology at an acceptable level as indicated by the GAPSS review based on the expectations of Georgia DOE's School

Keys. The lack of the ITC impacts the system's compliance with the state technology standards and may even affect compliance with national policies and the district's own technology initiatives for its learners. The factors influencing degree of ITC affect classroom instruction, the learning environment, and student achievement. Because the emphasis of providing inquiry type learning experiences in an educational setting is based on the foundations of constructivism, the framework for this study was constructivism with focus on Dewey's ideas. If a school is not complying with state technology standards, then teacher practices are not providing students with learning experiences in the classroom stressed by constructivist theorists.

Current literature findings emphasized the importance of the integration of technology because it promotes higher order and critical thinking skills. Other advantages of the use of technology in the classroom found among recent research includes meeting the needs of students with disabilities and allowing students to work at their own pace. Barriers to the implementation of technology in the classroom mentioned in literature were teacher skills, teacher attitudes and beliefs, and availability of resources. The purpose of this project study was to identify potential relationships among factors influencing degree of implementation of technology in the classroom in a local high school. The research questions for this project study reflect the factors that literature suggested may have an effect on the integration of technology. Possible solutions to increasing degree of ITC and improving compliance with technology initiatives by removing barriers arose from the project.

The methodology of this study is outlined in Section 2. The research design for this project was a quantitative descriptive research design. Section 2 includes the rationale for choosing a quantitative descriptive research design and the analysis process of the data collected in this study. The survey tool for collecting the quantitative data is also thoroughly described in the methodology section. A description of my proposed project and the reasoning behind my choice in project genre is discussed in Section 3. Section 3 also addresses needed resources, existing supports, potential barriers, and a time table in regard to the project. Specific roles and responsibilities for those involved in the project are outlined also. Section 4 addresses the strengths and limitations of the proposed study based on my reflections. Suggestions of other ways to address the problem are included as well.

Section 2: The Methodology

The purpose of this quantitative study was to identify relationships among factors that may influence degree of ITC within a large suburban high school outside a Southeastern metropolitan area. In this nonexperimental project study, I analyzed the data on the research variables using multiple regression and Chi-square analyses (for the parametric and nonparametric variables, respectively). There was a gap in practice at this local school; teachers were failing to comply with a state technology standard. The findings of this study were intended to direct the decision-making process that takes place within the school system to support social change, specifically in relationship to the integration of technology for increasing compliance with technology standards to better meet student needs and increase student achievement.

The data collected from the survey instrument represented the teachers' perspectives at the large suburban high school in this study. The responses of the teachers indicated to what extent the independent variables represented by the questions influence Degree of ITC, the dependent variable. This data will be electronically stored for 5 years then destroyed.

Section 2 includes the methodology of collecting and analyzing the quantitative data in this nonexperimental study. I also provide a description and justification for the setting, population, sampling, and participants. It was anticipated that this study would identify the factors that affected degree of ITC within this local high school. Statistical measures for these factors are outlined in the analysis section. In order to promote

compliance with local, state, and national technology initiatives, the factors that act as barriers to the ITC must be addressed to catalyze an increased use of technology. For this school to become an object of social change itself the learner must be at the center of its focus.

Research Questions

In this project study I addressed the following research questions (RQ). The indicated statements are the appropriate null (H_0) and alternative (H_a) hypotheses that were accepted or rejected during this proposed study:

RQ 1: How does Teacher Disposition toward ITC relate to Degree of ITC?

H_01: Teacher Disposition toward ITC does not relate to Degree of ITC.

H_a1: Teacher Disposition toward ITC does relate to Degree of ITC.

RQ 2: How does Instructional Support for ITC relate to Degree of ITC?

H_02: Instructional Support for ITC does not relate to Degree of ITC.

H_a2: Instructional Support for ITC does relate to Degree of ITC.

RQ 3: How does Availability of Technology for ITC at school relate to Degree of ITC?

H_03: The Availability of Technology for ITC at school does not relate to Degree of ITC.

H_a3: The Availability of Technology for ITC at school does relate to Degree of ITC

RQ 4: How does Teacher Collaboration regarding ITC relate to Degree of ITC?

$H_0 4$: Teacher Collaboration regarding ITC does not relate to Degree of ITC.

$H_a 4$: Teacher Collaboration regarding ITC does relate to Degree of ITC.

RQ 5: How does Access and Use of Computers at Home for ITC relate to Degree of ITC?

$H_0 5$: Access and Use of Computers at Home for ITC does not relate to Degree of ITC.

$H_a 5$: Access and Use of Computers at Home for ITC does relate to Degree of ITC.

RQ 6: How does the teacher's level of education relate to Degree of ITC?

$H_0 6$: Teacher's level of education does not relate to Degree of ITC.

$H_a 6$: Teacher's level of education does relate to Degree of ITC.

RQ 7: How does the number of years of teaching experience relate to Degree of ITC?

$H_0 7$: Number of years of teaching experience does not relate to Degree of ITC.

$H_a 7$: Number of years of teaching experience does relate to Degree of ITC

RQ 8: How does teacher participation in the Georgia Technology Initiatives relate to Degree of ITC?

$H_0 8$: Teacher participation in the Georgia Technology Initiatives does not relate to Degree of ITC.

$H_a 8$: Teacher participation in the Georgia Technology Initiatives does relate to Degree of ITC.

The constructs in each of these research questions were identified in the literature as factors related to technology integration; they additionally are connected to Dewey's (1938) constructivist framework of creating experiential and inquiry-based learning. Analyzing these constructs through the constructivist lens provided essential data for determining how to best improve compliance as well as student learning at the local school. These questions gave the study and methodology direction by quantifying the degree to which the above mentioned factors influence the ITC. From the analysis of the data and the identification of those factors that most affect the ITC, a plan to increase the ITC be established.

In order to accomplish the purpose of the study, I applied a nonexperimental research design—one that allowed me to interpret quantitative data by obtaining perceptions of teachers related to factors effecting technology use in the classroom. In this section, I provide an overview and justification for the methodology, a description of the sample, setting, and proposed data collection and analyses procedures. I also provide

information regarding the protection of participants' rights and safeguards to ethical research practices.

Research Design and Approach

The research design that fit this study's research questions was a nonexperimental research design. This allowed me to produce findings that offered solutions to lack of compliance with state technology initiatives within this suburban high school. In an experimental research design, the effects of a specific treatment on an experimental group are measured and compared to the responses of the control group that has not received the treatment (Creswell, 2012). Because the participants were not subjected to a particular treatment, the nonexperimental research design fit my plan for collecting data from a group of teachers about their perceptions regarding degree of ITC. My research plan involved the collection and analysis of data in number format through a predesigned survey. The established survey—created to examine constructs that contribute to technology integration in the classroom; (Harris, 2003),—helped to identify factors that influence Degree of ITC in the local school. The statistical analysis of these quantitative data led to applicable findings to the research population. Both Chi-square analysis and multiple regression were the statistical methods for assessing the influence of particular factors on Degree of ITC. The quantitative data representing Degree of ITC related to specific factors determined the influence of variables that influenced teachers' efforts to integrate technology, thereby influencing the achievement of the state technology standards.

The dependent variable in this study was implementation of technology in the classroom referred to as Degree of ITC. The survey yielded quantitative data from teacher perceptions regarding the factors that literature suggests affect Degree of ITC. These multiple independent variables include Teacher Disposition toward ITC, Instructional Support for ITC, Availability of Technology for ITC, Teacher Collaboration regarding ITC, Access and Use of Computers at Home for ITC, teacher's level of education, number of years of teaching experience, and teacher participation in the Georgia Technology Initiatives. Independent variables were determined by the literature review and are related to the use of technology in the classroom to create experiences for learning suggested by the framework of this project study.

The intent of this study was to predict the degree of influence the independent variables have on the dependent variable though the collection of data with the predesigned survey tool. Merriam (2009) remarked that if prediction is the goal of the investigation then quantitative research is preferred over qualitative research. The findings gave direction to the change that needs to take place to address the problem of the lack of compliance with the state technology standards implied by the Georgia DOE's School Keys. The idea behind quantitative research was to seek an answer to the research problem by "assessing whether certain factors predict an outcome" (Creswell, 2012, p. 13). A move toward improving compliance of technology initiatives by attempting to remove barriers perceived by the teachers in this local school was anticipated from the analysis of the quantitative data from the survey.

Design Justification and Connection to Local Problem

To collect the necessary data to investigate the problem related to the compliance of state initiatives related to technology, I chose a nonexperimental research design. An experimental design was not chosen because my study did not involve imposing a treatment on a particular group under controlled conditions to determine the effects of the variables (see Campbell & Stanley, 2015). In the setting of this study there was not one particular factor or independent variable imposed on the teachers to identify the effects on the implementation of technology in the classroom. Therefore, it was not possible to administer a pretest and posttest to determine the effect of a special treatment as indicated in an experimental design. However, through nonintervention research I was able to see to what degree different variables are thought to influence the dependent variable, Degree of ITC, based on teacher perceptions (Creswell, 2012).

Qualitative design. I did not consider a qualitative design because it would involve collecting data through verbal or narrative means such as interviews or observations to reveal reoccurring themes that are considered findings rather than through a survey (Merriam, 2009). Using a survey allowed me to collect vast amounts of data from the teachers in the large high school while protecting their identity and eliminating fear of reprisal from truthful communication. Answering questions face-to-face regarding their integration of technology within the classroom may have created participant fear of negative ramifications regarding compliance with standards.

Collecting data from qualitative methods would narrow the data. Qualitative measures often produce data in the form of words instead of the quantification of data collected and analyzed (Bryman, 2015). In this study, I sought to determine the factors that were influencing the ITC in the local school as well as which factors account for more of the variance in the ITC. Qualitative descriptions would provide a narrative on the situation in this local school, but they would not provide specific information regarding the measurable influence of any one factor. Additionally, qualitative research can often be more time consuming than quantitative research. Time restraints prevented me from conducting interviews with the teachers in the school and making observations in the classrooms to collect substantial data. As I needed input from the majority of the teachers rather than deeper insight from just a few, qualitative methods were not suitable for the objectives of this study.

For this study, I chose to collect quantitative data through a nonexperimental research design using a survey to identify the factors that influence the degree of ITC to portray the causes of the failure to integrate technology within the school. The quantitative data collected from the survey based on teacher perceptions in regard to attitude, use, support, and training related to technology gave insight into the factors causing a gap in practice related to compliance with technology standards. The analysis of the quantitative data collected from the survey was used to improve compliance with state technology standards by addressing the factors showing the most influence on the ITC. Typically, quantitative research can be generalized to the larger population

(Creswell, 2012). Unfortunately, the findings from this study can only be applied to the local setting because of the sampling; however, my hopes are that this study to catalyze change across the district and state.

Setting and Sample

The setting for the research was a large suburban high school outside a Southeastern metropolitan area. The population of the study was the 109 certified teachers employed within the participating local high school. Because the purpose of this study was to investigate the potential relationships among factors that influence practices within the school, the teachers were asked to complete the survey instrument for this study. The teachers that chose to participate created the final sample for this study. The sample was the result of the population (N = 109) minus any teachers who choose not to participate in the data collection. In calculating using Raosoft, the recommended sample size with a 5% margin of error and 95% confidence level, the ideal number of participants for this study was 86 (Raosoft, 2016). This sample size was calculated using a 50% response distribution. The justification for this sampling strategy was that through analysis of the participants' responses to the survey instrument, the variables that affect degree of ITC in this local high school were evident.

Sampling Method

While qualitative researchers choose participants with specific characteristics in mind, quantitative researchers want to be able to generalize their findings from the sample to a larger population. Creswell (2012) noted that probability which is indicative

of random sampling and nonprobability entailing nonrandom samples are the two main quantitative sampling strategies. Random sampling has no specific order or purpose in the sampling since it is used to take snapshots of data that can be generalized. However, through random sampling findings can be generalized to the population (Bryman, 2015). Convenience sampling is a nonprobability sampling strategy for the ease of the researcher in collecting data. This type of sampling is often chosen because the participants are readily available and willing to engage with the researcher (Creswell, 2012). Another nonrandom sampling strategy is census sampling. In census sampling, the researcher is able to use the entire realistic population (Australian Bureau of Statistics, 2013).

Census sampling. Of the sampling strategies, census sampling was chosen for this study because the study population was a manageable size. This project study was conducted in a Georgia high school serving Grades 9-12 that were failing to implement technology at an acceptable rate according to state standards; the study population was the suburban high school itself. Random sampling was considered, but because there are less than 200 teachers, all the teachers in the building were surveyed. Since all the teachers were asked to complete the survey through their school district e-mail, convenience sampling was not necessary.

The focus of the study was improving compliance of state standards through teacher practice; therefore, the sampling frame and the sample were the faculty members of the school. Since the actual population was 109 certified teachers serving as the faculty members at this local high school, census sampling was the nonrandom sampling chosen

for this quantitative study. The inclusion criteria for the participants was that they must be the part of the population required to implement technology within the classroom.

Access to participants. Access to the participants was gained through permission from the principal. The letters to the principal were e-mailed and included an overview of the proposed study and instructions for distributing a survey link to teachers. Appendix B contains the letter to the principal asking permission to survey the teachers within the school. Since the principal was only asked to send an e-mail with a survey link, Walden University's requirement of securing a Letter of Cooperation was waived (Walden University, 2015). After securing permission to collect data from the Walden University Institutional Review Board (IRB, #11-01-16-0032866), I e-mailed the letter to the principal asking permission to distribute the study invitation and survey link.

Since I am a teacher in this school, I am a lateral colleague to the prospective participants, but I do not supervise or have a role of authority over any of the teachers. Therefore, there was no ethical conflict in their participation, especially because collected data were anonymous and gathered electronically. Many teachers, however, may have recognized my name as a colleague in the invitation to participate which may or may not have influenced their decisions to participate in the survey.

Researcher-participant working relationship. In order to establish a researcher-participant working relationship with the participants an invitation to participate was sent via e-mail which included a link to the survey instrument (Appendix C). The invitation to participate included information regarding the purpose of the study, an explanation of the

protection of participant rights as well as the protection of their identification. All the teachers at the local high school received an invitation to participate in the survey on their school e-mail from the principal. No compensation for participation in the survey was offered to the participants.

Instrumentation and Materials

In this study, I used a survey entitled Technology and Professional Development Survey of Georgia High School Teachers to collect teacher perspectives regarding factors that influence Degree of ITC. This instrument is a 34 item (nine fill-in-the-blank, two multiple choice, two open-ended, one rubric, and 20 Likert Scale items) survey designed to gather data on teacher perceptions relative to ITC (Harris, 2003). It gathers nominal data (yes/no responses) that allows the respondent to indicate if he or she *agrees with* the provided statement and then Likert scaled items with six choices that ask for the respondent to indicate the *usefulness, importance, frequency of use*, or *extent of agreement* with statements about technology issues or concerns. Using the Likert scale allows the respondent to choose the level of agreement on a scale (Bryman, 2015). The *Importance/Usefulness Scale*, the *Frequency of Use Scale*, and the *Agree/Disagree Scale*, each a six-choice Likert scale, allow a researcher to generate scores by calculating the means of items that loaded on each of the factors measured by the instrument. There are additional survey items that request demographic information about gender, year born, education, years of teaching experience, grade levels taught, and main teaching field, as well as two open-ended items that were omitted from this quantitative study.

The survey in original form (Appendix D) was modified only to be applicable to the local setting (Georgia vs. Louisiana). The survey changes involved altering the title from *Louisiana* to *Georgia*, the term *parish* to *county* in Item 6, and state-specific technology initiatives in Item 17 from Louisiana-specific to Georgia-specific initiatives. It is significant to note that all other language and wording of the original instrument were retained in order to support the instrument's integrity. Table 2 indicates the changes in the survey.

Table 2

Alerations to the Technology and Professional Development Survey of Louisiana high School Teachers

Item	Original Wording	Revised Wording
Title	Technology and Professional Development Survey of Louisiana High School Teachers	Technology and Professional Development Survey of Georgia High School Teachers
6	In what PARISH do you currently teach?	In what SCHOOL DISTRICT do you currently teach?
17A	First Tech	Edmodo
17B	Louisiana INTECH	Nearpod
17C	Louisiana INTECH2	LiveBinders
17D	INTECH Social Studies	Educreations
17E	PASS-PORT	Brainscape
17F	T.H.E. QUEST	Blendscape
17G	n/a	Assistive Technology

Verification of permission to modify and use this instrument is provided in Appendix E. To complete the survey instrument, participants simply clicked on an emailed link, and selected the appropriate responses to the survey items. All choices included drop down menus or electronic buttons. An opportunity was provided for participants to provide additional information or questions if they choose to do so. The amended survey instrument, prepared for launching through SurveyMonkey™, is provided in Appendix F.

Concepts Measured

The survey instrument contained 34 scaled items that were factor analyzed by entering the variables into a data reduction equation. Based on a principal component analysis (PCA) with varimax rotation on a sample of 769 normally distributed data sets, six factors emerged with eigenvalues higher than 1 and accounting for 66.627% of the variance. According to the author, "items from the survey instrument that resulted in the highest loadings for each of the six factors relating to Integrating Technology into the Classroom (ITC) were assimilated into that factor" (Harris, 2003, p.89). Six factors related to ITC emerged from this analysis. The 34 items, influenced by established federal and state technology surveys regarding technology initiatives with content validity verified by technology experts, were culled from the literature as the factors that best

> impact technology integration, the success of professional development, a teacher's ability/willingness to change classroom practice, and student achievement. Moreover, the heart of the instrument addressed teaching practices

> and perceptions regarding support, professional development, use of technology, and the impact of technology on student achievement. (pp. 60-61)

Because each of the instrument's emerging six factors provides insight into teacher perceptions about ITC and still align with the research literature on ITC, this instrument was most appropriate for gathering data in this study. Table 3 details the concepts measured by this instrument, the formal factor names, and the description of each construct.

Table 3

Factor Loadings of the technology and Professional Development Survey of Lousiana High School Teachers

Factor	Description of Items
1: Teacher Disposition Toward ITC	Related to teacher confidence, attitude and effort toward implementing technology as well as communication and encouragement from the instructional leader.
2: Instructional Support for ITC	Identified colleagues or personnel that could assist with technology integration in the form of instructional support.
3: Availability of Technology for ITC	Indicated availability of technology and onsite technology support.
4: Teacher Collaboration Regarding ITC	Addressed teacher interaction or collaboration regarding integrating technology into the classroom.
5: Degree of ITC	Provided frequency of use, hours of technology integration training, and level of technology implementation in the classroom.
6: Access and Use of Computers at Home for ITC	Indicated access and use of computers at home for school related purposes.

In this study, these six factors, with these same names, were used to indicate the variables in the research questions and hypotheses. Because the current literature aligns with this instrument, it was an appropriate choice for achieving this study's purpose.

Calculations of Scores by Factor

In order to score each of the six factors measured by this instrument, the data set are electronically gathered or entered into an Excel™ spreadsheet, with each item in its own column and participant data entered by row. From this design, different survey items can be grouped and sorted, by participant, so that each item is grouped with other items that loaded on the instrument's factors. For example, each participant's Factor 1 score was the sum of each participant's responses to Items 21-27. This process was repeated for each of the six factors, using the appropriate items, respectively. Once each participant's scores were calculated for all six factors, the factor scores were analyzed with the appropriate parametric statistical test. Data not scaled were coded for descriptive or nonparametric analyses. Table 4 provides details about the individual survey items that loaded by factor. This summary was used to guide the development of the electronic spreadsheet for data analysis.

Table 4

Factor Loadings of the Technology and Professional Development Survey of Louisiana High School Teachers by Actual Survey Item

Item	Factor 1: Teacher Disposition Toward ITC
21	Using technology enhances student learning.
22	I have many uses for technology in my classroom.
23	I feel confident in my ability to use technology.
24	I expect my technology activities to be successful.
25	I put a lot of effort into implementing technology activities/projects.
26	I keep working even when there are problems with technology.

(table continues)

Item	Factor 1: Teacher Disposition Toward ITC
27	My instructional leader encourages me to integrate technology into my classroom curriculum.
28	My instructional leader talks/communicates with me frequently about the integration of technology in my classroom.
Item	**Factor 2: Instructional Support for ITC**
20AB	Teachers at the school site
20BB	Principal at the school site
20CB	Teachers at other school sites
20DB	Technology coordinator/aide at school site
20EB	District mentor, technology coordinator, or resource person
20FB	Online resource
tem	**Factor 3: Availability of Technology for ITC**
9B	Computers and other technology for my classroom are sufficiently available.
10B	I have a computer with Internet access for use at school.
11B	I have a computer with Internet access for instructional use in my classroom.
Item	**Factor 4: Teacher Collaboration Regarding ITC**
12B	I participate in collaboration with other teachers on issues of instruction that involve teaching with technology.
13B	I participate in mentoring/peer observation/coaching relative to the integration of technology in the classroom.
14B	I participate in a network of teachers that discusses/addresses technology in the classroom (e.g. one organized by an outside agency or over the Internet).
Item	**Factor 5: Degree of ITC***
31A	Please select the statement that best describes the frequency of technology use in your classroom. Remember, *technology*, refers to any electronic devices used to store and deliver information, including computer, video, and communication systems.
31B	*Same as 31A*
32	Please indicate the number of clock hours of technology training you have received over the past 5 years.
Item	**Factor 6: Access and Use of Computers at Home for ITC**
16B	I have a computer at home.
18B	I use a computer at home for school related purposes.

*Dependent Variable

Validity and Reliability

Validity of the survey instrument was addressed through the initial pilot testing and peer checking of the survey (Harris, 2003). A panel of five technology experts took part in reviewing and evaluating the instrument to establish content validity—determining that all items measured the intended subject matter—and construct validity, determining that instrument was constructed in a design that was functional and efficient for the intended purpose. Necessary changes were made by the author in response to the input of the experts (Harris, 2003). After review of the final instrument one expert commented that the

> instrument is impressive and comprehensive and that the attempt to gather many types of information—attitudes, levels of expertise, teacher confidence, etc. makes it a very valuable because it will provide indications of the many influences on teachers' use of technology in the classroom and beyond. (Harris, 2003, p. 76).

The instrument constructs were further validated with an exploratory factor analysis.

The reliability of the instrument, the ability of it to measure the intended constructs over time from participant to participant, was calculated with a Cronbach's alpha, cited as an appropriate measure to establish reliability (Crowl, 1996). For the 26 items entered in the factor analysis, the alpha coefficient was 0.8861 and the alpha for the standardized item was 0.9128 (Harris, 2003). Because both alpha were close to 1.00, which represents perfect internal consistency, the instrument is considered highly

reliable. In this study, the reliability was recalculated after the data have been collected for this study to ensure a high degree of reliability.

Research Variables

The factors measured by this instrument align with the purpose of this study as they define and describe teacher perceptions about technology initiatives. The variables in each of the research questions, therefore, are represented by the factors or items that this instrument provided. Table 5 provides an alignment of the instrument's items and research variables for this study.

RQ 1: How does the Teacher Disposition toward ITC relate to Degree of ITC?

RQ 2: How does Instructional Support for ITC relate to Degree of ITC?

RQ 3: How does Availability of Technology at school relate to Degree of ITC?

RQ 4: How does Teacher Collaboration regarding ITC relate to Degree of ITC?

RQ 5: How does Access and Use of Computers at Home for ITC relate to Degree of ITC?

RQ 6: How does the teacher's level of education relate to Degree of ITC?

RQ 7: How does the number of years of teaching experience relate to Degree of ITC?

RQ 8: How does participation in the Georgia Technology Initiatives relate to Degree of ITC?

Table 5

Research Variables Aligned with the Instrument's Factors and Itams, Data Type, and Analysis by Research Question

RQ	Variable	Survey Item(s)	Data Type	Analysis
1-8	Factor 5: Degree of ITC*	31-32	Scaled	Regression
1	Factor 1: Teacher Disposition toward ITC	21-28	Scaled	Regression
2	Factor 2: Instructional Support for ITC	20AB-FB	Scaled	Regression
3	Factor 3: Availability of Technology at School	9b, 10b, 11b	Scaled	Regression
4	Factor 4: Teacher Collaboration Regarding ITC	12b, 13b, 14b	Scaled	Regression
5	Factor 6: Access and Use of Technology at Home for ITC	16b, 18b	Scaled	Regression
6	Teacher level of education	Demographic Item 3		Chi-Square
7	Number of years of teaching experience	Demographic Item 3		Chi-Square
8	Participation in the Georgia technology initiatives	17A-19H	Nominal	Chi-Square

*Dependent variable in the study

Data from this instrument created the nine indicated variables to address the indicated research questions in this study.

The data collected through the survey instrument represented the responses of the teachers in a large suburban high school in regard to the independent variables and the implementation of technology in the classroom. Statistical measures allowed the comparison of the different variables on Degree of ITC, which is explained in the analysis section. These variables are Teacher Disposition toward ITC, Instructional Support for ITC, Availability of Technology at school, Teacher Collaboration regarding ITC, and access and use of technology at home for ITC.

Data Collection and Analysis

The survey data for this study was collected through an electronic survey hosted by SurveyMonkey™. The link to the instrument was distributed to the participants by email. After data were collected, they were analyzed using an appropriate statistical measure. In this section, I detailed the step-by-step process for gathering the data from the participants and setting up the data for analysis. I provided an explanation of and justification for the selected descriptive and inferential analyses and the appropriateness of the analysis for addressing each research question in this study.

In the data collection process, an email containing the link to the survey instrument published through SurveyMonkey™ was sent to all of the teachers at the local high school in this study. The email explained the purpose of the survey and the directions for completing the survey. As the surveys were completed by the teachers, the data were stored in a database through the SurveyMonkey™ software. When the time period for submitting the survey had expired, all the data were analyzed and the results were displayed by SurveyMonkey™. From the analysis of the data, the influence on Degree of ITC was seen for each factor based on participants' responses for this study.

The survey instrument began with questions regarding basic demographic and educational information. Throughout the survey the participants were able to choose *Yes* or *No* in regard to agreeing with the survey statement. Then the Likert scale was used to rank the importance or usefulness of the statement. Using the Likert scale allows the respondent to choose their level of agreement which in turn will produce the quantitative

data for analysis (Bryman, 2015). The Importance and Usefulness Scale consisted of the numbers one through six where one indicates *Not Important/Useful* at all and six represents *Essential*.

In order to address the research questions in this study, all nine of the indicated variables were identified in the data set that were gathered from the participants. After the survey instrument was coded and organized for scoring, the scores for Research Questions 1-8 were analyzed appropriately.

Analyses

The analysis of data sets was determined by the type of data. Different analyses exist for different purposes and have certain criteria that must be in place to use the analyses. In this study, I analyzed the relationship among multiple independent variables in order to determine the best predictors of the dependent variable, Degree of ITC. Because the independent variables were either continuous or discrete, I used both a parametric and nonparametric analysis to determine the findings. The variables and hypotheses of RQs 1-5 were analyzed with parametric statistics. The variables in RQs 6-8 and the null hypotheses were tested statistically with nonparametric analyses. Nonparametric analyzes are used when one of the criteria for a parametric analysis has been violated (Triola, 2012). Multiple regression analysis of the data identified *to what degree* various factors influence the ITC within this local high school, while the Chi-square test was used to compare what was expected to what was observed for some variables.

RQs 1-5: Multiple regression. Teacher Disposition, Instructional Support, Availability of Technology, Teacher Collaboration, and Access and Use of Computers addressed in Research Questions 1-5 were tested with a multiple regression analysis to determine which factors were predictors of teacher Degree of ITC. After factor scores were calculated for the responses to the survey items related to these research questions, the values were used in a multiple regression equation to determine if the implementation of technology can be predicted by known variables. A multiple regression equation articulates a linear relationship between a response variable and two or more predictor variables (Triola, 2012). Items that could not be included in the multiple regression analysis were analyzed using Chi-square or descriptive analysis.

RQs 6-8: Chi-square Goodness of Fit. Because Research Questions 6-8, level of education, number of years of teaching experience, and participation in Georgia Technology Initiatives, are nominal data, the relationship between the independent and dependent variables were assessed with a nonparametric analysis, the Chi-Square test. In a Chi-square goodness-of-fit test, the hypotheses are tested to identify if observed frequencies conform to claimed distributions (Triola, 2012). Because the data collected in the items related to Research Questions 6-8 were categorical data, multiple regression could not be used; however, Chi-square goodness-of-fit was used to compare categorical data with theoretical distribution.

Table 6 provides a description of the nature of the scale and the statistical analysis type for each variable in this study.

Table 6

Research Variables by Nature of the Scale & Appropriate Statistical Analysis

	Variables by Nature of the Scale	Statistical Analysis
RQ	Interval or Continuous	Parametric/Multiple Regression
1-8	Factor 5: Degree of ITC*	X
1	Factor 1: Teacher Disposition toward ITC	X
2	Factor 2: Instructional Support for ITC	X
3	Factor 3: Availability of Technology at School	X
4	Factor 4: Teacher Collaboration Regarding ITC	X
5	Factor 6: Access and Use of Technology at Home for ITC	X
	Nominal/Categorical/Discrete	Nonparametric/Chi-Square
6	Teacher level of education	X
7	Number of years of teaching experience	X
8	Participation in the Georgia technology initiatives	X

Variables

These multiple independent variables included Teacher Disposition toward ITC, Instructional Support for ITC, Availability of Technology for ITC, Teacher Collaboration regarding ITC, Access and Use of Computers at Home for ITC, teacher's level of education, number of years of teaching experience, and teacher participation in the Georgia Technology Initiatives. The following is a description of each of the variables, a review of the construct it measures, and specifics about the factor relevant to the analysis in this study.

Teacher Disposition toward ITC. Questions (Items 21-26) on the survey related to teacher attitude, confidence, and efforts toward integrating were organized under Factor 1, Teacher Disposition Toward ITC. An Agree/Disagree Scale was used for Questions 21 through 26, where the number one on the scale represented Strongly Disagree and the number six on the scale represented Strongly Agree. Items 27-28 addressed encouragement and communication related to the instructional leader in regard to the integration of technology and were also included with Factor 1 since teacher attitude and confidence are affected by administrative support. The same agreement scale was used for Items 27 and 28 that was used for Question 21 through Question 26.

Instructional Support for ITC. Survey questions (Items 20A-20F) addressing assistance with the implementation of technology in the classroom were categorized under Factor 2, *Instructional Support for ITC.* Question 20 looked at instructional support for implementing technology into the classroom both at a school level and district level. Participants are given a specific resource and they must answer *Yes* or *No* for support and rank the frequency of support. On the Frequency of Support Scale, one stands for *Never* and six stands for *Several Times a Day*.

Availability of technology for ITC. Factor 3, *Availability of Technology for ITC,* related to the availability of technology and onsite support. The questions (Items 9-11) asking about accessibility of computers and Internet access were specifically addressing the availability at school. Participants were first asked whether they agree or not with the option of a simple *Yes* or *No* as the answer, in addition to an Importance/Usefulness Scale

where zero represents *I did not participate in this initiative* and six represents *Essential* on the Importance/Usefulness Scale.

Teacher Collaboration regarding ITC. Questions (Items 12-14) regarding Teacher Collaboration in relation to technology use in the classroom were considered Factor 4, *Teacher Collaboration Regarding ITC.* Like Items 9-11, respondents were given the option of a *Yes* or *No* as the answer, in addition to an Importance/Usefulness Scale where zero represented *I did not participate in this initiative* and six represented *Essential* on the Importance/Usefulness Scale.

Degree of ITC. Factor 5, *Degree of ITC,* encompasses questions (Items 31A, 31B, & 32) regarding technology implementation in the classroom, frequency of use, and technology training related to the integration of technology. Questions 31A and 31B related to degree of implementation of technology in the classroom (ITC) the answer choices for these survey questions were a list of statements that the participant used to best describe themselves. This factor was the dependent variable of the study. The amount of technology training was addressed in Question 32. The answer options for this question were in clock hours of technology training received over the past 5 years.

Access and Use of Computers at Home for ITC. Variables such as availability and use of computers at home for school purposes were organized as Factor 6, *Access and Use of Computers at Home for ITC.* These questions (Items 16 & 18) contained the Importance/Usefulness Scale where zero represents *I did not participate in this initiative*

and six represents *Essential* on the Importance/Usefulness Scale, as well as the option of *Yes* or *No* to agree with the statement.

Teacher's level of education. One question (Item 3) addressed the teacher's level of education by degree type. Teachers were given the option of *Bachelors, Masters, Specialists,* and *Doctorate*. This nominal data were analyzed using Chi-square analysis.

Number of years of teaching experience. On the survey instrument, the participant's number of years of teacher experience were identified in Question 4 (Item 4). Chi-square analysis was used in analyzing this survey data.

Georgia Technology Initiatives. Questions 17 and 19 were specifically related to student achievement and growth tracking in the state of Georgia. These questions determined the knowledge of and frequency of use of Georgia Technology Initiatives in regard to Point and Infinite Campus. Participants were first asked whether they agree with the option of a simple *Yes* or *No* as the answer, in addition to an Importance/Usefulness Scale where zero represents *I did not participate in this initiative* and six represents *Essential* on the Importance/Usefulness Scale.

Additional information or remarks. Item 33 asked the participant how technology should be used to improve teaching, learning, and scholarship. The final question, Item 34, asked for comments regarding computers and technology in his or her teaching experience. Although these items were included in the survey to maintain the integrity of the existing instrument, these open-ended questions were not analyzed in this quantitative study.

Assumptions, Limitations, Scope, and Delimitations

Assumptions

The participants' perceptions were accurately represented by the results of the survey. The terminology in the survey related to technology use and initiatives was easily understood by participating teachers. Teachers were not hesitant to participate in the survey because their responses and identity are confidential and anonymous.

Limitations

One limitation pertaining to this study was the use of census sampling. However, the choice of only using the teachers from within a local high school as the sample was based on the idea that the findings provided insight into the factors influencing degree of ITC at this location. Thus, my project study will hopefully increase the integration of technology within this school and improve compliance with state technology standards. Therefore, even though census sampling reduced the overarching generalizability of the study, it meets the criteria for solid research practice in this project study.

Scope

The variables under study were the factors influencing Degree of ITC. These multiple independent variables include Teacher Disposition toward ITC, Instructional Support for ITC, Availability of Technology for ITC, Teacher Collaboration regarding ITC, Access and Use of Computers at Home for ITC, teacher's level of education, number of years of teaching experience, and teacher participation in the Georgia

Technology Initiatives. The effects of these variables on Degree of ITC were quantified by the survey instrument in this study.

Delimitations

The boundary of this project was the large suburban high school under study. Delimitations included the confined teacher population at the school under study as well.

Protection of Participants' Rights

Measures were taken to protect the participants against any unethical actions during the study. The rules for good research practice include protecting the identity of the participants involved in the study. The identity of the participants willing to submit their responses to the survey were kept anonymous which protect their rights. Data were submitted electronically through a third party website allowing all data sets to be deidentified. Moreover, as the researcher, I did not have any authority over the potential participants in the study; I am a colleague only. There is no ethical conflict presented as I had no ability to pressure potential participants in their decision to participate or not. Teachers simply had the option to choose to follow the link from the email containing the invitation to participate or not and will not have to follow the link to the survey instrument if they choose not to do so. The appropriate IRB guidelines for research were followed at all times during the study to protect the rights of individuals and kept them free of harm.

Results

On November 7, 2016, the Principal's Permission Letter (Appendix B) was emailed to the principal at a large suburban high school outside a Southeastern metropolitan area requesting his assistance in surveying teachers that instruct Grades 9-12 at the school. Later on the same day, the principal sent out the Invitation to Participate email (Appendix C) to the 109 teachers in the school. The Invitation to Participate contained the SurveyMonkey™ link to the survey, *Technology and Professional Development Survey of Georgia High School Teachers.* By the end of November 7, 50 responses were received from teachers. After 2 weeks had passed, 84 responses were collected. However, because the ideal number of participants was 86, the principal sent out the Reminder Email (Appendix G) as requested. Within the final 2 weeks of data collection following the reminder, three additional responses were received; therefore, a total of 87 responses were received by the desired deadline set by the research committee.

Description of Data

The 87 responses received during the 4-week collection period represented 79.82% of the population. These responses represented the opinions and thoughts of teachers from the same local high school. The survey was designed so that no questions could be skipped by respondents; however, during the data collection process nine teachers exited out of the survey early; therefore, only 78 were complete for comparative analysis (n = 78, N = 109). Table 7 contains the number and percent of respondents completing the survey by gender.

Table 7

Number and Percentage of Teachers Completing the Survey by Gender

Gender	*N*	%
Female	55	70.51
Male	23	29.49
Total	78	100.00

A majority of the participants that responded to this survey were female, held a Master's degree, taught either 10th or 11th grade, and taught in a field of teaching assignment represented by *Other*. Data in Table 8 show the number and percentage of teachers by level of education and grade level taught, as well as the main teaching assignment at this school—that is, the field that represents most of the classes taught by the teacher.

Table 8

Number and Percentage of Teachers Completing the Survey by Educational Degree, Grade Levels Taught, and Teaching Assignment

Educational Degree	*N*	%
Bachelors	19	24.36
Masters	34	43.59
Specialists	19	24.36
Doctorate	6	7.69
Total	78	100.00
Grade	***N***	**%**
8	0	0.00
9	39	21.31
10	51	27.87
11	49	26.78
12	44	24.04
Teaching Assignment	***n***	**%**
English or Language Arts	14	17.95
Music and/or Art	3	3.85
Vocational	3	3.85
Math	10	12.82
Science	14	17.95
Social Studies	12	15.38
Other	22	28.20
Total	78	100.00

Dependent Variable, Degree of ITC

The dependent variable was represented in Factor 5, Degree of ITC. Items 31A, 31B, and 32 of the survey represent the Degree of ITC. These survey items address the use of technology in the classroom. Table 9 displays the frequency, mean, and percent of teacher responses to these items.

Table 9

Mean Item Responses to Degree of Implementation in the Classroom

Items		*n*	*M*	*SD*
31A	Frequency of Technology Use in Classroom	78	4.23[a]	1.299
31B	Level of Technology Use in Classroom	78	3.73[b]	.863
32	Number of Hours of Technology Integration Training	78	4.03[c]	3.117

[a]6-point scale (1 = low, 6 = high);
[b]5-point scale (1 = low, 5 = high);
[c]15-point scale (1 = low, 15 = high)

Item 31A was based on a 6-point Likert scale where the number 1 implies *Never* (low) and the number 6 implies *Several times a day* (high). The average frequency of technology use in the classroom was 4.23 indicating that respondents implement technology into the classroom *several times a week*. Thirty-two percent of participants (*n* = 25) reported implementing technology in the classroom several times a week. Participants were able to choose from a 5-point Likert scale for Item 31B and a 15-point scale in Item 32. In the 5-point scale, the number 1 represents *No use of technology* (low) while the number 5 represents *Almost always incorporating national, state, and local*

technology standards(high). In Item 32 the number 1 depicts 0 to 9 hours of technology training and the number 15 depicts 200 plus hours of technology training (high). The frequency of technology use in the classroom by respondents can be seen in Table 10.

Table 10

Frequency of Responses to Frequency of Technology use in the Classroom

Frequency Scale	*f*	%
Never	0	0.00
Several Times a Semester	9	11.54
Several Times a Month	13	16.67
Several Times a Week	25	32.05
Daily	13	16.67
Several Times a Day	18	23.08
Total	78	100.00

In regard to the level of technology use in the classroom, teachers responded doing so slightly below Level 4, one that entails the integration of technology in the delivery of the subject matter as well as student use of Internet and software applications, but above Level 3, which indicates occasional use of technology in lessons. The Degree of ITC reported by teachers according to the answers to Item 31B can be seen in Table 11.

Table 11

Frequency and Percentage of Responses to Level of Technology use in the Classroom

Description of Teacher at 5 Levels of ITC	*f*	%
1. Does not use Technology, personally or professionally.	1	1.28
2. Uses Technology at home or school for preparation and e-mail.	7	8.97
3. Uses Technology in classroom for preparation, email, and basic software; is aware of technology standards.	15	19.23
4. Integrates Technology into subject matter, depends on e-mail for communication, uses computer management tools, relies on software application, expects students to use technology for class requirements, and incorporates technology standards into lessons.	44	56.41
5. Technology is integral component of teaching, uses multiple components of computer technology in instruction, proficient in computer filing and maintenance, students are immersed in technology classes, and always incorporates technology standards into lessons.	11	14.10

Based on the data collected, only one teacher stated that he or she did not use technology at all. However, 22 teachers (28%) reported the implementation of technology at Level 2 or 3, indicating the use of technology for the purpose of lesson preparation, communication, and basic software application. In addition, 55 teachers (71%) indicated the use of technology at a level that portrayed dependence on technology for teaching and learning. These teachers also frequently incorporate national, state, and local technology standards into lessons. Table 12 displays the number of hours of training received in technology as indicated by the participants.

Table 12

Frequency and Percentage of Number of Hours of Technology Training Reported

Level	Number of Hours	*f*	%
1	0-9	18	23.08
2	10-19	16	20.51
3	20-29	11	14.10
4	30-39	5	6.41
5	40-49	6	7.69
6	50-59	4	5.13
7	60-69	8	10.26
8	70-79	2	2.56
9	80-89	3	3.85
10	90-100	3	3.85
11	100-124	0	0.00
12	125-149	0	0.00
13	150-174	1	1.28
14	175-199	0	0.00
15	200+	1	1.28

The average number of hours of technology training was 4.03 as reported by respondents. This mean represents a range of 40-49 clock hours of technology training received over the past 5 years in relation to the use of technology as a tool to support or enhance teaching and learning in the classroom. It is important to note that 34 (44%) of the teachers had less than 20 hours of technology training over a 5 year period. Also, only 2 (3%) teachers had over 100 hours of technology training. A total of 20 (26%) respondents had between 50-100 hours of training, while 56 (72%) had less than 50 hours of technology training.

Multiple Regression

In this project study, multiple regression was performed to formulate an equation that represents the relationship between the dependent variables and the independent variable. In the equation, the Degree of ITC (Factor 5) was the dependent variable. The independent variables were Teacher Disposition (Factor 1), Instructional Support (Factor 2), Availability of Technology (Factor 3), Teacher Collaboration (Factor 4), and Access and Use of Computers/Internet at Home (Factor 6). Multiple regression analysis, the regression equation that predicts Degree of ITC (Y) was as follows:

$$Y = .939 + .279X_1 + .249X_2 + -.046X_3 + -.097X_4 + -.067X_5$$

X_1 = Teacher Disposition Toward ITC (Factor 1)

X_2 = Instructional Support for ITC (Factor 2)

X_3 = Availability of Technology for ITC (Factor 3)

X_4 = Teacher Collaboration Regarding ITC (Factor 4)

X_5 = Access & Use of Computer at Home for ITC (Factor 6)

Table 13 details the standardized regression coefficients (B), the unstandardized regression coefficients (*B*), and the statistical significance of each factor.

Table 13

Standardized Multiple Regression Coefficients Matrix

Model	*B*	*SE*	*β*	*t*	*Sig.*
Constant	.939	4.340		.216	.829
Factor 1: Teacher Disposition	.279	.087	.402	3.208	.002
Factor 2: Instructional Support	.249	.096	.283	2.591	.012
Factor 3: Availability of Technology	-.046	.286	-.020	-.161	.872
Factor 4: Teacher Collaboration	-.097	.140	-.077	-.697	.488
Factor 6: Access and Use of Computer/Internet at Home	-.067	.239	-.029	-.283	.778

To verify that the assumptions for multiple regression were met by the data, the variables were tested before the final analysis took place. The independent variables were loaded in a correlation matrix to ensure that there were not high correlations between any of the independent variables. For this analysis, only 78 responses were able to be analyzed because nine participants exited the survey without answering the survey items included in the analysis. Therefore, the regression equation is based on 78 data sets. Table 14 indicates the correlation coefficients for the independent variables included in the multiple regression.

Table 14

Pearson Correlation Coefficients for Factors Included in Regression

Factor	1	2	3	4	5	6
1	1.000	.366**	.558**	.255*	.473**	.082
2	.366**	1.000	.215	.249*	.403**	.165
3	.558**	.215	1.000	.399**	.231*	.108
4	.255*	.249*	.399**	1.000	.086	.095
5	.473**	.403**	.231*	.086	1.000	.042
6	.082	.165	.108	.095	.042	1.000

*$p \leq 0.05$ level (2-tailed)
**$p \leq 0.01$ level (2-tailed)

Null Hypothesis 1

Teacher Disposition Toward Technology (Factor 1) does not relate to Degree of ITC. The sum of each respondent's score for Items 21-28 on the survey instrument was used to calculate the factor score for Teacher Disposition Toward Technology. The other factors and this value were then entered into the multiple regression equation at the same time. According to the correlation matrix and the multiple regression analysis, Teacher Disposition Toward Technology had a .473 correlation with Degree of ITC, $p = .002$, and an unsaturated beta coefficient (B) of .279, each statistically significant at $p < 0.01$. Table 15 reports the mean responses to items in Factor 1.

Table 15

Mean Item Responses to Teacher Disposition Toward Technology

Items 21-28	*n*	*M*[a]	*SD*
21. Using technology enhances student learning.	78	5.06	.852
22. I have many uses for technology in my classroom.	78	4.63	1.100
23. I feel confident in my ability to use technology.	78	4.68	.981
24. I expect my technology activities to be successful.	78	4.85	.681
25. I put a lot of effort into implementing technology activities.	78	4.42	1.194
26. I keep working even when there are problems.	78	4.90	.871
27. My instructional leader encourages me to integrate technology.	78	4.94	1.017
28. My instructional leader talks with me frequently about ITC.	78	4.16	1.091

[a]6-point scale (1 = low, 6 = high)

Null Hypothesis 2

Instructional Support for ITC (Factor 2) does not relate to Degree of ITC. The sum of items 20A-20F on the survey instrument represent Factor 2. These items collected data related to the frequency with which teachers received instructional support with technology integration. Teachers also indicated the source of support, i.e. from school principal, colleagues, district personnel, etc. Instructional Support for ITC was also a predicator of Degree of ITC as $B = .249$, $r = .403$, and $p = .012$. Therefore, this null

hypothesis was rejected. Table 16 displays the sources of instructional support by the number and percentage of teachers who received the support.

Table 16

Number, Frequency, and Percentage of Reported Instructional Support Sources

Sources of Instructional Support	*n*	Yes	%	No	%
Teachers at the School Site	78	73	92.42	6	7.59
Technology Coordinator/Aide at School Site	78	57	72.15	22	27.85
Online Resource	78	57	72.15	22	27.85
District Mentor or Technology Resource Person	78	49	62.03	30	37.97
Teachers at Other School Sites	78	43	54.43	36	45.57
Principal at the School Site	78	40	50.63	39	49.37

A majority of the respondents, 92.42%, reported that they received instructional support from teachers at their school site. Additionally, 72.15% of the teachers received support from the technology coordinator at their school site and online resources. The source of instructional support that ranked the lowest was principal support at 50.63%. Participants were also given the opportunity to share additional sources of instructional support in Item 20G of the survey instrument. Of the teachers that responded, three (27%, $n = 11$) reported that they received support from Google. Other responses included USA TestPrep, Griffin RESA, the help desk, a department chair, and a family member.

Null Hypothesis 3

Availability of Technology for ITC (Factor 3) does not relate to Degree of ITC. Participants were asked to report availability and importance of computers and Internet services for classroom use in survey Items 9, 10, and 11. At this point in the survey, five teachers had The sum of these items were used in the Factor 3 score and entered in the regression equation. Factor 3 was not found to contribute to the variance of Degree of ITC at $p < 1$ with a $B = -.046$, and an $r = .231$. Therefore, the null hypothesis stating that the Availability of Technology for ITC was not related to Degree of ITC, was accepted. Computer and technology availability responses are shown in Table 17.

Table 17

Frequency and Percentage of the Availability of Technology

Computers & Technology Available	*n*	Yes	%	No	%
At Teacher's School	78	78	100.00	0	0.00
For Classroom Use	78	71	91.03	7	8.97
In Teacher's Classroom	78	37	47.44	41	52.56

Null Hypothesis 4

Teacher Collaboration Regarding ITC (Factor 4) does not relate to Degree of ITC. Items 12, 13, and 14 on the Technology and Professional Development Survey of Georgia High School Teachers asked respondents to indicate their participation in collaborative activities with other teachers. Participants were also asked to rate the importance of these activities as it relates to their roles and responsibilities of

implementing technology in the classroom. The sum of the responses to the items related to Factor 4 was entered into the regression equation. Teacher Collaboration Regarding ITC was not found to be a predictor of Degree of ITC with B = -.097, r = .086, and $p < 1$. The null hypothesis was accepted. In Table 18, I report the frequency and percentage of sources of Teacher Collaboration regarding ITC.

Table 18

Frequency and Percentage of Teacher Collaboration Regarding ITC

Sources of ITC Collaboration	*n*	Yes	%	No	%
Other Teachers	78	63	80.77	15	19.23
Mentoring, Peer Observation, Coaching	78	28	35.90	50	64.10
Teacher Networking from External Agency or Internet	78	24	30.77	54	69.23

Null Hypothesis 5

Access and Use of Computers/Internet at Home for ITC (Factor 6) does not relate to Degree of ITC. Items 16 and 18 on the survey referred to access and use of a personal home computer for school-related purposes. This factor was not included in the regression equation and the null hypothesis was accept because it was not found to be statistically significant as a predictor of ITC (B = -.067, r = .042, and $p < 1$). The frequency and percentage of Factor 6 item responses are detailed in Table 19.

Table 19

Frequency and Percentage of Access and use of Computers at Home for ITC

Access & Use of Computer for ITC	*n*	Yes	%	No	%
Access to Computer at Home	78	52	66.67	26	33.33
Use of Computer at Home for ITC	78	72	92.31	6	7.69

Specific uses of home computers by the respondents was gathered by Item 29 on the survey instrument. Teachers were given five choices to choose among to describe the use of their personal home computer for school related purposes. They were also given an *Other* category to share additional uses not listed in one of the five choices. Table 20 shows the responses of participants based on survey instrument categories for Item 29.

Table 20

School-Related Purposes for which Respondents Used Computers at Home

School Related Purpose	*f*	%
To Locate Online Resources	69	87.34
To Communicate By E-Mail	65	82.28
To Prepare Quizzes, Tests, Or Class Materials	56	70.89
To E-Mail Handouts Or Materials	51	64.56
Other	13	16.46
I Do Not Use A Computer At Home	4	5.06

Of the 13 responses to the *Other* category, 12 teachers left comments related to the use of computers at home not included on Item 29. Two of these comments referred to the input

of data and information to Individualized Education Plans (IEPs). Another comment by two other respondents referred to the use of the app Remind, which is used for communication with students and parents. Additional comments pertained to submitting to Dropbox, completing online required paperwork, and participating in online groups for subject related reasons.

Chi-Square Test of Independence

Multiple regression was used to measure the relationships among variables with scaled data. The Chi-square test was used to examine relationships between nominal data. The expected frequencies generated by the null hypotheses are compared to the observed frequencies in a Chi-square analysis.

Null Hypothesis 6

A teacher's level of education does not relate to Degree of ITC. Chi-square analysis was used to compare teachers' level of education (Item 3) and their Degree of ITC (Factor 5). This comparison generated a Pearson Chi-Square value of 44. 945 and a significance level of .712 which was not significant at the $p = .05$ level. The analysis indicated that there was not a strong association between Level of Education and Degree of ITC; therefore, the null hypothesis was not rejected. Data for Level of Education was organized by three categories: Bachelors Degree, Masters Degree, and Above a Masters Degree. Degree of ITC was separated into three categories Low ($5 \leq$ Sum of Factor $5 \leq 10$), Medium ($11 \leq$ Sum of Factor $5 \leq 16$), High ($17 \leq$ Sum of Factor $5 \leq 23$). The cross tabulation of this Chi-square can be seen in Table 21.

Table 21

Chi-Square Cross Tabulation of Teacher's Education Level and Degree of ITC

	Degree of ITC						
	Low		Med		High		
Degree	Obs.	Exp.	Obs.	Exp.	Obs.	Exp.	Total
Bachelors	7	7.9	11	9.2	2	2.8	20
Masters	12	13.1	15	15.2	6	4.65	33
Above Masters	12	9.9	10	11.5	3	3.5	25
Total	31		36		11		78

Large differences between observed and expected frequencies contribute the most to the value of x^2. The cross tabulation indicates that more teachers with Bachelors Degrees implement technology at a Medium level (n = 11) than expected (n = 9.2). In addition, respondents with Masters Degrees also implement technology at a higher degree (n = 6) than was expected (n = 4.65). However, fewer teachers with degrees Above a Masters were expected to implement technology at a Low level (n = 9.9) than was actually reported (n = 12). The null hypothesis was not rejected.

Null Hypothesis 7

Number of years of teaching experience does not relate to Degree of ITC. In this Chi-square analysis, data on respondents' number of years of teaching experience (Item 4) and their Degree of ITC (Factor 5) were compared. The number of years of experience

was separated into three categories: Less than 10 years of experience, between 10 and 20 years of experience, and more than 20 years of experience. These levels were included in the Chi-square and compared with Low, Medium, and High Degrees of ITC. A Pearson Chi-Square value of 429.628 was generated in the comparison as well as a significance of level of .834. The results of this analysis indicated that there is not a strong association between number of years of teaching experience and Degree of ITC. The null hypothesis was not rejected. Table 22 indicates the cross tabulation of this Chi-square analysis.

Table 22

Chi-Square Cross Tabulation of Teacher's Education Level and Degree of ITC

	Degree of ITC						
	Low		Med		High		
Experience	Obs.	Exp.	Obs.	Exp.	Obs.	Exp.	Total
<10 years	6	8.7	12	10.2	4	3.1	22
10-20 years	15	14.3	15	16.6	6	5.1	36
>20 years	10	7.9	9	9.2	1	2.8	20
Total	31		36		11		78

These data indicated that more teachers with beyond 20 years of experience implemented technology at a Low level (n = 10) than expected (n = 7.9) and these same teachers implemented technology less (n = 1) than expected at a High level (n = 2.8). Those respondents with less than 10 years of teaching experience implemented technology less

(n = 6) than expected at a Lower level (n = 8.7) while implementing technology more (n = 4) than expected at a High level (n = 3.1).

Null Hypothesis 8

Teacher participation in the Georgia Technology Initiatives does not relate to Degree of ITC. Items 17A and 17B on the survey instrument were related to the participation and importance of Georgia Technology Initiatives. The analysis of the data for these items generated a Pearson Chi-Square value of 20.875 and a p value of .962. It was concluded that there was not a strong association between importance/usefulness of Georgia Technology Initiatives as indicated by teachers and the implementation of technology at a higher level. Because a majority of the respondents participated in the initiatives, Table 23 indicates how the Degree of ITC relates to the importance/usefulness of Georgia Technology Initiatives as indicated by teachers where Low, Medium, and High relate to the importance/usefulness of technology. The greatest difference between the observed (n = 12) and expected (n = 10.7) was seen between those teachers that implemented technology at a Low level and ranked the importance of the Georgia Technology Initiatives at a Medium level.

Table 23

Chi-Square Cross Tabulation of Participation in Georgia Technology Initiatives and Degree of ITC

	Degree of ITC						
	Low		Med		High		
Importance	Obs.	Exp.	Obs.	Exp.	Obs.	Exp.	Total
Low	19	19.8	24	23.1	7	7.1	50
Medium	12	10.7	11	12.5	4	3.8	27
High	0	.4	1	.5	0	.1	1
Total	31		36		11		78

Summary

The purpose of this quantitative project study was to identify the relationships among factors influencing degree of implementation of technology in the local classroom. The teachers in a large suburban high school outside a Southeastern metropolitan area were the population for my study. A 34-question modified survey using the Likert scale served as the data collection tool. The survey was distributed to all the certified teachers within the local high school in the study. The responses to the items on the survey instrument were used in this study to address the variables related to the framework of this project study and the variables found in the literature review in regard to the ITC. For instance, Sincar (2013) noted that administrators integrating technology into their classrooms faced challenges such as technology training, teacher resistance,

lack of or inappropriate resources, equity, and bureaucracy. Other constructs found in the literature review such as teacher beliefs and attitudes were also addressed by the research questions of this project study.

The guiding question, what factors influence degree of implementation of technology in the classroom, drove the methodology of this project study. As the research questions were developed, the intentions were to guide this study project toward improving compliance with technology standards. The collection of the perceptions of the teachers using the modified survey instrument produced data for interpretation of the problem regarding incompliance with technology standards. The analysis of the data revealed findings about the factors influencing Degree of ITC. Only those factors that had statistically significant regression coefficients, $p \leq .05$, were relevant to the prediction of Degree of ITC, the dependent variable.

It was found that Teacher Disposition Toward ITC (Factor 1) and Instructional Support for ITC (Factor 2) relate to Degree of ITC. Teacher Disposition Toward Technology had a .473 correlation with Degree of ITC, $p = .002$, and an unsaturated beta coefficient (*B)* of .279, each statistically significant at $p < 0.01$ according to the correlation matrix and the multiple regression analysis. Teacher Disposition was included as a predictor in the regression equation for Degree of ITC; therefore, the null hypothesis related to Teacher Disposition was rejected. The relationship between Instructional Support for ITC and Degree of ITC was proven significant as $B = .249$, $r = .403$, and $p = .012$. Because of this statistical significance the null hypothesis in regard to Instructional

Support was rejected. The other 6 null hypotheses related to Availability of Technology for ITC, Teacher Collaboration Regarding ITC, Access and Use of Computers/Internet at Home for ITC, Teacher's Level of Education, Number of Years of Teaching Experience, Teacher Participation in the Georgia Technology Initiatives were accepted because they were not found to be statistically significant in regard to Degree of ITC.

Findings from the analysis answered the study's research questions and helped to achieve the goal of the study, which was to determine the factors that influence the degree of implementation of technology in the classroom. It was found that Teacher Disposition toward Degree of ITC (RQ 1) and Instructional Support for ITC (RQ 2) relate to Degree of ITC. Based on statistical analysis, Availability of Technology for ITC (RQ 3), Teacher Collaboration regarding ITC (RQ 4), Access and Use of Computers at Home for ITC (RQ 5), teacher's level of education (RQ 6), number of years of teaching experience (RQ 7), and teacher participation in the Georgia Technology Initiatives (RQ 8) do not relate to Degree of ITC. These findings have several significant implications towards increasing the integration of technology with the purpose of improving compliance with local, state, and federal technology standards.

Section 3 gives an overview of the project's description and goals specifically designed to address Teacher Disposition toward Degree of ITC and Instructional Support for ITC. A summary of the review of literature in Section 3 reveals the rationale behind the project's focus of developing professional learning communities. The training and collaboration takes place during three different professional development meetings.

Reflections and conclusions are found in Section 4. Project strengths, limitations, and recommendations for remediation of limitations are also pointed out in the final section. Section 4 allowed for self-analysis in regard to my growth as a scholar, practitioner, and project developer. The section concludes with the project's potential influence on social change.

Section 3: The Project

The purpose of this professional development program is to foster a culture of training and collaboration through the development of the professional learning communities (PLC) where the members can share their experiences and expertise for increasing the use of technology in the classroom. The local gap in data indicated incompliance with state technology standard due to the lack of implementation of technology; therefore, the goal of the project is to provide teacher training and support through PLC that address learning, instructional, and curricular needs for increasing the use of technology in the classroom.

One objective of this project is to develop a collaborative environment where the members of the PLC may focus on school improvement and meeting the needs of the learners as well as current instructional needs of the members of the PLC. A second objective is to promote the integration of technology in the classroom for improving learning through the research of best practices, planning, and implementation of technology rich practices. To ensure field experiences and student teaching components that support the ability of teacher candidates to be successful in the classroom is the third objective.

In order to plan a project to promote compliance with technology standards, I searched for information on increasing the use of technology among classroom teachers. I used the electronic database, Education Search Complete, through the Walden University library, and Google Scholar to find current peer reviewed articles related to Teacher

Disposition toward ITC and Instructional Support for ITC. In the search of literature for the direction of my project study, I used the following key phrases: *implementing technology, improving teacher disposition toward technology, increasing instructional support, effective professional development, teacher technology training, leadership support, collaboration, school improvement, district technology support, school technology support, online resources for teachers, instructional technology support.*

Based on the review of literature, I outline a professional development plan in Section 3 to foster the development, training, and collaboration of PLC. The outcomes of this project are intended to improve the local problem are the development of effective PLC and the confident implementation of technology-rich lesson plans by teachers. Current literature suggested such practices as professional development, increased support, preservice teacher training, and professional learning communities for increasing the use of technology in the classroom. Support for the use of these practices is found in Section 3. In developing the project, *Increasing the Use of Technology through Professional Learning Communities*, I incorporated all of these practices as seen in the following section. The components of the development of PLC, a narrative description of the three professional development meetings, and the evaluation of the training are also included in Section 3.

Description and Goals

The goal of the project is to provide teacher training and support through PLC that address learning, instructional, and curricular needs for increasing the use of technology

in the classroom. The use of technology for learning and teaching has become a prevalent means for meeting the demands of accountability systems in education. This project was designed to address the factors identified through research to influence Degree of ITC. In my study of a large suburban high school outside a Southeastern metropolitan area, these factors were found to be Teacher Disposition toward ITC and Instructional Support for ITC. Literature suggested professional development, teacher support, preservice teacher training, and professional learning communities as means to increase the use of technology in the classroom. A project study focused on these aspects could promote academic and social change while increasing compliance with local, state, and federal technology standards at this large suburban high school outside a Southeastern metropolitan area. The survey data collected provided a measure of the relationships among the factors influencing Degree of ITC. The findings of my project study indicated a relationship between Degree of ITC and both Teacher Disposition and Instructional Support.

Based on the supporting data of this research, the project chosen was the development of PLC. The purpose of this professional development program is to foster a culture of training and collaboration through the development of the PLC where the members can share their experiences and expertise for increasing the use of technology in the classroom. The development of a school-university partnership among preservice teachers, the teachers at the local high school in this study, and university faculty was intended to foster training and collaboration among the participants. The purpose of the

PLC was to catalyze a change in teaching and learning where technology is implemented more often in the classroom. An increase in the integration of technology can improve compliance with technology standards while addressing Teacher Disposition and Instructional Support.

Rationale

Webster and Son (2015) reported that personality factors, teaching beliefs, beliefs about technology, previous learning experiences, and the willingness of the teacher to lifelong learning are predictors of degree of technology use in the classroom. Klaeijsen, Vermeulen, and Martens (2017) concluded that intrinsic motivation among teachers in relation to innovative behavior is affected by both school climate and supervisor support. Another similar study indicated that to increase teachers' motivation to improve the use of information and communication technology there must be more teacher support, opportunities, and encouragement (Uluyol & Şahin, 2016). The analysis of the survey data from Domingo and Gargante's (2016) reported that the teachers' perception of how mobile technology impacts learning is related to the choice of applications in the classroom. The results of these studies along with my findings indicate a need to focus on Teacher Disposition and Instructional Support to improve the use of technology.

I designed this project to improve teacher disposition and increase instructional support for teachers at the large suburban high school outside a Southeastern metropolitan area in this study. The development of a PLC among preservice teachers, the teachers in this study, and university faculty can increase the use of technology in a

meaningful and effective manner. The training and collaboration for developing the PLC takes place through professional development. The 3-day professional development plan can be seen in Appendix A1. The professional development plan supports the needs of the teachers and students at the local high school communicated by the survey data. Continued support is fostered in the ongoing PLC collaboration separate from the three training meetings. This collaboration can look like face-to-face meetings, online group chats, or the sharing of electronic documents.

Review of the Literature

In reviewing literature, I selected journal articles that were both peer reviewed and published within the last 5 years. From these sound academic journals, I was able to find clues to guide me to finding possible solutions for improving teacher disposition toward ITC and improving instructional support for ITC as well as address compliance with technology standards. I coded the articles by topics to identify possible directions for my project study. Topics that arose from my research were professional development, sources of instructional support, preservice teacher training, and professional learning communities.

Practices

Literature revealed several practices for improving teaching and learning through experiences that support and further the understanding of implementing technology in the classroom. The most common practice for meeting the needs of students in the 21st century is teacher professional development. Increased support is also one way to

develop teachers who understand how to use technology to improve the quality and effectiveness of education. Another practice for seamless integration of technology in the classroom by well-trained teachers is preservice teacher training. The development of a PLC is a great way to optimize collaboration among educators. The partnership between preservice teachers, practicing teachers, and university faculty provides opportunities to plan, design, and deploy the best strategies for utilizing classroom technology. Professional development, increased support, preservice teacher training, and professional learning communities were common practices seen in my research for improving the use of technology in the classroom.

Professional development. In my review of literature, professional development was one practice suggested as a way to clarify teachers' understanding of standards and improve the implementation of instructional practices aligned to the standards (Allen & Penuel, 2014). Professional development programs are designed with theories related to student and teacher learning in mind (Kennedy, 2016). Allen and Penuel (2014) advocate the view that teachers make decisions about the relevancy of professional development ideas and resources based on the alignment of what is being presented to district goals. Professional development is one option for improving degree of ITC through teacher collaboration and reflection. Kafyulilo, Fisser, and Voogt (2016) showed an increase in teacher technology integration knowledge and skills when teacher design teams created technology rich lesson plans during professional development. There are a variety of professional development strategies for addressing teacher needs. The purpose of Voogt,

Laferrière, Breuleux, Hickey, and McKenney studying the online collaboration "was uncovering issues teachers face when integrating new theories of learning into their teaching practice" (2015, p. 267). Voogt et el. (2015) observed that professional development promoting online networks that fosters discussions and community is one way for teachers to deal with teacher and student accountability pressures related to implementing new theories. Baran's (2014) data, grounded in constructivist and critical perspectives, indicated that there was a discrepancy between what was communicated about professional development and the actual practices in schools because of the staff needs, ineffective leadership, lack of motivation, the approach to the implementation of professional development, and the misconception of professional development.

Allen and Baran (2014) identified the barriers of teachers' professional development in relation to teacher education on mobile learning as teacher needs and motivation, intensity of work required to implement the strategies, the narrow approach of the professional development, the managerial style of implementation the professional development initiatives, and educational leadership. Whitworth and Chiu (2015) indicated the importance of the roles that school district leaders play in planning and implementing effective professional development. Although professional development can be one solution for addressing factors that influence degree of ITC, there are other effective practices as well. However, based upon the local school's needs and the literature, I chose a professional development plan for my project for developing a PLC

for the collaboration and training of preservice teachers, practicing teachers, and university faculty.

Increased support. The data in this study indicated a relationship between Instructional Support and Degree of ITC. The data were collected from survey items were related to means of teacher support for implementing technology such as other teachers, school leaders, administrators, technology coordinators, district mentors, or resource persons. Blannin (2015) indicated that more research is needed in the areas of personal barriers for teachers, external barriers, and student roles and expectations when addressing pedagogical changes to classroom learning. Research has indicated that teachers responded positively to being provided relevant and course-grained information when planning computer-supported collaborative learning scenarios (Rodríguez-Triana, Martínez-Monés, Asensio-Pérez, & Dimitriadis, 2015). Lo and Hew (2017) held the view that an increase in instructional technology support can promote these classroom changes like flipped classrooms. Leadership practices provide support for teachers when building knowledge and skill (Marsh & Farrell, 2014). Another solution for improving compliance with technology standards is through teacher support through instructional technology as well as district and school leaders.

Preservice teacher training. This research showed that Degree of ITC is influenced by Teacher Disposition. Therefore, the beliefs and attitudes of preservice teachers must be considered in addressing the need for increased technology use in the classroom. Kler (2014) stated, “The positive attitude of the teachers towards the

computers is very much affected by the experience of the teachers with the computers" (p. 255). Kler also indicated that the use of ICT in teacher training has benefited teachers by allowing them to become familiar with innovations thus students benefit because they are able to access much information in a more interesting manner. Almeida, Jameson, Riesen, and McDonnell (2016) illustrated that teacher beliefs can be altered through increased experiences and changes in the way skills are taught in computer training. Naraian and Surabian (2014) suggested that teacher education programs provide opportunities throughout the entire program for teacher candidates to learn how to use technology to meet the needs of their students as well as address the subject matter.

One action plan taken at the college level to improve technology integration in the classroom was the implementation of the technological pedagogical content knowledge (TPACK) framework in a teacher education program. Kuo (2015) reported that the use of TPACK in field experiences was considered beneficial by the participants in increasing the use of educational technology in teacher practices. Jo (2016) suggested that web-based activities had a positive effect on preservice teachers' dispositions and confidence in relation to using geospatial technology in the classroom. Howard, Chan, and Caputi's (2015) indicated that both time and subject areas are associated with teacher readiness to use technology in the classroom; however, teacher beliefs are only related to subject areas. Although it can be pointed out that there is not one solution for addressing all the factors that influence degree of ITC, these findings indicate the necessity of preservice teacher training. Therefore, it can be concluded that preservice teacher training in regard

to technology can have a positive effect on teacher disposition toward the implementation of technology in the classroom.

Professional learning communities. Finally, another practice that could positively influence teachers' belief and attitudes toward technology is the development of PLC where preservice teachers, practicing teachers, and university faculty form a collaborative partnership. I chose the genre of my project to be a professional development plan for training and collaboration through PLC because literature supports the idea of using these partnerships to improve the implementation of technology. Herro, Qian, and Jacques (2017) illustrated an increased use of technology in the classroom because of an intentional school-university partnership. Allowing teachers to collaborate with instructors from post-secondary schools could possibly improve compliance with local, state, and federal technology standards. McQuirter, Dortmans, Rath, Meeussen, and Boin (2016) observed an increase in the sharing of classroom practices using the iPad and the development of leadership skills among the teachers in their longitudinal case study of a long-term school-university partnership. In addition, the university instructors learned more about digital technology in the classroom and were able to share the new pedagogical approaches and resources with their preservice students (McQuirter et el., 2016).

The analysis of postquestionnaires from Herro et al. (2017) study indicated a shift in teacher practices after weekly visits from a faculty resident toward tech-rich curricula, student learning through collaborative technology use, and the integration of new digital

tools. This type of outreach by university faculty could be a solution to increasing the implementation of technology in the classroom. Nelson and Webb (2016) indicated that the school-university training model resulted in successful on-site coaching where teachers learned new instructional technology techniques. Winslow, Dickerson, Weaver, and Josey (2016) stated that the partnership between schools and universities can be an effective technology professional development if it is focused on mutual needs. The relationship between universities and the community promises to promote learning through service to society (Brewster, Pisani, Ramseyer, & Wise, 2016).

Summary

The research questions for my project study were intended to guide this study project toward improving compliance with state technology standards by increasing the implementation of technology in the classroom. The perceptions of the teachers were collected using the modified survey instrument that produced data for interpretation of the problem regarding incompliance with technology standards. The analysis of the quantitative data brought about findings in regard to the factors influencing Degree of ITC. Only those factors that had statistically significant regression coefficients, $p \leq .05$, were relevant to the prediction of Degree of ITC, the dependent variable. According to the analysis of the data, Teacher Disposition toward ITC (Factor1) and Instructional Support for ITC (Factor 2) account for 29.2% of variance in Degree of ITC. From these findings, I was able to target possible implications towards teacher disposition and instructional support for increasing the integration of technology with the purpose of

improving compliance with state technology standards. A review of literature revealed that professional development, increased support, preservice teacher training, and professional learning communities are possible solutions for increasing degree of ITC.

For my project, *Increasing the Use of Technology through Professional Learning Communities,* I designed a professional development plan for developing, training, and collaboration of professional learning communities. Participants are members of cooperating instituitions. Each professional learning community is comprised of a preservice teacher, practicing teacher, and university faculty. This partnership allows for collaboration among members that each bring a different expertise to the relationship for increasing the use of technology in the classroom. Training and collaboration take place in the three professional development meetings designed to take place over one semester of the school year. Communication and collaboration among the participants continues outside of these meetings to offer support throughout the semester.

Implementation

The goal of the project, *Increasing the Use of Technology through Professional Learning Communities,* is to provide teacher training and support through professional learning communities (PLC) that address learning, instructional, and curricular needs for increasing the use of technology in the classroom. Therefore, throughout this implementation narrative, the processes are shared in the present tense as if the reader were following instructions. From this vantage, the project description, as well as the

project deliverable (Appendix A), may serve as helpful tools for any reader seeking guidance on initiating PLCs for an educative purpose.

PLC Participants

Each PLC for this program consists of a preservice teacher, a practicing teacher, and a university faculty member. The members of the PLC are volunteers that share a common vision of improving teaching skills and the academic performance of students through the increased use of technology in the classroom. The number of PLC formed depends upon the number of teachers that volunteer to participate as well as the number of available university faculty.

Forming the PLC

Cooperating institutions. The formation of the PLC takes place prior to any professional development meetings or trainings. The idea is to unite volunteers from two or three cooperating institutions participating through the development of the PLC. The cooperating institutions are a local high school and one or two universities with a teacher education program that are also in geographical proximity to the local high school. Creating PLCs among participants in a designated region is a best practice to eliminate potential conflicts in meeting times relative to travel. In an ideal PLC, there are 15 to 20 preservice teachers, each paired with a practicing teacher at the local high school. It is possible that there will only be 2 to 5 university faculty members in the PLC associated with each school, as several preservice teachers will likely be under the supervision of the same university faculty member. To summarize, the cooperating institutions are ideally a

local high school that has faculty members that mentor or support preservice teachers and local universities with education programs that place preservice interns in the local high school.

PLC participants. *Preservice teachers* participating in the PLC are students in an education program at a local university with program requirements that are met through the participation in this professional development program. The *university faculty member* within the PLC is from the same university as the preservice student and serves as the student's mentor or professor. In some instances, the faculty member may have several students participating in the professional development program as the preservice teacher during the same semester. The *practicing teacher* is a certified educator currently under contract in a local school district within a reasonable distance from the university that the preservice teacher and faculty member are associated with for the sake of convenience. The partnership among the preservice teacher, practicing teacher, and university faculty is the driving force for improving teaching and learning through the use of technology.

Professional Development Meetings

Once the partnership is established, the members attend three professional development meetings throughout the semester. Each meeting is designed for eight hours of training and collaboration. The agenda for these meetings is found in Appendix A-1. The meetings are designed so the PLC may develop a coherent program organized around technology standards, improve student learning, and create a common vision of

good teaching. These outcomes are achieved through the collaboration among the members in developing goals, setting performance guidelines, and planning activities for implementing best-practices for the integration of technology in the classroom. Collaboration continues as the practicing teacher, preservice teacher, and university faculty work closely throughout the semester to increase the implementation of technology in the classroom.

Professional development: Meeting 1 (PD1). The first professional development meeting takes place before the beginning of the semester for the local school system and university. Training and collaboration is the main focus of the first meeting. At the beginning of the first meeting, participants are presented with the purpose of this project, goal statement, curriculum, and behavioral objectives in the form of a PowerPoint presentation. Evidence in current literature and research supporting the use of PLC to increase the use of technology is also provided in the PowerPoint presentation. This initial part of the meeting takes 1.5 hours. Next, the participants introduce themselves and share the story behind their current role in education. The participants are grouped with the other members of their PLC which includes a preservice teacher, practicing teacher, and university faculty. The university faculty member may have to move from group to group if he or she is supervising more than one preservice teacher. The Your Story Venn Diagram handout is used for this activity. Each member of the PLC gets a handout and fills it in as the other members share their story. Then the participants introduce each other to the entire group attending the professional learning meeting by reading their

stories out loud. This activity gives personal insight to the background of each member allowing for relationships to begin to form among the members. An hour is allotted for introductions.

After introductions, participants complete the Technology Inventory to better understand the competency level of each participant in regard to technology and the technology available to participant. One hour of the meeting is set aside for completing the survey individually and discussing the results within the PLC. Next the members of the PLC are given an hour to establish a vision and identify roles. The Sticky Note Activity is intended to identify each participant's current understanding of the roles and responsibilities of the members of the PLC. The purpose of this activity is to eliminate misconceptions of the roles and responsibilities of participants in PLC. The members each get a sticky note pad and write down the preconceived roles and responsibilities of the preservice teacher, practicing teacher, and university faculty. They place the sticky notes on the appropriate poster boards labeled preservice teacher, practicing teacher, and university faculty. Next a PowerPoint presentation is shown to define the roles and responsibilities of each member. The last item on the agenda for the first professional development meeting is the collaboration of the PLC to develop lesson plans for implementing technology in the classroom and to establish guidelines for the partnership. Participants are given 3.5 hours for this collaboration opportunity. A lesson plan template for a high school lesson is found in Appendix A3. This template is a suggested format for planning lessons; however, other templates for writing lesson plans may be used.

Professional development: Meeting 2 (PD2). The second professional development meeting is designed to allow the participants to reflect and revise practices and ideals of the PLC. At the beginning of the meeting, PLC members review successes and failures over a 2 hour period by writing them down on the T-chart handout and discussing the feedback. After discussing their thoughts and reviewing the outcomes, participants spend a large portion of the meeting collaborating. During this 4.5 hours designated for collaborating, participants re-visit the vision of the PLC, review the goals and objectives, revise guidelines and practices, and plan lessons for the next 9-weeks. The last 1.5 hours of the 8 hour meeting is intended to be used for planning and developing a PowerPoint presentation for communicating the successes and failures to the stakeholders at the end of the semester. These stakeholders will include parents, teachers, principals, district leaders, board members, and the superintendent.

Professional development: Meeting 3 (PD 3). The third professional development meeting like the second meeting begins with 3 hours of reflective practices. Participants fill in the T-chart with successes and failures seen in the last 9-weeks of the semester. Members then discuss what was written on the T-chart and review data and outcomes. After the T-chart activity, the participants are given the hyperlink to the five question SurveyMonkey™ Likert scale evaluation of the PLC professional development. Once the online survey is completed by all members and the results are analyzed through SurveyMonkey™, the findings are reviewed by the presenters and leaders and then discussed with the PLC. Giving the survey early in PD 3 allows for consideration of the

results of the survey in the revision process during collaboration. In the next 3.5 hours of the meeting, the PLC members collaborate to revise the vision, guidelines, practices, and expected outcomes for the next term, based on the T-chart and the findings of the surveys. At the end of the final meeting of the semester, the members take 1.5 hours to complete the PowerPoint presentation they began in the second meeting to deliver outcomes to stakeholders. If schedules allow, the PLC continue their partnership into the next semester. The PLC will have three meetings in the next semester with the same agenda as the first semester.

The project is the culmination of this entire process. The findings from the literature review in Section 3 were combined with the results from the study to determine the project design and inform the project goal and behavioral objectives. Literature supports the use of professional development for teacher training and collaboration for improving teaching and learning especially in relation to technology (Kafyulilo, Fisser, and Voogt, 2016). Statistical analysis indicated that Teacher Disposition and Instructional Support influence the degree of ITC. The development and collaboration of professional learning communities is the focus of the professional development plan found in this project for increasing the use of technology in the classroom through teacher support and training.

Potential Resources and Existing Supports

Before collaboration, the members of the PLC must understand the competency level of each participant in regard to technology and the technology available to that

participant. Each participant completes the six question paper and pencil Technology Inventory. This inventory is designed to establish a clear understanding of the technology resources accessible to each member as well as their comfort and competency level for using the available technology so that the planning of teaching strategies and lessons are appropriate for the group as a whole. The members discuss existing supports in relation to technology and instruction. After completing and discussing the inventory, the PLC can collaborate to plan activities and practices using the potential resources and existing supports.

Potential Barriers

The availability of technology and software for each member of the PLC may be a potential barrier. Other barriers include the members' current competency and existing supports. These barriers must be taken into consideration during collaboration; therefore, the Technology Inventory is completed in the first professional development meeting. The intention is to identify and address any barriers related to comfort and competency so they may be improved or overcome during collaboration.

Proposal for Implementation and Timetable

The development of the PLC, the professional development program, and the communication of the outcomes of the PLC are intended to take place over 1 semester of a school year which is roughly 18 weeks. The implementation that would occur first is *Element 1: Development of PLC.* This element of the project would occur before the school year begins. The organization and development of the PLC is the responsibility of

the educational leaders choosing to implement the program. The leaders must solicit practicing teachers seeking to increase the use of technology in their classrooms to participate in the PLC. Leaders need to contact local universities with teacher education programs that have faculty members and their students willing to participate in the PLC. The development of the PLC must be complete before the first professional development meeting of the program.

Element 2: Professional Development would be the second step in implementation. This element is comprised of three professional development meetings. The outline for these meetings are found in the Professional Development Plan for Increasing the Use of Technology through Professional Learning Communities (Appendix A1). Each meeting is comprised of 8 hours of training and collaboration. The first meeting is to be scheduled during the school district's preplanning week for teachers. Roughly 9 weeks later the second meeting should be scheduled. The third and final professional development meeting is to be scheduled at the end of the first semester of the school year. If those participating in the PLC are able to continue with the partnership during the second semester of the school year then the collaboration will continue and the meetings will continue into the next semester.

The third step in implementation would *be Element 3: Communication with Stakeholders*. The basis of Element 3 is the development and exhibition of a PowerPoint presentation for communicating to the stakeholders the outcomes of the PLC in relation to increasing the use of technology in the classroom. The initial planning and

development of the presentation should begin in the second professional development meeting which is planned to occur halfway through the semester. The members of the PLC are given an hour and a half to collectively work on the presentation. The presentation is to be completed during the last hour and a half of the third professional development meeting at the end of the first semester of the school year. The exhibition of the PowerPoint presentation to the stakeholders should occur at the next regularly scheduled school district board meeting.

Roles and Responsibilities of Student and Others

The Sticky Note activity in the first professional development meeting is intended to bring about each member's current understanding of the roles and responsibilities in the PLC and identify the true roles and responsibilities. The preservice teacher, practicing teacher, and university faculty member each get a sticky note pad and they write down what they think are the roles and responsibilities of each member of the partnership. They then take the sticky notes and place them on the appropriate poster boards labeled preservice teacher, practicing teacher, and university faculty. Each poster board will contain sticky notes from each of the members and these sticky notes are used to initiate a discussion about the prior knowledge of the roles and responsibilities of the members of the PLC. Once the discussion is closed, the slides from the PowerPoint identifying the basis roles and responsibilities of each member will be shown. The group then collaborates to elaborate on the roles and responsibilities of each member.

Once the preservice teacher, practicing teacher, and the university faculty member have established their goals, developed a vision, and understand their roles and responsibilities, they may begin developing guidelines and practices. This collaboration takes place at the end of the first professional meeting. The PLC develops lesson plans and activities for increasing the use of technology in the classroom. The members agree upon the means of communication that will take place between them during the semester. Collaboration among the PLC continues throughout the semester to meet the needs of the students in the classroom through the use of technology for teaching and learning. This ongoing collaboration is separate from the three professional development meetings and is important for the success of the program.

Project Evaluation

The purpose of this professional development program is to foster a culture of training and collaboration through the development of the PLC where the members can share their experiences and expertise for increasing the use of technology in the classroom. The goal of the project is to provide teacher training and support through PLC that address learning, instructional, and curricular needs for increasing the use of technology in the classroom. By increasing effective integration of technology in the classroom, the project will improve compliance with local, state, and federal technology standards. The formative and summative assessment of the program takes place during the second and third professional development meeting. The completion of the T-chart during the second and third meeting serves as a formative assessment of the program,

while the online survey that was designed for the professional development program is completed during the third meeting serves as the summative assessment of the program. The summative evaluation of the project is focused on the purpose, goal, and behavioral objectives of the PLC for the professional development program.

The behavioral objectives are used as indicators of performance for the PLC. The behavioral objectives of the PLC are stated as follows:

- To develop a collaborative environment where the members of the professional learning community can focus on school improvement and meeting the needs of the learners as well as current instructional needs of the members of the PLC
- To promote the integration of technology in the classroom for improving learning through the research of best practices, planning, and implementation of technology rich practices
- To ensure field experiences and student teaching components that support the ability of teacher candidates to be successful in the classroom

Kirkpatrick's Framework

In order to properly evaluate behavioral objectives, the Kirkpatrick Four-Level Training Evaluation Model was followed as an evaluation framework (Kirkpatrick & Kirkpatrick, 2016). Following a proven model such as Kirkpatrick provides an empirical design to measure each objective beyond the respondents' initial feeling about the learning experience so the focus is on the behavioral outcomes that are intended to

improve student development and learning. Kirkpatrick and Kirkpatrick (2016) emphasized the importance of providing evidence that training accomplishes the results desired and contributes to desired outcomes. This evidence is collected by the Kirkpatrick Four-Level Training Evaluation Model using four levels: reaction, learning, behavior, and results (Kirkpatrick & Kirkpatrick, 2017). Carlfjord, Roback, and Nilsen (2017) found this model to be very effective in evaluating participants of an annual course on implementation science. Based on the results of my research, I have chosen this evaluation model to measure the potential attainment of each of the behavioral objectives for both the reflective practices of the formative assessments as well as the summative assessment that takes place in the form of an evaluation survey.

Formative Assessment

The second professional development meeting serves as a time of reflection of the PLC. This meeting takes place at the midpoint of the semester. The reflective practices that take place during the meeting serve as a formative assessment of the PLC. The formative assessment gives the members of the PLC an opportunity to identify what is working and what is not working then make changes if necessary. To begin the reflective process, each member of the PLC is given a T-chart handout. Participants will be asked to consider Kirkpatrick's four levels: reaction, learning, behavior, and results while assessing the training (Kirkpatrick & Kirkpatrick, 2017). They will then be given the opportunity to write down what they feel have been the successes and failures of the PLC and professional learning meetings up to this point. After each member writes down their

thoughts and opinions, the PLC collectively discuss their responses. As a group they review the outcomes and the data collected during the semester.

Next, the participants re-visit the vision and review the goal statement and behavioral objectives. With the vision in mind and the findings of the formative assessment in mind, the members of the PLC revise guidelines and practices as necessary. Following revisions, the participants collaboratively design lesson plans and develop activities for the remainder of the semester. The focus of the teaching and learning strategies are for the purpose of increasing the integration of technology.

Summative Assessment

The program closes with the third and final professional development meeting. This meeting serves the purpose of completing the summative assessment of the project. Members once again use the T-chart handout to list and discuss successes and failures. As a group, they also discuss data and outcomes documented in regard to the behavioral objectives. Next, each member of the PLC takes the evaluation survey developed on SurveyMonkey™ by the student. The link to the survey is given to the participants and time is allotted for them to complete the evaluation on their phone or laptop.

Evaluation instrument. The evaluation instrument was designed using the Kirkpatrick Four-Level Training Evaluation Model. The instrument consists of 15 Likert scale survey questions and two free response questions. Survey Item 2, Item 3, and Item 4 address Level 1: *reaction* (Mind Tools, 2017). Level 2 (*learning*) type questions are reflected in Item 5 and Item 6 of the survey (Mind Tools, 2017). The behavioral

objectives were developed to be utilized for the evaluation of the effectiveness of the professional development program. Item 7 through Item 14 are aligned with the behavioral objectives for the program; therefore, these survey questions address how the participants apply what they learned based on the training they received. These survey items are related to Kirkpatrick's Level 3 (*behavior*) evaluation requirements (Mind Tools, 2017). The desired outcome of the professional development program which is an increase in the use of technology in the classroom is evaluated by survey Item 15. This survey question is based on Kirkpatrick's Level 4: *results* (Mind Tools, 2017). Survey Items 16 and 17 are free response questions that allow the participants to make comments and offer advice for improving the professional development program.

Analysis

Once the surveys are complete, the program leaders review the quantitative analysis of the survey data through SurveyMonkey™ and communicate the findings with the whole group. After the discussion of the findings, the collaboration for the third professional development begins. Members revise the vision, behavioral objectives, guidelines, and practices as necessary for the next term. These changes benefit the members that participate in the PLC next semester. The evaluation of the program is a continuous process. In following semesters, members will continue to formatively and summatively assess the project so that improvements can be made as needed.

Implications Including Social Change

Social Change

The project, *Increasing the Use of Technology through Professional Learning Communities*, addresses the needs of the learners at this large suburban high school outside a Southeastern metropolitan area by increasing the use of technology in the classroom. Reports from the school review process indicated that this local high school was not in compliance with the technology standard advocated by the state. The school evaluation showed that teachers were not integrating technology at an acceptable level and that students were not using technology at a rate that met state standards. Data collected from the teachers at this school indicated that Teacher Disposition toward integration of technology in the classroom (ITC) and Instructional Support for ITC relate to the Degree of ITC. This project addresses the lack of integration of technology at this site.

This project has numerous implications. Once implemented, the school will be in compliance with the state technology standard by increasing the integration of technology in the classroom. Having a professional development plan for training and collaboration through the development of a professional learning community increases the use of technology in the classroom. The social change within the educational environment is seen by an increase in the use of technology by teachers and students. Students, parents, teachers, administrators, and community members will notice the positive effect of the

implementation of this project through the increase of knowledge and skills related to technology.

Local Community

By establishing PLC, teacher disposition and instructional support are addressed and there will be an increase in the integration of technology in the classroom. Teachers will have the necessary support and gain the knowledge and skills through collaboration to implement technology at a level that is in compliance with local, state, and federal technology standards. In turn, students become more educated in regard to technology and obtain 21st century skills that they need to function in a technologically advanced society through the classroom experiences fostered by the teachers. Parents, administrators, and community partners will see the importance of PLC in promoting integration of technology in the classroom to meet the demands of our technological society.

Far-Reaching

The implementation of this project has the potential to instill social change due to the development of professional learning communities for improving teacher disposition toward ITC and increasing instructional support for ITC. Removing these barriers and other challenges related to ITC has a positive influence on teacher practices and the educational environment by causing an increase in the use of technology in the classroom. Increasing the use of technology in the classroom provides experiences for students that give them the skills to be a productive member of society. These educational

experiences fostered by teachers to use technology provide students opportunities to be competitive in a global, information-based society. This positive change not only affects this school, but could also influence other schools that need reform for addressing compliance with state technology standards. Sharing this professional development plan for developing learning communities across this school district and throughout the state could positively promote social change by enhancing the use of technology in schools and improving compliance with the state technology standards.

Conclusion

This project outlines a professional development plan for developing professional learning communities (PLC). The professional development plan (Appendix A-1) takes place over one semester of a school year. The plan is broken down into three professional development meetings for training and collaboration (Appendix A-2). The meetings are intended to support the formation and collaboration of the PLC. Evaluation of the training and preparation for communicating with stakeholders also takes place during the professional development meetings

The first meeting is for developing a PLC. It begins with identifying the purpose, goal statement, and behavioral objectives of the PLC to provide the members with foundation for developing a PLC. Next in the meeting, participants are presented with current literature that supports the use of a PLC within an educational setting. After roles and responsibilities are established collaboration begins so that members can leave the meeting with lesson plans and activities for implementing technology. The second

professional development meeting is for reflection on how the PLC is affecting the implementation of technology in the classroom during the first half of the semester. During collaboration, members are able to make changes to their practices and develop lesson plans and activities for the remainder of the semester. The final professional development meeting is to take place at the end of the semester for evaluating the PLC. This summative assessment of the PLC gives insight to the successes and failures experienced by the members. However, the evaluation of the program is a continuous process. Necessary changes are made to improve the positive influence of the PLC on the integration of technology in the classroom.

The development of PLC is intended to increase the integration of technology in the classroom. Teachers and students benefit from PLC by gaining skills and knowledge related to the use of technology. Teachers continue to effectively use technology in their classrooms while students go on to function successfully in society. Positive social change can occur from the positive attitudes and behaviors of teachers and students related to technology. This type of positive social change can spread throughout the district and state if this plan for developing a PLC is shared.

Section 4 focuses on reflections and conclusions of the project study. It addresses the strengths and limitations along with future research. In Section 4, I personally reflect on my growth as a scholar, practitioner, and project developer. I also analyze the significance of my project study and the potential positive social influence it may have on education. In conclusion, I reflect on what I have learned during my doctoral journey.

Section 4: Reflections and Conclusions

In this section, I summarize The strengths and limitations in addressing the problem in this project study as well as the personal reflections on my growth throughout the process. I reflect on what I have learned in the areas of scholarship, project development, leadership, and change. I also discuss the positive social change that may result from this project study. Upon conclusion, I discuss implications, applications, and directions for future research.

Project Strengths

This project has strengths that could promote an increase in the integration of technology in the classroom, improving compliance with state technology standards. My project was driven by the data collected from the teacher's at a local high school to meet their needs in regard to teacher disposition and instructional support. The implementation of this project is intended to foster an educational environment with increased use of technology through the development of a professional learning community. The professional development plan for developing a PLC is cost effective for the school. Teacher training and collaboration are the projects strengths in addressing the problem. The training and collaboration that take place during the professional development gives teachers the opportunity to plan lessons that align with state curriculum and technology standards through the intentional partnership of PLC. While limitations were considered, strengths and successes of the project were communicated with all stakeholders. An increased use of technology in the classroom because of an intentional school-university

partnership was seen in Herro, Qian, and Jacques' (2017) study; therefore, support of this project can result in an increase in the integration of technology for teaching and learning.

The project promotes an environment of training and collaboration to develop an effective PLC. The members of the PLC are given an opportunity to align practices with state curriculum while enhancing the use of technology in the classroom and develop lesson plans for improving compliance with state technology standards. The professional development plan for developing a PLC is appropriate for all subject areas and grade levels. The implementation of a PLC can lead to school-wide improvements and the formation of a school climate that fosters the implementation of technology through training and collaboration. This change can promote school compliance with local, state, and federal technology standards and policies.

Recommendations for Remediation of Limitations

Although grounded in research, this project has limitations in addressing the problem. The data collected by surveying the teachers in a local high school represented the thoughts and opinions of the teachers at the time of data collection. The archived data may not accurately represent the teachers' current thoughts and opinions or the school climate. Administering the survey again is a suggested remediation of this limitation. Collecting the data again provides current data related to factors influencing degree of implementation of technology. For a better understanding of the integration of technology in this local high school, I suggest comparing current data with the archived data and look

for similarities and differences in the data. This could offer a better picture of the role technology plays in the school culture.

Another limitation to the project is that it was designed with a high school in mind. However, remediation of this issue is obtainable by initiating the professional development plan for developing a PLC at the middle and elementary levels as well. The purpose and process of the project remains the same regardless of the grade levels of the teachers and students. Implementing this project at all grade levels across the district can affect more teachers and students and possibly lead to a positive social change in the district climate.

For this project to be successful, there must be buy-in from all members of the PLC. If any member of the PLC fails to play their role or uphold their responsibilities, the positive influence of the project is jeopardized. Administrators as well as university faculty must provide support during the implementation of a PLC to increase the likelihood of success of the project. The communication of the benefits of a PLC to parents, community members, and district leaders could provide more exposure of the potential social change through the implementation of the project and acquire support from outside the school building.

An alternative solution to the local problem indicated by this study could be increasing teacher support in regard to technology. Because the school is not in compliance with state technology standards due to the lack of technology use for teaching and learning, offering in-house teacher support for learning how and when to use

technology could possibly increase the integration of technology. Training for the entire faculty would give teachers the opportunities to learn strategies for implementing technology in the classroom. Instruction could come from within the building by teacher leaders that are considered an expertise in the integration of technology. Another option could be that district technology personnel leading several training sessions throughout the year for teachers to attend. It would be ideal to offer this professional development during preplanning before the school year starts then periodically throughout the school year during teachers' planning periods. The intentions of the efforts of the school leaders for enhancing the use of technology need to be on the teachers. Focusing on the needs of the teachers within the school in regard to technology can potentially produce an overall positive social change in the school culture. Once the school culture shifts toward an increase in the integration of technology, the compliance with local, state, and federal technology standards improves.

Another direction for addressing lack of technology implementation in the classroom is to focus on technology training for preservice teachers. For preservice teachers to be prepared for using technology in the classroom, technology training needs to take place throughout the teacher education. These teacher candidates need to have experience in understanding how to use technology and when to use technology in teaching the required curriculum to ensure preparedness for the classroom. Efforts to properly train preservice teachers may not have an immediate influence on current

technology use in the classroom, but once the teacher candidates are in their own classrooms there is potential for improved compliance with technology standards.

State technology standards are in place to ensure that students graduating from public schools have had the equal opportunity to obtain the skills necessary to function in our technology-driven society. The efforts of schools across the nation to ensure that students are prepared to be functioning members of society in regard to technology are not the same. However, making efforts to educate and support teachers in the use of technology can potentially bring equity within schools, through school districts, and across the nation in regard to technology use in the classroom. The implementation and evaluation of this project has not yet occurred. However, the purpose of this project study is to increase the integration of technology in the classroom and improve compliance with state technology standards. Addressing the needs of the teachers through planning professional development for developing a PLC at this site can create a school culture that promotes compliance with local, state, and federal legislation; however, the support of parents, administration, and community members is equally important in cultivating a social positive change in this local high school.

Scholarship

Scholarship is more than just about completing a doctoral program. Scholarship is a journey. In this journey, I have learned far more than I could have ever imagined possible. This journey has stretched and grown me into a better person, educator, and

scholar. The experiences I have had along my doctoral journey have forever changed who I am as a learner.

To become a scholar an individual must accumulate knowledge and skills from study and research. Scholarship is using higher-order thinking to solve a problem. To solve the problem a scholar must conduct in-depth research that advances knowledge. The application of this knowledge can be seen in the development of an original and creative solution based on the analysis and synthesis of research. Although scholarship through the attainment of such knowledge and skills for solving a problem appears to be simple, I found it to be more challenging than I ever anticipated.

I have always considered myself an intelligent, hardworking, and dedicated teacher and learner; however, over the past 6 years I have come to understand more about what it means to be a learner and through my experiences it has made me a better teacher. The realization that I had much to learn about scholarship after identifying the focus of my project study. I learned how to be a researcher and a scholarly writer. In researching the topic, I obtained new skills for locating reliable resources. In organizing my research, writing my narrative, and citing my sources I became more confident as a writer. There were also things I learned about APA guidelines that I have used repeatedly outside of my doctoral program. I also realized the abundance of information waiting to be discovered and utilized for solving a problem. I have since passed this realization on to my students and have shared with them how to be a scholarly researcher and writer. My confidence as a scholarly writer has improved dramatically during this process. In the

past, I would not consider writing to be one of my strengths and I let that thought hold me back at the beginning of this journey. As I have written this project study, I have overcome this barrier and pride myself in my new scholarly writing skills.

Scholarship goes beyond obtaining knowledge. Becoming a scholar also means saturating your mind with as much information as you can about the topic you are researching. A scholar must develop and use skills to create a possible solution. The part I enjoyed most about this journey was collecting and analyzing the data for creating a more intimate picture of my study site. Learning to use SurveyMonkey™ and SPSS software are two things that I see myself taking away from this project study and using again in the near future. Communicating my findings after the analysis process was probably the one accomplishment that truly made me feel like a scholar. Devising a plan for addressing the findings was part of the journey that came the easiest to me. The most challenging aspect of my doctoral journey was overcoming time restraints and finding a balance between being a student, wife, mother, teacher, and coach. This doctoral journey has been one of the most challenging yet rewarding experiences that I have had within my life. Through this doctoral journey, I have learned how to seek the knowledge and understanding for developing the skills necessary for becoming a scholar.

Project Development and Evaluation

The development of the project followed the identification of a local problem, intense research, collection of data, and data analysis. As the developer, I learned that I had to maintain a focus on addressing the problem of the lack of technology use in a large

suburban high school outside a Southeastern metropolitan area that was not in compliance with state technology standards and design a project that addresses the problem on both the local level and a global scale. The quantitative data collected by the survey instrument determined the direction of the project along with current literature. Analyzing the thoughts and opinions of the teachers at the research site gave me insight to addressing the factors that influence the degree of implementation of technology in the classroom. The data revealed that there is a significant relationship between Teacher Disposition and Instructional Support and the Degree of ITC.

In order to improve compliance with state technology standards at the local high school in this study there has to be an increase in the integration of technology in the classroom. The project was designed to meet the needs of the teachers through professional development to promote the use of technology for teaching and learning. Current literature suggested professional development, increased support for teachers, preservice teacher training, and professional learning communities. These suggestions helped me understand what action steps I needed to take to plan my project for increasing the integration of technology in the classroom. Therefore, I chose to plan professional development for developing a professional learning community where practicing teachers, preservice teachers, and university faculty form a partnership. Training and collaboration foster a partnership among the members of the PLC where an increased use of technology in the classroom is the end result.

The success of the project is determined by the buy-in of the members of the PLC and support of the stakeholders. If the practicing teacher, preservice teacher, and university faculty do not uphold their responsibilities of the partnership then the success of the project is threatened. To encourage buy-in the professional development takes place at a time that is convenient for all members. The project is cost effective because does not require any supplies or equipment that is not already readily available to the school or university. As the student, I am responsible for the training portion of the project so no additional funds are needed for hiring an outside trainer. As the partnership undergoes evaluation by the members they communicate their findings with stakeholders. Because there are formative and summative assessments that take place stakeholders will be aware of the successes of the development of the PLC. Seeing the positive social changes that are taking place within the school hopefully promotes continued support of the stakeholders; therefore, ensuring continued success of the project.

Leadership and Change

My passion for improving teaching and learning gave me the perseverance I needed to see my project study to completion. My desire to bring about a positive change at the local high school provided the motivation to seek out a problem and design a possible solution. Feeling the same frustrations as those teachers at the site, I found it easy to place my focus on increasing the use of technology in the classroom. After much research, I discovered that this same problem exists in schools across the nation and

throughout world. These findings motivated me to promote local and far-reaching change despite the barriers.

I demonstrated my leadership abilities by seeking a solution to the lack of technology use in the classroom. Like other teachers, I see the lack of technology use in the classroom having a negative effect on teaching and learning on a daily basis. Moving forward to take action to find a project for increasing the use of technology thus improving compliance with technology standards sets me apart from others and demonstrated my capabilities as a leader. Despite the resistance among fellow teachers to address barriers and promote positive change, I see the importance behind technology in teaching and learning.

However, an effective leader must promote change that is both local and far-reaching. Developing a project that fosters training and collaboration allows for wide-reaching results. Through the professional learning community, members form a partnership that not only offers support that promises success, but create a collective desire to promote social change. A good leader inspires and delegates to ensure widespread success. From my project, each member of the PLC gains knowledge and skills for increasing the use of technology in the classroom through training and collaboration. Once the members have the knowledge and skills for effectively using technology in the classroom, they too are able to seize the opportunity to promote change within their educational environment.

Analysis of Self as Scholar

Scholarship is about finding the best solutions for solving a problem. Becoming a scholar is taxing and requires hard work and dedication. There were times when I wanted to give up and leave the problem for someone else. However, I took the passion I have for teaching and learning and combined it with the knowledge and skills I have acquired and chose to serve a purpose greater than myself. As a scholar, I developed a project that was driven by the needs of others and current research. I used the thoughts and opinions of teachers collected by the survey instrument to guide my scholarly work. My desire to catalyze a positive social change in the classroom by improving teaching and learning through increased use of technology led to the development of my project. The project I developed assists teachers in effectively implementing technology in the classroom.

After responding to the needs of students, colleagues, and other stakeholders, I feel a great sense of accomplishment as a scholar. I began this journey lacking in the necessary knowledge and skills, but through the process I learned what was needed to achieve positive social change. I learned all that comes with identifying a problem, conducting research, and finding ways to solve the problem. The learning does not end here because as a scholar and an advocate for positive change, I continue to seek ways to improve teaching and learning. I now understand the importance of lifelong learning. This ongoing, self-motivated pursuit of knowledge is what defines a scholar.

Analysis of Self as Practitioner

A scholar-practitioner can integrate research and theory into practice. Moats (2017) recognized that developing scholar-practitioners close the theory-to-practice gaps across disciplines. Through my experiences during this doctoral journey, I have developed as a scholar. It was a long, hard, and sometimes frustrating, but over the past six years I have learned to seek knowledge through many avenues. I have listened to other teachers, studied literature, relied on my chair for guidance, observed the needs of students, and questions school leaders. Because of the knowledge obtained through this process, I am now able to see a problem as way to initiate positive change by closing the gap in the education field. Initiating a positive change means to practice scholarship through seeking new strategies and applications.

The purpose of my project is to offer training and collaboration that equips teachers to effectively use technology in the classroom. Activities and lesson plans developed during professional development increase the use of technology thus improving compliance with technology standards. As a practitioner, I have learned that you have to put what you have learned into action. By leading the development of a professional learning community, I am promoting what I have found to be a possible solution for closing the gap in the use of technology in a local high school. Fostering the development of a school-university partnership can potentially improve school practices and change the district climate through changes in teaching and learning with technology. The development of this project shows my growth as a scholar-practitioner.

Analysis of Self as Project Developer

In designing this project, I first developed a purpose, goal statement, and behavioral objectives. I used these to drive the plan for professional development. I learned as a project developer that I had to seek out ways for teachers to learn how to effectively implement technology in the classroom. The data from my survey indicated that Teacher Disposition and Instructional Support are the factors that most influence the Degree of ITC. I took these findings and looked for what literature said was the best way to address these barriers to implementing technology. I also considered what I would find helpful as a teacher in regard to using technology in the classroom. Lastly, I considered solutions that would be accepted by other teachers, school leaders, and other stakeholders. I came to the conclusion that training and collaboration promise teacher buy-in for developing a professional learning community. As a project developer, I maintained my focus on improving teacher disposition and increasing instructional support in planning the scope and sequence of the professional development. The professional development plan includes time for learning why and how a PLC works and offers several opportunities for the members to collaborate. All members are able to take way lesson plans and strategies for effectively implementing technology in the classroom.

A project that is cost-effective, meets the approval of school leaders, and is considerate of others' time and efforts is more likely to be long-lived. In designing the project, I had to consider methods that would utilize resources that were already readily available at the presentation site or would have minimal costs. I also had to consider a

plan that supports the school improvement plan and promises to have a positive influence on the school climate for gaining the approval of administrators and teacher leaders. Looking at time restraints was also part of planning the project. Developing a plan where the members of the PLC only meet three times for professional development is ideal for respecting the time of the participants. Including an expectation of continued communication among the members offers continued support among the partnership. As I reflect on my project, I can see my growth as a project developer. I learned to maintain my focus on the purpose, goal, and objectives while exploring all options for promoting positive social change.

The Project's Potential Influence on Social Change

As a teacher in a large suburban high school, I found myself concerned with the lack of the use of technology and the limited availability of technology throughout the building. Teaching in a society that is technology-driven places demands on teachers for ensuring that teaching and learning are preparing students to be functioning members of society. The expectations of public education is to graduate students that are globally competitive in their abilities to use technology and access information. Institutions feel the depth of this technological change, but the speed and scope of the transformation highly depends on the response of the faculty. Whether in a traditional classroom or online, to enhance teaching and learning teachers must implement best practices for using technology. Thoughtfully planned lessons backed by researched-based practices can improve student learning, performance, and motivation.

This project brings together practicing teachers, preservice teachers and university faculty to enhance teaching and learning through a partnership. The outcomes of the development of a PLC are intended for the purpose of increasing the use of technology in the classroom. The training and collaboration potentially have an influence on the local high school in this study and other educational environments. Practicing teachers at the study site take away strategies, new skills, and relationships that support the increased use of technology. This enhancement in teaching and learning promotes compliance with local, state, and federal technology standards. Preservice teachers gain knowledge with real classroom experiences and challenges that they take with them to their own classrooms one day. Through this partnership, university faculty understand concepts needed in a teacher education program to meet the needs of teachers and student in our technological society. Providing the training and support educators need through this project encourages a positive social change at a local level as well as in higher-learning institutes. Thus this potential influence of this project could potentially be felt across the nation and globally due to the partnerships fostered by this professional development plan.

Implications, Applications, and Directions for Future Research

The analysis of the data from this project study supports implications, applications, and future research. Literature shows teacher disposition, instructional support, availability of technology, collaboration, access and use of computers, level of education, and participation in technology initiatives as factors that influence degree of

implementation of technology in the classroom. Research from this study at the local site indicate a significant relationship between Teacher Disposition and Instructional Support and Degree of ITC.

A teacher's self-efficacy can affect his or her attitude and behavior. If teachers are educated in effective use of technology in the classroom as seen in this project with the intent to improve their beliefs in their competency and capability, this potentially results in positive change in teacher disposition. This change in disposition can lead to an increased use of technology for teaching and learning. Future research could help to find other ways to improve teacher disposition towards the use of technology in the classroom.

Future studies should also be conducted to identify other programs for increasing instructional support. There are many avenues for offering instructional support. Allen (2016) found that administrators support collaboration and that collaboration promotes intentional dialogue and allows for narrowing the focus on the specific issues. The implications of this study resulted in my decision to plan for collaboration in my project. I saw the need for teachers in this large suburban high school outside a Southeastern metropolitan area to be able to come together with other educational stakeholders with a shared purpose and a common goal. Working toward this goal as a group evoked a partnership for sharing knowledge, planning lessons, and developing skills for enhancing teaching and learning using technology.

The applications of the professional development plan of this project may not fit the needs of other teachers and students. The evaluation of this project should occur before it is implemented in other schools. The professional development plan for developing a professional learning community was designed with a high school students in mind. Surveying other groups of teachers will result in findings that drive the development of other projects for increasing the use of technology in the classroom. Collecting the data from the population for which the project will be designed for will ensure reliability. Changes in the project will allow for targeting the needs of other schools in regard to technology. The continuation of my project in some form will allow a long-lasting and a far-reaching effect of my efforts from the past six years. Seeing my project contribute to technology-enhanced teaching and learning across the educational environment would make all my hard work in completing this project study worthwhile.

Conclusion

Section 4 allows for reflecting on my final study. These reflections required me to focus on the strengths and weaknesses of my project study. Limitations of my study were also identified and recommendations for alternative approaches addressed these limitations. I described what I learned about becoming a scholar, practitioner, project developer, and leader. I reflected on the importance of the overall work specific to research and development of the project. I also elaborated on what I learned about change. A description of the potential influence of my project study in regard to positive

social change was included also. I concluded with directions for implications, potential applications, and possible directions for future research.

Through this quantitative nonexperimental project study, I learned how to address factors influencing degree of implementation of technology in a local high school. The project I designed was based on the thoughts and opinions of teachers with the intention of promoting technology-enhanced teaching and learning through training and collaboration. I concluded that the best option for fostering a positive social change was through a professional development plan. Therefore, I designed a project with the purpose of increasing the use of technology in the classroom through the development of professional learning communities. The result of this school-university partnership potentially increases the implementation of technology in the classroom making it possible for the large suburban high school outside a Southeastern metropolitan area in this study to become compliant with local, state, and federal technology standards.

My personal goal of developing a plausible solution to this specific local problem was accomplished through this project study. I have a passion for teaching and learning and after observing the disengagement from technology among teachers in a local high school, I saw a need for intervention. I worked diligently to insure that my research and action plan would not only benefit this local school but would be far-reaching. Through this journey, I significantly enhanced my understanding about identifying a problem, locating what current research says about the problem, collecting and analyzing data, and project design and evaluation. From this growth, I was able act on my passions to

develop a project with value for stakeholders. I feel accomplished knowing that my project will promote positive social change by fostering best practices in classrooms in my community and globally.

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Appendix A:The Project

Increasing the Use of Technology through Professional Learning Communities

by Darby Steele

Introduction

An imbalance of the use of technology within a school creates a lack of compliance with district and state mandates, but it also restricts the students' ability to have experiential learning activities that support constructing knowledge and skill development. Increasing the use of technology allows teachers to implement classroom activities that comply with standards related to technology and support the constructivist learning theory while developing skills necessary for the 21st century. The use of technology such as computers, LCD projectors, and other interactive tools has the ability to "transform modern education and student learning" (Sundeen & Sundeen, 2013, p. 9). The constructs such as teacher disposition, instructional support, availability of technology, teacher collaboration, and use of technology at home are those factors that have been identified through literature to affect the use of technology to create experiences in the classroom. These constructs were the basis of my study that led to the development of this professional development program intended to encourage social change by improving compliance with technology standards and empowering students with knowledge and skills learned through experiences with technology.

My study was developed on evidence from a school wide evaluation indicating that the local high school was not in compliance with a state technology standard related

to the use of technology for teaching and learning. The purpose of the study was to measure relationships among factors influencing degree of implementation of technology in the classroom (ITC). The findings of my quantitative investigation indicated a statistically significant relationship between Degree of ITC and both Teacher Disposition toward ITC and Instructional Support for ITC. In order to promote compliance with local, state, and national technology initiatives, the factors such as these that act as barriers to ITC must be addressed to catalyze an increased use of technology.

The goal of the project is to provide teacher training and support through professional learning communities (PLC) that address learning, instructional, and curricular needs for increasing the use of technology in the classroom. This project provides a professional development program for educational leaders to address Teacher Disposition toward ITC and Instructional Support for ITC to help teachers overcome the challenges of using technology for teaching and learning. Blackwell, Lauricella, and Wartella (2014) confirmed attitudes of early childhood educators toward the value of technology on student learning had the strongest effect on the use of technology in the classroom. Unfortunately, teachers that do not see the significance of technology are likely to resist the effective use of technology within the classroom. O'Bannon and Thomas (2014) showed that teachers over the age of 50 were less supportive of mobile phones in the classroom and did not find mobile phone features useful for school-related activities. Pyle and Esslinger (2013) advocated the view that most physical education teachers see the positive influence technology can have in the curriculum but may not

know how to implement technology without taking time away from other activities thus resulting in negative perceptions about the use of technology. Collaboration among educators through the development of PLC in this program may assist in breaking down negative beliefs and attitudes towards using technology in the classroom.

Other possible barriers to the integration of technology are limited knowledge and lack of skills. Even when technology is accessible, teachers' limited knowledge and lack of skills to effectively implement technology within the classroom continues to be a barrier. Thunman and Persson (2013) indicated that more young teachers using information and communication technology in comparison to veteran teachers because of their more recent training in technology. Hechter and Vernette (2013) reported two main survey findings from their research in Manitoba, Canada. One was that administrators are making efforts to provide classrooms with the most up-to-date technology. Secondly, "teachers are unclear on effective ways to integrate these technologies into their teaching and have a low comfort level with their personal knowledge and use of these new technologies" (Hechter & Vernette, 2013, p. 87).

If the resources are available, it is at the teacher's discretion as to how and when technology is infiltrated into their classroom; however, he or she is expected to comply with local initiatives, state standards, and federal policies. Koh, Chai, and Tay (2014) indicated that experience in technology use and beliefs in teaching led to increased construction of technological pedagogical content knowledge (TPACK). To ensure that teachers make efforts to increase their understanding of the use of current technology and

improve upon their skills in the use of technology, states are incorporating the integration of technology in teacher evaluations. Pyle and Esslinger (2013) confirmed that teacher candidates in Kentucky are currently being evaluated in technology. Accountability initiatives like these are intended to encourage teachers to increase their knowledge and skills in regard to technology across the nation thus resulting in compliance with state technology standards. The integration of this professional development program fosters a culture for sharing, improving, and practicing technological expertise among participants.

Teachers encounter many challenges in technology integration that can be overcome through this professional development program. Kale and Goh (2012) suggested an increase in professional development where teachers can observe, practice, and discuss the use of technology in their content areas. Larson (2013) observed "technologically savvy and innovative teachers who were not sharing their expertise with their less proficient colleagues due to lack of time" (p. 44). Creating PLC where fellow educators can form partnerships for sharing ideas and planning strategies is one way to overcome challenges for increasing ITC.

The Professional Development Program

The purpose of this professional development program is to foster a culture of training and collaboration through the development of PLC where the members can share their experiences and expertise for increasing the use of technology in the classroom. The PLC are intended to increase the use of technology in a meaningful and effective manner within the classroom through the partnership of the members. The training and

collaboration for developing PLC takes place through professional development meetings. There are three elements to this professional development program: development of PLC, professional development, and communication with stakeholders. This program was developed to take place during one semester of the school year to accommodate preservice teachers and university faculty that have mid-year course changes. During the semester, there are three professional development meetings for participants of the program. Collaboration continues throughout the semester between the members of the PLC. At the end of the semester, an evaluation of the program takes place and the outcomes of the PLC are presented to the stakeholders. The members of the PLC that do not have a change in schedule can continue to participate in the program to obtain continued support for improving the implementation of technology in the classroom.

Element 1: Development of PLC

Each PLC for this program consists of a preservice teacher, a practicing teacher, and a university faculty member. The members of the PLC are volunteers that share a common vision of improving teaching skills and the academic performance of students through the increased use of technology in the classroom. The formation of the PLC takes place before the professional development meetings. The idea is to unite volunteers from two or three cooperating institutions participating through the development of the PLC. The number of PLC depends upon the number of teachers that volunteer to participate as well as the number of available university faculty. The institutions comprise of a local high school and one or two universities with a teacher education program located

reasonably close to the high school for meeting purposes. The ideal situation is to have 15 to 20 preservice teachers each paired with a practicing teacher at the school involved in the program in the district. It is possible that there will only be two to five university faculty members in the PLC associated with each school because several of preservice teachers will likely be under the supervision of the same university faculty. Preservice teachers participating in the PLC are students in an education program at a local university with program requirements that are met through the participation in this professional development program. The university faculty member within the PLC is from the same university as the preservice student and serves as the student's mentor or professor. In some instances, the faculty member may have several students participating in the professional development program as the preservice teacher during the same semester. The practicing teacher is a certified educator currently under contract in a local school district within a reasonable distance from the university that the preservice teacher and faculty member are associated with for the sake of convenience. The partnership among the preservice teacher, practicing teacher, and university faculty is the driving force for improving teaching and learning through the use of technology.

Element 2: Professional Development

Once the partnerships are established, the members attend three professional development meetings throughout the semester. Each meeting is designed for 8 hours of training and collaboration. The ideal situation is for these meetings to take place on Saturdays with professional learning credits as added incentives. The agenda and time

allotments for these meetings are found in Appendix A1. The meetings are designed so the PLC can meet to develop a coherent program organized around technology standards, improving student learning, and a common vision of good teaching. This is achieved through the collaboration among the members in developing goals, setting performance guidelines, and planning activities for implementing best practices for the integration of technology in the classroom. The breakdown of the specific benchmarks and activities for each meeting are outlined in Appendix A2. The collaboration continues as the practicing teacher, preservice teacher, and university faculty work closely throughout the semester to increase the implementation of technology in the classroom.

Professional development: Meeting 1 (PD1). At the beginning of the first meeting, participants are presented with the purpose of this project, goal statement, curriculum, and behavioral objectives in the form of a PowerPoint presentation. The behavioral objectives are used to guide and evaluate the PLC. The behavioral objectives for this program are as follows:

- To develop a collaborative environment where the members of the professional learning community can focus on school improvement and meeting the needs of the learners as well as current instructional needs of the members of the PLC
- To promote the integration of technology in the classroom for improving learning through the research of best practices, planning, and implementation of technology rich practices

- To ensure field experiences and student teaching components that support the ability of teacher candidates to be successful in the classroom

Evidence in current literature and research supporting the use of PLC to increase the use of technology is presented in the PowerPoint presentation. Next, the participants introduce themselves and share the story behind their current role in education. The participants are grouped with the other members of their PLC which includes a preservice teacher, practicing teacher, and university faculty. The university faculty member may have to move from group to group if he or she is supervising more than one preservice teacher. The Your Story Venn Diagram handout is used for this activity. Each member of the PLC gets a handout and fills it in as the other members share their story. Then the participants introduce each other to the entire group attending the professional learning meeting by reading their stories out loud. This activity gives time for introductions and personal insight to the background of each member allowing for relationships to begin to form among the members.

After introductions, participants complete the Technology Inventory to better understand the competency level of each participant in regard to technology and the technology available to participant. Time is set aside for completing the survey individually and discussing the results within the PLC as seen in the agenda (Appendix A1). Next the members of the PLC establish a vision and identify roles. The Sticky Note Activity is intended to identify each participant's current understanding of the roles and responsibilities of the members of the PLC. The members each get a sticky note pad and

write down the preconceived roles and responsibilities of the preservice teacher, practicing teacher, and university faculty. They place the sticky notes on the appropriate poster boards labeled preservice teacher, practicing teacher, and university faculty. The PowerPoint presentation for this program is then shown to define the true roles and responsibilities of each member. The last item on the agenda for the first professional development meeting is the collaboration of the PLC to develop lesson plans for implementing technology in the classroom and to establish guidelines for the partnership. A template for a high school lesson plan is provided; however, other templates maybe be used for planning units.

Professional development: Meeting 2 (PD2). The second professional development meeting is designed to allow the participants to reflect and revise practices and ideals of the PLC. At the beginning of the meeting, PLC members review successes and failures by writing them down on the T-chart handout. After discussing their thoughts and reviewing the outcomes, participants spend a large portion of the meeting collaborating. A majority of the meeting is set aside for collaborating, participants revisit the vision of the PLC, review the goals and objectives, revise guidelines and practices, and plan lessons for the next nine weeks. The end of the meeting is to be used for planning and developing a PowerPoint presentation for communicating the successes and failures to the stakeholders at the end of the semester.

Professional development: Meeting 3 (PD3). The third professional development meeting like the second meeting begins with reflective practices.

Participants fill in the T-chart with successes and failures seen in the last nine weeks of the semester. Members then discuss what was written on the T-chart and review data and outcomes. After the T-chart activity, the participants are given the hyperlink to the 17 question SurveyMonkey™ Likert scale evaluation of the PLC professional development. Once the online survey is completed by all members and the results are analyzed through SurveyMonkey™ the findings are reviewed by the presenters and leaders then discussed with the PLC. Next the PLC collaborate to revise the vision, guidelines, practices, and expected outcomes for the next term based on the T-chart and the findings of the surveys. Collaboration among the PLC continues throughout the semester to meet the needs of the students in the classroom through the use of technology for teaching and learning. This ongoing collaboration is separate from the three professional development meetings and is important for the success of the program. If schedules allow, the PLC continue their partnership into the next semester. The PLC will have three meetings in the next semester with the same agenda as the first semester. At the end of the final meeting of the semester, the members complete the PowerPoint presentation they began in the second meeting to deliver the outcomes to stakeholders.

Element 3: Communication with Stakeholders

During the second professional development meeting, time is set aside for members of the PLC to begin designing a PowerPoint presentation for communicating the outcomes of the partnerships to stakeholders. The presentation is completed in the third meeting because the meeting takes place at the end of the semester and the members

are able to reflect on the successes and failures after 18 weeks of the implementation of PLC. The purpose of this project is to increase the use of technology in the classroom through the development of PLC to address incompliance with technology standards like Instructional Standard 7 of the Georgia School Keys. Instructional Standard 7 states, "Integrates appropriate current technology into teaching and learning" (Georgia DOE, 2013c, p. 24). The PowerPoint presentation is intended to communicate to what degree the gap in compliance with state technology standards was closed due to the increased use of technology through the implementation of PLC. This PowerPoint is shown to district leaders, school administration, parents, and university leaders during a regularly scheduled board of education meeting.

Appendix A1: Professional Development Plan

I. Meeting 1: Development of Professional Learning Communities (PLC)

A. Purpose, Goal Statement, Elements, and Behavioral Objectives of PLC—PowerPoint Presentation (Duration: 1 hr)

B. What literature says about PLC—PowerPoint Presentation (Duration: 30 mins)

C. Developing a PLC

1. Participant introductions—Your Story Venn Diagram (Duration: 1 hr)

2. Participant inventory—Technology Inventory (Duration: 1 hr)

a. Technology Competency/Accessibility Inventory

b. Discuss results of inventory

3. Establish a vision and roles for the PLC (Duration: 1 hr)

a. Create a vision—Collaboration

b. Roles of participants

1. Previous knowledge of roles—Sticky Note Activity

2. Defining roles/responsibilities—PowerPointPresentation

c. Develop lesson plans and determine guidelines—Collaboration (Duration: 3.5 hrs)

1. Plan lessons/activities using a lesson plan template (members must develop 4 lesson plans that include technology-rich strategies for teaching and learning)

2. Communication Agreement for partnership

3. Documentation of behavioral objective outcomes

II. Meeting 2: Reflection of PLC (Formative Assessment)

A. Reflective practices for midpoint of semester (Duration: 2 hrs)

1. Review successes—T-chart

2. Review failures—T-chart

3. Review data/outcomes

B. Collaboration (Duration: 4.5 hrs)

1. Re-visit vision

2. Review the goal statement and behavioral objectives

3. Revise guidelines and practices

4. Plan lessons/activities (members must develop 4 lesson plans that include technology-rich strategies for teaching and learning)

C. Communication with Stakeholders (Duration: 1.5 hour)

1. Plan and begin developing a PowerPoint presentation to present outcomes to stakeholders

III. Meeting 3: Evaluation of PLC (Summative Assessment)

A. Reflective practices for end of semester (Duration: 3 hours)

1. Review successes—T-chart

2. Review failures—T-chart

3. Review data/outcomes

4. Likert scale survey—Evaluation of PLC Professional Development

   http://www.surveymonkey.com/r/PDforPLCeval

5. Discuss the results of the survey

B. Collaboration (Duration: 3.5 hours)

1. Revise vision, guidelines, practices, and expected outcomes as necessary for the next term

C. Communication with Stakeholders (Duration: 1.5 hour)

1. Complete PowerPoint presentation to deliver outcomes to stakeholders

Appendix A2: Professional Development Meetings Outlined

PROJECT STUDY: PROFESSIONAL DEVELOPMENT MEETING 1 (8HRS)	
Local District and/or School:	
Purpose:	The purpose of this professional development program is to foster a culture of training and collaboration through the development of the professional learning communities (PLC) where the members can share their experiences and expertise for increasing the use of technology in the classroom.
Goal Statement:	The goal of the project is to provide teacher training and support through PLC that address learning, instructional, and curricular needs for increasing the use of technology in the classroom.
Local Gap in Data/Problem:	Incompliance with state technology standard due to the lack of implementation of technology
Behavioral Objectives:	*To develop a collaborative environment where the members of the professional learning community may focus on school improvement and meeting the needs of the learners as well as current instructional needs of the members of the PLC *To promote the integration of technology in the classroom for improving learning through the research of best practices, planning, and implementation of technology rich practices *To ensure field experiences and student teaching components that support the ability of teacher candidates to be successful in the classroom

Outcomes to Improve Local Problem:	Development of PLC and the implementation of technology-rich lesson plans					
STEP/BENCHMARK	**STAKEHOLDERS**	**LEADERSHIP**	**ACTIVITY**	**RESOURCES NEEDED**	**REQUIRED TIME**	**QUALITY INDICATORS**
1. Deliver and discuss purpose, goal statement, curriculum and behavioral objectives of PLC	PLC Members: Preservice teachers Practicing teachers University faculty	Trainer (Walden Student) Assistant Principal of CIA CIA Teacher Leader	PowerPoint Presentation to be shown to whole group— Increasing the Use of Technology through Professional Learning Communities	• Laptop • Projector • Screen • PowerPoint Presentation (Appendix A3)	1 hour	Whole Group Discussion including Questions & Answers Desired participation= 100% of group
2. Present what current literature says about PLC	PLC Members: Preservice teachers Practicing teachers University faculty	Trainer (Walden Student) Assistant Principal of CIA CIA Teacher Leader	PowerPoint Presentation to be shown to whole group— Increasing the Use of Technology through Professional Learning Communities	• Laptop • Projector • Screen • PowerPoint Presentation (Appendix A3)	30 minutes	Whole Group Discussion including Questions & Answers Desired participation= 100% of group

STEP/BENCHMARK	STAKEHOLDERS	LEADERSHIP	ACTIVITY	RESOURCES NEEDED	REQUIRED TIME	QUALITY INDICATORS
3. Participant Introductions	PLC Members: Preservice teachers Practicing teachers University faculty	Trainer (Walden Student) Assistant Principal of CIA CIA Teacher Leader	PLC members group up with their partners and receive 1 handout per group Each member of the PLC share his/her story for becoming an educator to the small group One member records what is shared on the handout Members take turns introducing a member from their group and sharing what was learned through the Your Story Venn Diagram activity	• Your Story Venn Diagram Handout • Writing Utensils	1 hour	Completed Your Story Venn Diagram and Whole Group Introductions

STEP/BENCHMARK	STAKEHOLDERS	LEADERSHIP	ACTIVITY	RESOURCES NEEDED	REQUIRED TIME	QUALITY INDICATORS
4. Participant Inventory • Technology Competency/Accessibility Inventory • Discuss results of inventory	PLC Members: Preservice teachers Practicing teachers University faculty	Trainer (Walden Student) Assistant Principal of CIA CIA Teacher Leader	Technology Inventory to be completed by each member of the PLC Discuss results of inventory	• Technology Inventory handout containing a computer/technology competency inventory & available technology inventory	1 hour	100% Completed Technology Inventory Group discussions resulting in an understanding of computer/technology competency of each member & available technology for use in the classroom at the site school Desired participation= 100% of group
5. Establish a vision for the PLC based on standards and curriculum	PLC Members: Preservice teachers Practicing teachers University faculty	Trainer (Walden Student) Assistant Principal of CIA CIA Teacher Leader	Create a vision through collaboration and create a document for saving the vision for future reference	• Laptop	30 minutes	Shared Google document created by the members containing the vision for the partnership including what the outcomes of the PLC should look like Desired participation= 100% of group

STEP/BENCHMARK	STAKEHOLDERS	LEADERSHIP	ACTIVITY	RESOURCES NEEDED	REQUIRED TIME	QUALITY INDICATORS
6. Identify roles of the members of the PLC	PLC Members: Preservice teachers Practicing teachers University faculty	Trainer (Walden Student) Assistant Principal of CIA CIA Teacher Leader	Sticky Note Activity—Each member of the PLC receives a sticky note pad. They write down previous knowledge or presumptions of the roles of each member in the PLC each idea on a separate sticky note and place the sticky notes on the appropriate poster board. Slides addressing roles of PLC are shown from the PowerPoint Presentation— Increasing the Use of Technology through Professional Learning Communities	• Sticky note pads • 3 poster boards (one labeled Preservice Teacher, one labeled Practicing Teacher and one labeled University Faculty) • PowerPoint Presentation—Increasing the Use of Technology through Professional Learning Communities (Appendix A3)	1 hour	Poster boards complete with 100% accurate sticky notes that describe the true roles and responsibilities of each member of the PLC partnership. The sticky notes that were misconceptions were removed or edited to truly represent the roles and responsibilities decided on upon by the whole group.

STEP/BENCHMARK	STAKEHOLDERS	LEADERSHIP	ACTIVITY	RESOURCES NEEDED	REQUIRED TIME	QUALITY INDICATORS
7. Develop lesson plans	PLC Members: Preservice teachers Practicing teachers University faculty	Trainer (Walden Student) Assistant Principal of CIA CIA Teacher Leader	Plan lessons/activities using a lesson plan template (members must develop 4 lesson plans that include technology-rich strategies for teaching and learning)	• Laptop • Lesson Plan Template	3 hrs	4 complete lesson plans containing technology-rich best practices Shared Google Document containing the communication agreement and instrument for recording behavioral objective outcomes
8. Develop guidelines	PLC Members: Preservice teachers Practicing teachers University faculty	Trainer (Walden Student) Assistant Principal of CIA CIA Teacher Leader	Develop of a communication agreement for partnership Agree upon a method for documenting behavioral objective outcomes	• Shared Document with the communication agreement and documentation methods for recording behavioral objective outcomes	.5 hours	Shared Google Document containing the communication agreement and instrument for recording behavioral objective outcomes

PROJECT STUDY: PROFESSIONAL DEVELOPMENT MEETING 2 (8HRS)	
Local District and/or School:	
Purpose:	The purpose of this professional development program is to foster a culture of training and collaboration through the development of the professional learning communities (PLC) where the members can share their experiences and expertise for increasing the use of technology in the classroom.
Goal Statement:	The goal of the project is to provide teacher training and support through PLC that address learning, instructional, and curricular needs for increasing the use of technology in the classroom.
Local Gap in Data/Problem:	Incompliance with state technology standard due to the lack of implementation of technology
Behavioral Objectives:	*To develop a collaborative environment where the members of the professional learning community can focus on school improvement and meeting the needs of the learners as well as current instructional needs of the members of the PLC *To promote the integration of technology in the classroom for improving learning through the research of best practices, planning, and implementation of technology rich practices *To ensure field experiences and student teaching components that support the ability of teacher candidates to be successful in the classroom
Outcomes to Improve Local Problem:	Formative assessment of PLC and the continued implementation of technology-rich lesson plans

STEP/BENCHMARK	STAKEHOLDERS	LEADERSHIP	ACTIVITY	RESOURCES NEEDED	REQUIRED TIME	QUALITY INDICATORS
1. Reflection of PLC at the midpoint of semester (formative assessment)	PLC Members: Preservice teachers Practicing teachers University faculty	Trainer (Walden Student) Assistant Principal of CIA CIA Teacher Leader	Members of the PLC discuss successes and failures then list them on the T-chart document as a group. They also review strategies/practices that worked and those that didn't and place them in the T-chart document. Members of the PLC discuss data and identify outcomes from the past 9 weeks. On the same document below the T-chart, members list any significant data or outcomes. Each PLC shares their successes/failures or any significant data or outcomes to the whole group	• Laptop • T-chart electronic document	2 hours	Completed T-chart document Completed list of data and outcomes on same electronic document as the T-chart Desired participation in discussion= 100% of whole group

STEP/BENCHMARK	STAKEHOLDERS	LEADERSHIP	ACTIVITY	RESOURCES NEEDED	REQUIRED TIME	QUALITY INDICATORS
2. Collaboration- Reflect & Revise	PLC Members: Preservice teachers Practicing teachers University faculty	Trainer (Walden Student) Assistant Principal of CIA CIA Teacher Leader	PLC re-visit the vision, review the goal statement and behavioral objectives, and revise guidelines and practices. Each PLC shares the revisions to guidelines and practices with the whole group that they consider necessary for continued success of the partnership.	• Laptop • Shared Google Document	1 hour	Revisions to the guidelines and practices added to the shared Google document from Day 1 containing the vision and desired outcomes. Desired participation in discussion= 100% of whole group
3. Collaboration – Plan lessons & activities	PLC Members: Preservice teachers Practicing teachers University faculty	Trainer (Walden Student) Assistant Principal of CIA CIA Teacher Leader	PLC members must collaboratively develop 4 lesson plans for the remaining 9 weeks of the semester that include technology-rich strategies for teaching and learning	• Laptop • Lesson Plan Template	3.5 hours	4 complete lesson plans containing technology-rich best practices
4. Communication with Stakeholders	PLC Members: Preservice teachers Practicing teachers University faculty	Trainer (Walden Student) Assistant Principal of CIA CIA Teacher Leader	Each PLC plans and develops a PowerPoint presentation to present progress to stakeholders	• Laptop • PowerPoint software	1.5 hour	Completed PowerPoint communicating current progress of the PLC. The PowerPoint should include pertinent successes, failures, data, and outcomes.

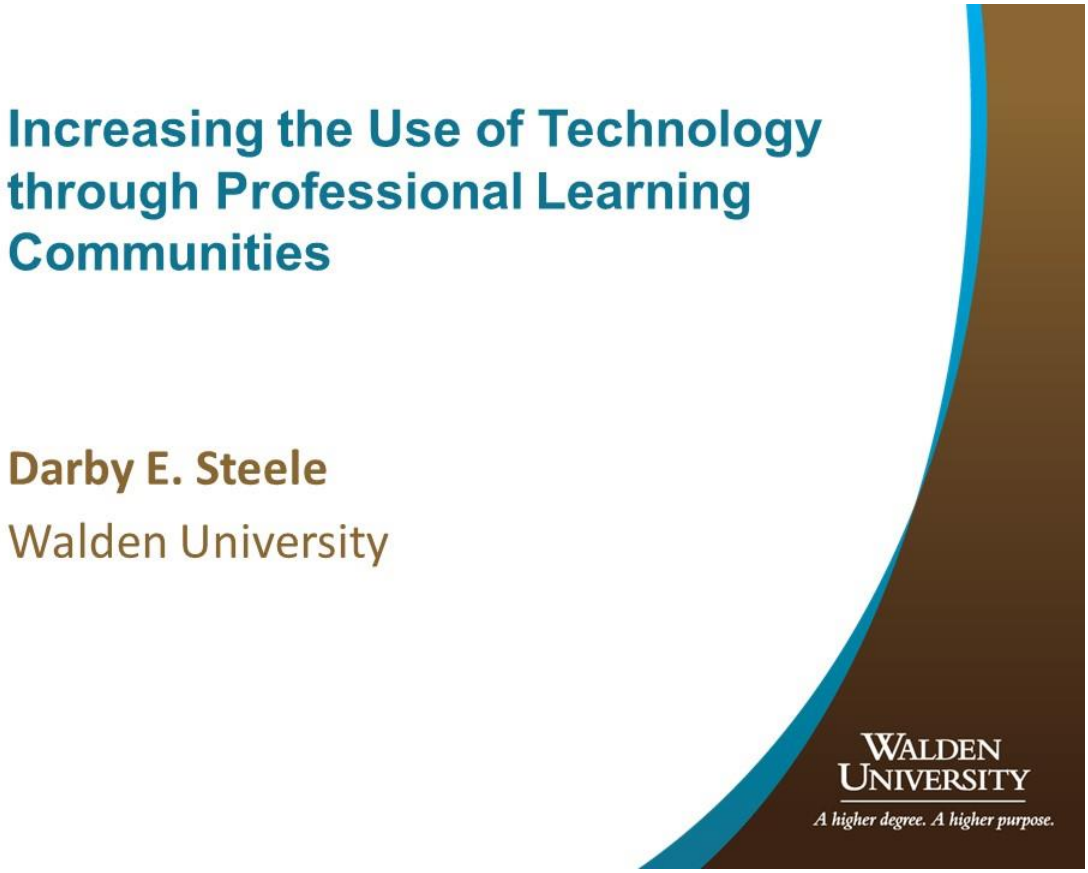
PROJECT STUDY: PROFESSIONAL DEVELOPMENT MEETING 3 (8HRS)	
Local District and/or School:	
Purpose:	The purpose of this professional development program is to foster a culture of training and collaboration through the development of the professional learning communities (PLC) where the members can share their experiences and expertise for increasing the use of technology in the classroom.
Goal Statement:	The goal of the project is to provide teacher training and support through PLC that address learning, instructional, and curricular needs for increasing the use of technology in the classroom.
Local Gap in Data/Problem:	Incompliance with state technology standard due to the lack of implementation of technology
Behavioral Objectives:	*To develop a collaborative environment where the members of the professional learning community can focus on school improvement and meeting the needs of the learners as well as current instructional needs of the members of the PLC *To promote the integration of technology in the classroom for improving learning through the research of best practices, planning, and implementation of technology rich practices *To ensure field experiences and student teaching components that support the ability of teacher candidates to be successful in the classroom
Outcomes to Improve Local Problem:	Summative assessment of PLC and collaborative revisions of the partnership

Step/Benchmark	Stakeholders	Leadership	Activity	Resources Needed	Required Time	Quality Indicators
1. Evaluation of the PLC professional development program (formative assessment)	PLC Members: Preservice teachers Practicing teachers University faculty	Trainer (Walden Student) Assistant Principal of CIA CIA Teacher Leader	Review successes and failures from the Meeting 2 T-chart document. Members of the PLC add successes and failures from the last 9 weeks to the list from the first nine weeks; however, a different color or notation will be used. Members also discuss strategies/practices that worked and those that didn't and fill in the T-chart document as a group. Members of the PLC discuss data and identify outcomes from the last 9 weeks. On the same document below the T-chart, members add any significant data or outcomes. Each PLC shares the successes/failures or any significant data/outcomes from the entire 1st semester (18weeks) to the whole group	• Laptop • T-chart electronic document	2 hours	Completed T-chart document Completed list of data and outcomes on same electronic document as the T-chart Desired participation in discussion= 100% of whole group

STEP/BENCHMARK	STAKEHOLDERS	LEADERSHIP	ACTIVITY	RESOURCES NEEDED	REQUIRED TIME	QUALITY INDICATORS
2. Evaluation of the PLC professional development program (summative assessment)	PLC Members: Preservice teachers Practicing teachers University faculty	Trainer (Walden Student) Assistant Principal of CIA CIA Teacher Leader	Each member of the PLC uses the Survey Monkey link to take the Likert scale survey, *Evaluation of the PD for the PLC*, on their personal technology. After everyone has completed the survey, the analysis of the results are displayed for the whole group and a whole-group discussion about the results takes place.	• Laptop or other personal technology • Internet • Projector • Survey	1 hour	Desired participation in the survey= 100% of the whole group
3. Collaboration – Revisions	PLC Members: Preservice teachers Practicing teachers University faculty	Trainer (Walden Student) Assistant Principal of CIA CIA Teacher Leader	PLC re-visit the vision and review the goal statement and behavioral objectives. Each PLC revises the vision, guidelines, practices, expected outcomes, and lesson plans as needed. These revisions are shared with the whole group to support continued success of the partnership.	Laptop Shared Google Document Lesson Plans	3.5 hour	Revisions to the vision, guidelines, practices, and expected outcomes are added to the shared Google document from Day 2. Lesson plans from the entire semester are edited as needed. Desired participation in discussion= 100% of whole group

Step/Benchmark	Stakeholders	Leadership	Activity	Resources Needed	Required Time	Quality Indicators
4. Communication with Stakeholders	PLC Members: Preservice teachers Practicing teachers University faculty	Trainer (Walden Student) Assistant Principal of CIA CIA Teacher Leader	Each PLC plans and develops a PowerPoint presentation to present progress to stakeholders	Laptop PowerPoint software	1.5 hour	Completed PowerPoint communicating the overall success of the PLC. Indications of progress throughout the semester must be noted. The PowerPoint should include pertinent successes, failures, data, and outcomes from the entire semester.

Appendix A3: PowerPoint Presentation



The purpose of my study was to measure relationships among factors influencing degree of implementation of technology in the classroom (ITC). The findings of my quantitative investigation indicated a statistically significant relationship between Degree of ITC and both Teacher Disposition and instructional support to improve the use of technology. In order to promote compliance with local, state, and national technology initiatives, the factors such as these that act as barriers to ITC must be addressed to catalyze an increased use of technology. The purpose of this project is to increase the use of technology through PLC.

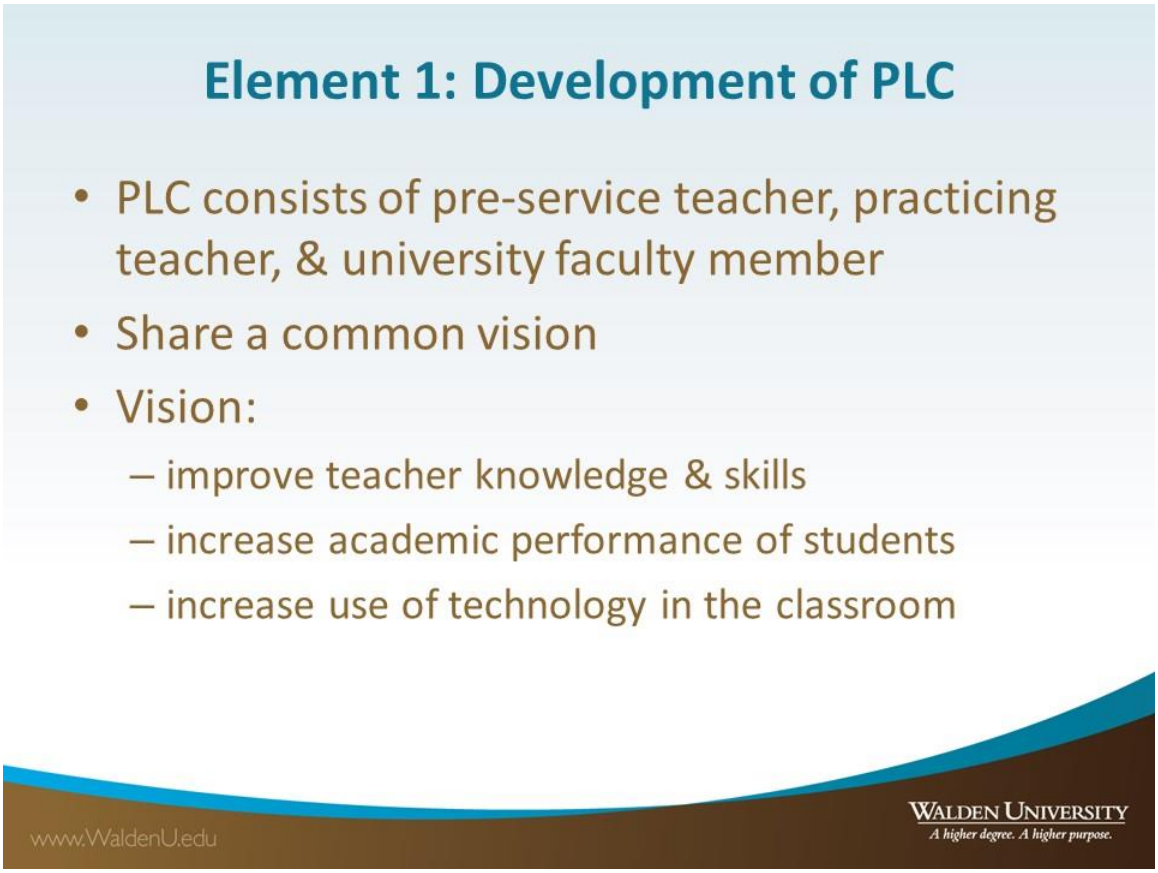
Purpose

The purpose of this professional development program is to foster a culture of training and collaboration through the development of the professional learning communities (PLC) where the members can share their experiences and expertise for increasing the use of technology in the classroom.

Goal Statement

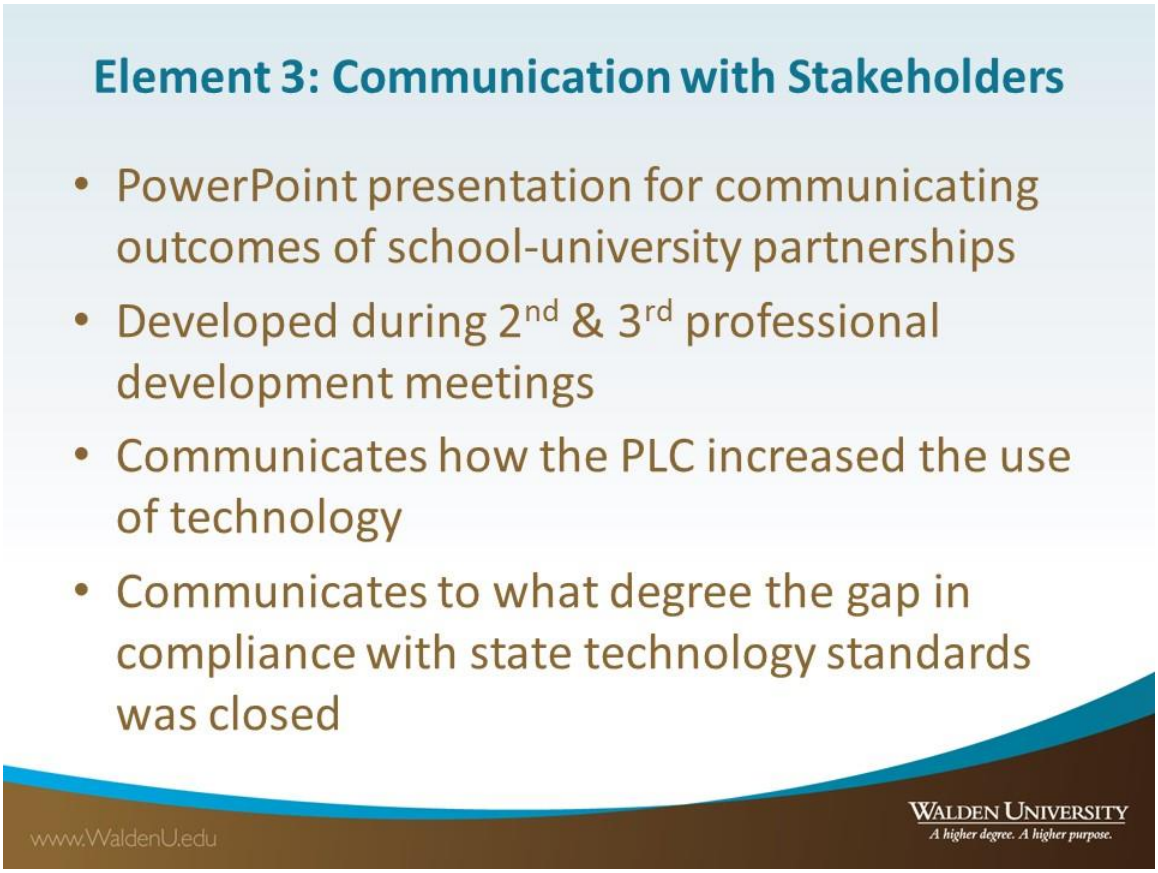
The goal of the project is to provide teacher training and support through professional learning communities (PLC) that address learning, instructional, and curricular needs for increasing the use of technology in the classroom.

Element 1—development of the PLC begins before the school year begins
Element 2—Meeting 1 occurs during preplanning for teachers. Meeting 2 occurs at the midpoint of semester. Meeting 3 occurs at the end of semester.
Element 3—Communication with stakeholders occurs at the end of semester.

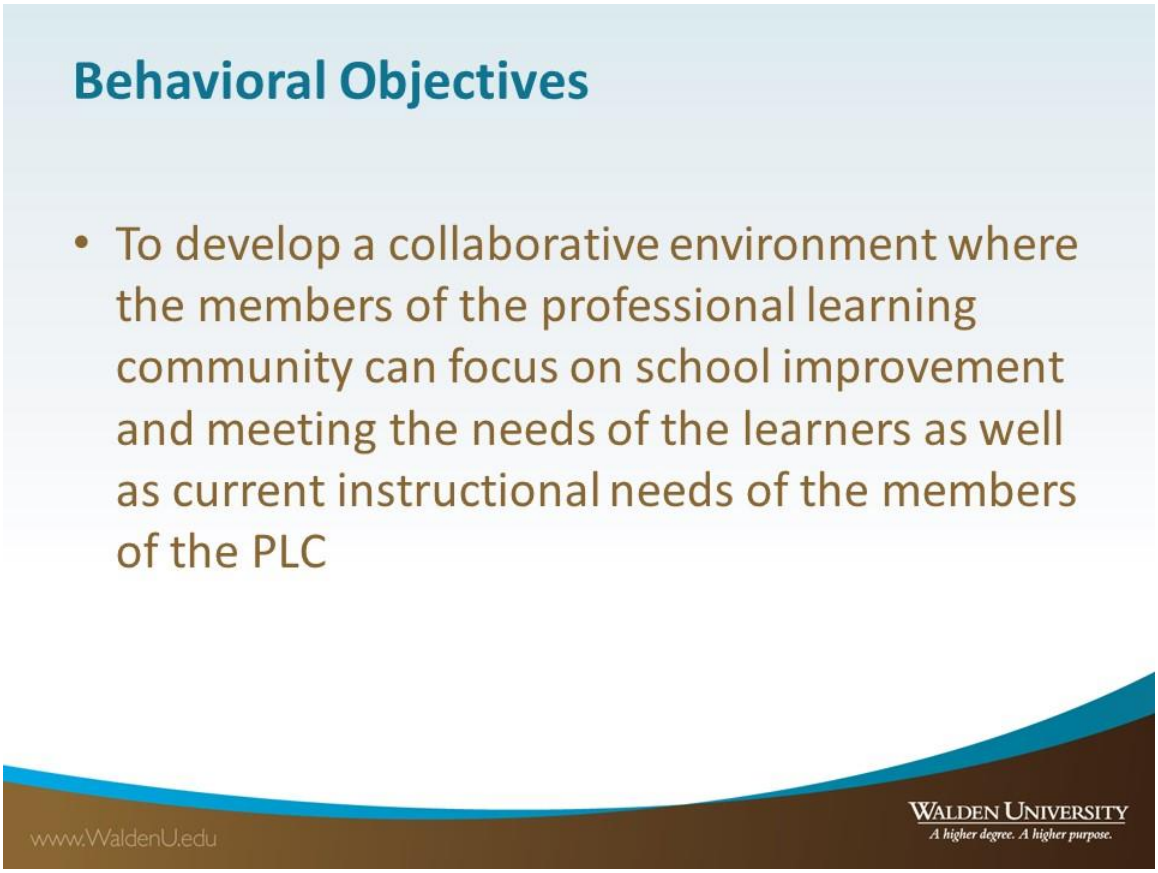


Element 1—The organization and development of the PLC begins before beginning of school year. The volunteers participating in the PLC come from 2-3 institutions the members of the PLC include one preservice teacher, one practicing teacher, and one university faculty.

Element 2—The 3 professional development meetings throughout semester of the school year. Collaboration continues throughout the semester between the members of the PLC.

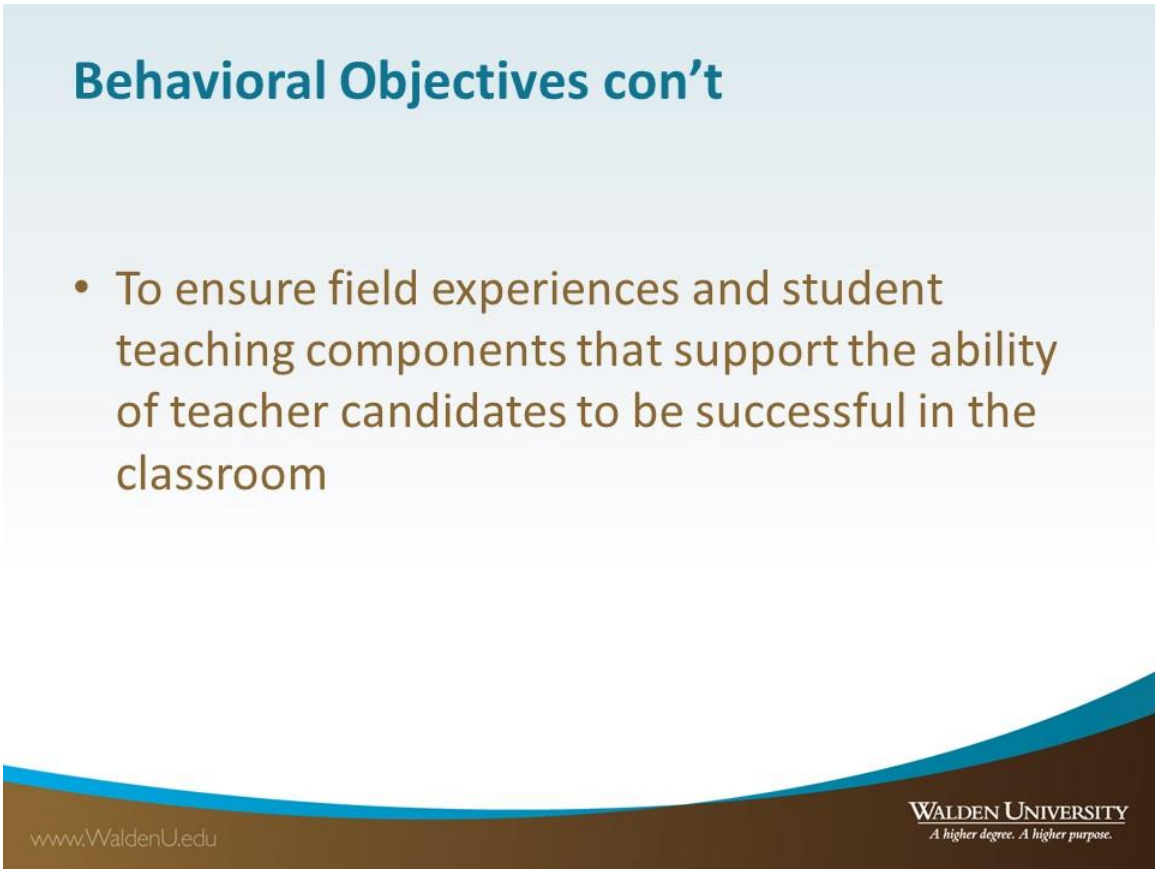


Element 3—Upon the completion of the semester, program and school leaders will present the PowerPoint presentation to district leaders, school administration, teachers, and parents.

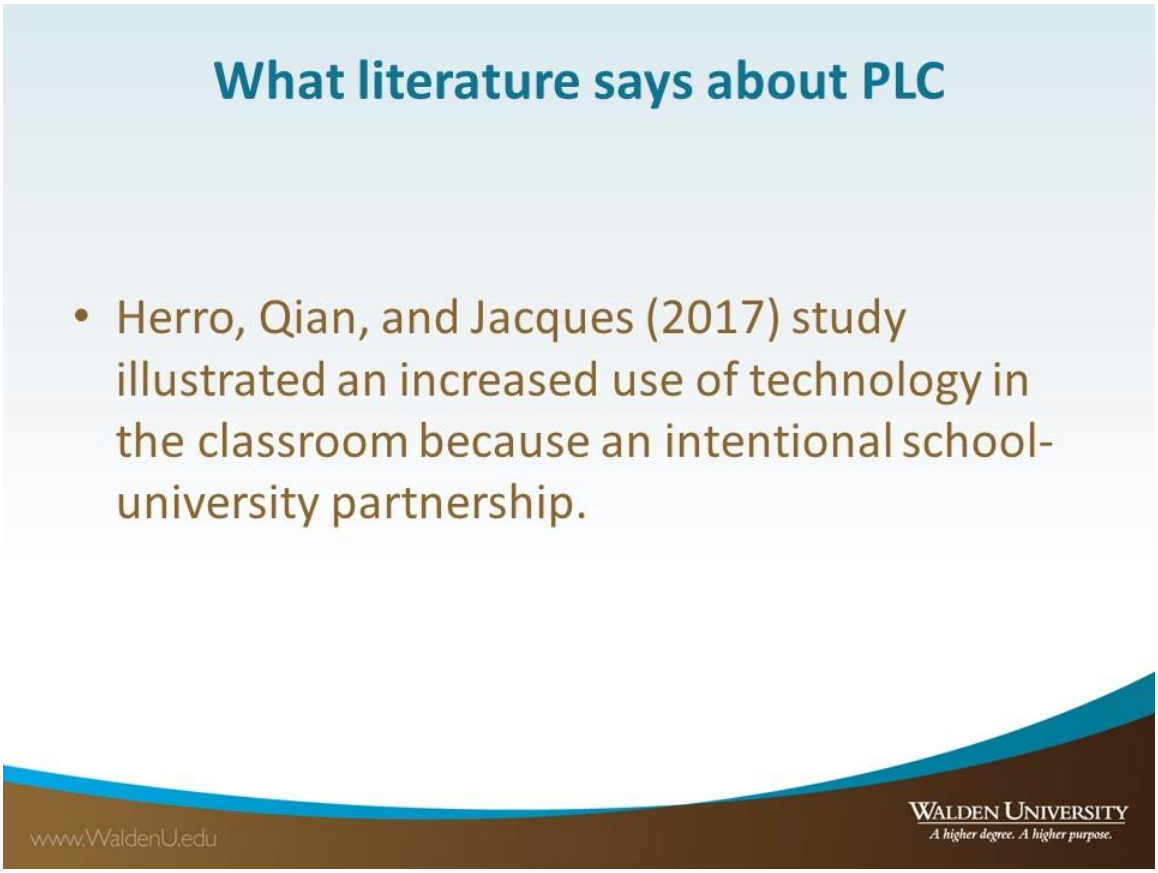


The focus of this behavioral objective is on school improvement while fostering collaboration where the practicing teacher, preservice teacher, university faculty, & students can learn new strategies for using technology.

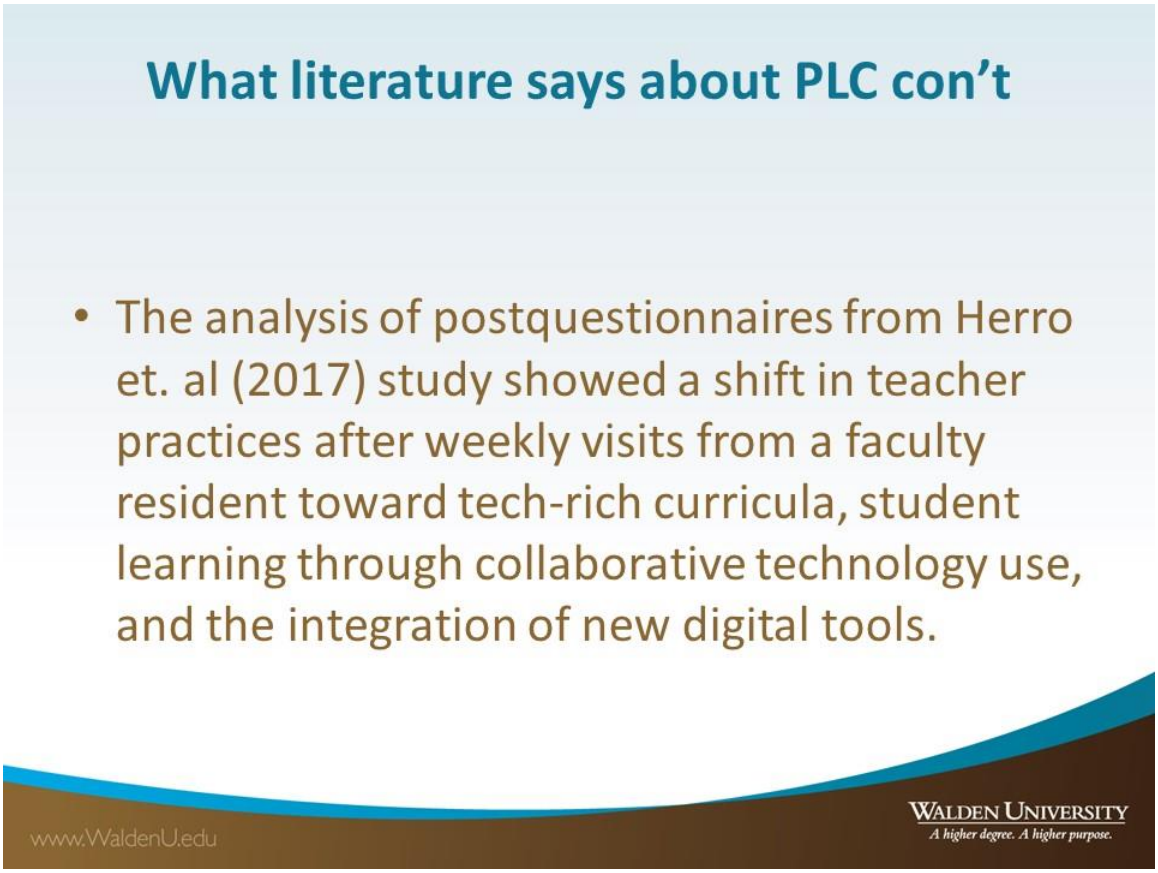
The focus of this behavioral objective is improving student learning and achievement through the use of technology.



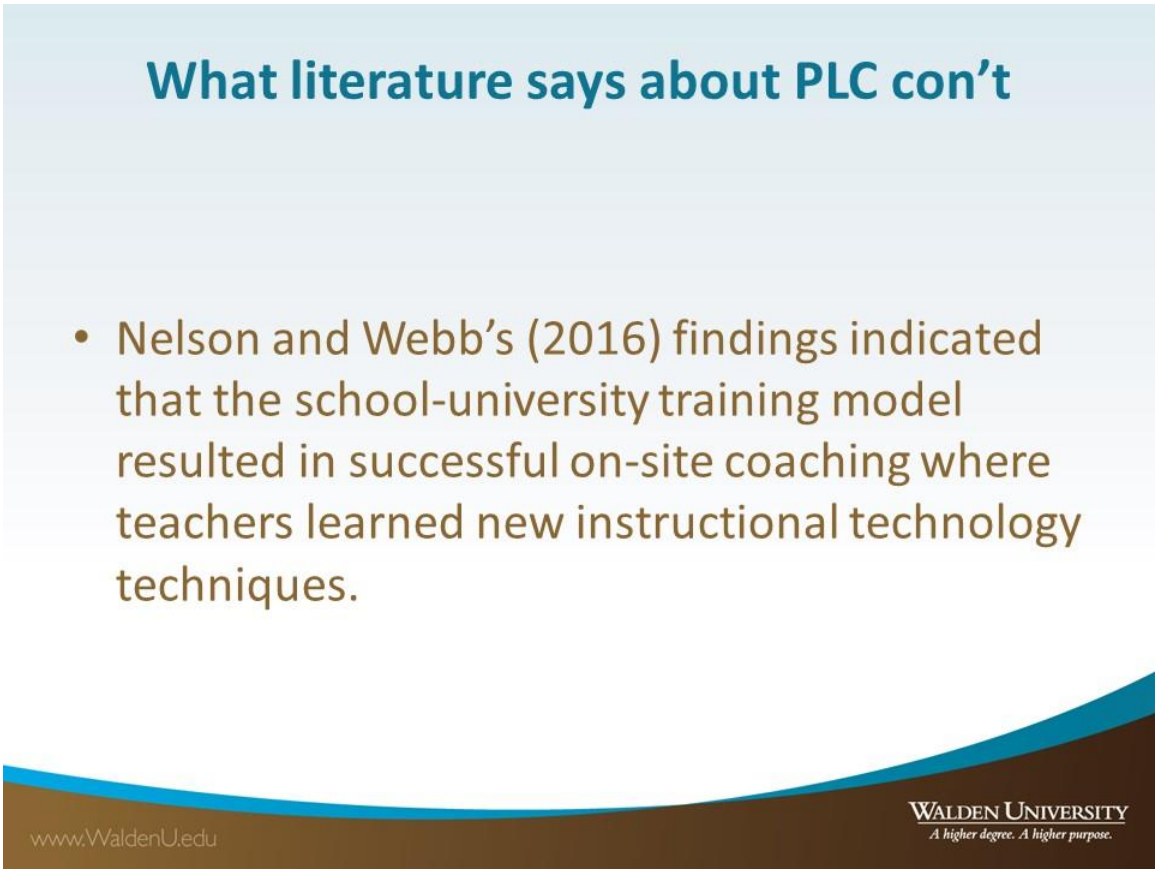
The focus of this behavioral objective is on the preservice teacher. It is designed to ensure the preservice teacher walks away with the knowledge and skill to effectively implement technology in the classroom.



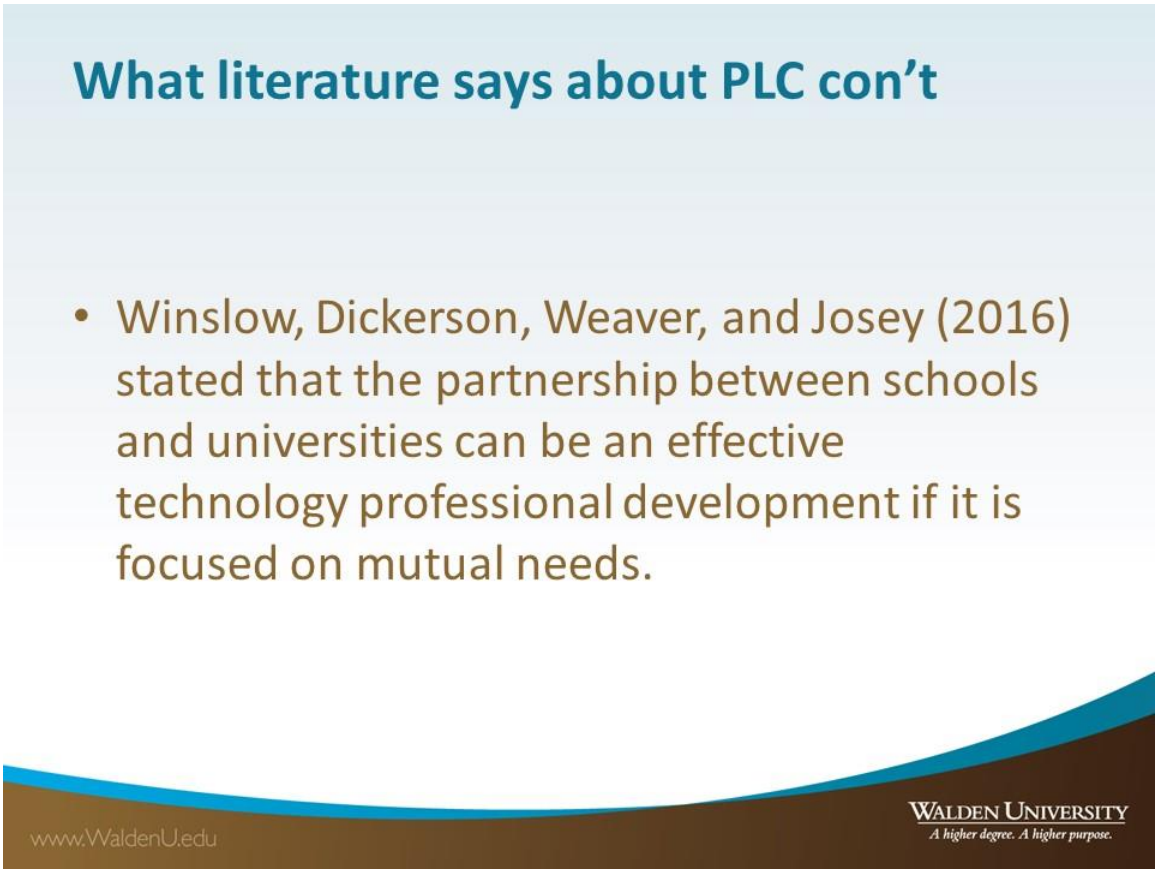
This program was developed to promote the partnership between preservice teachers, practicing teachers, & university faculty for increasing the use of technology resulting in improved compliance with technology standards and policies.



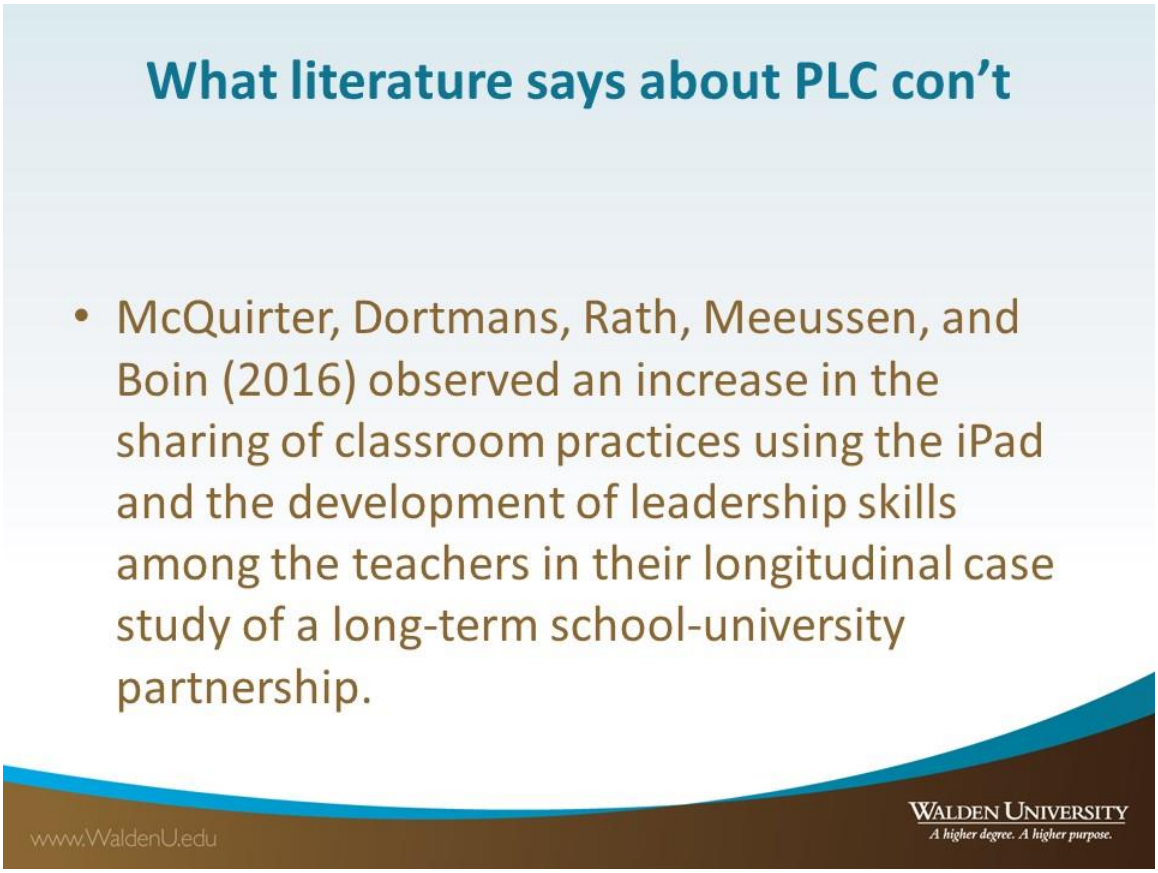
This study indicates a change in teaching and learning from the partnership with a university faculty member.



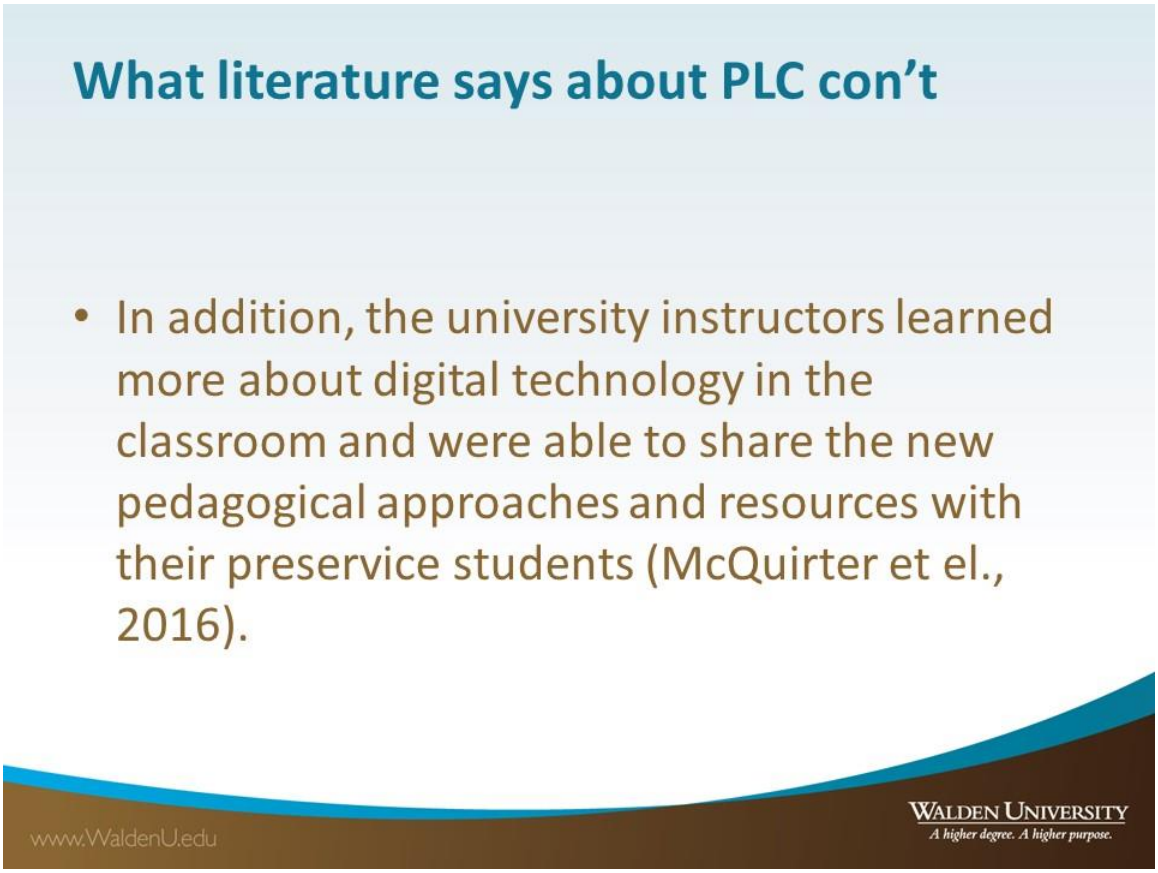
This research showed improved implementation of instructional strategies using technology through the support of partnerships of PLC.



This source supports technology professional development that fosters collaboration that meets the needs of all members.



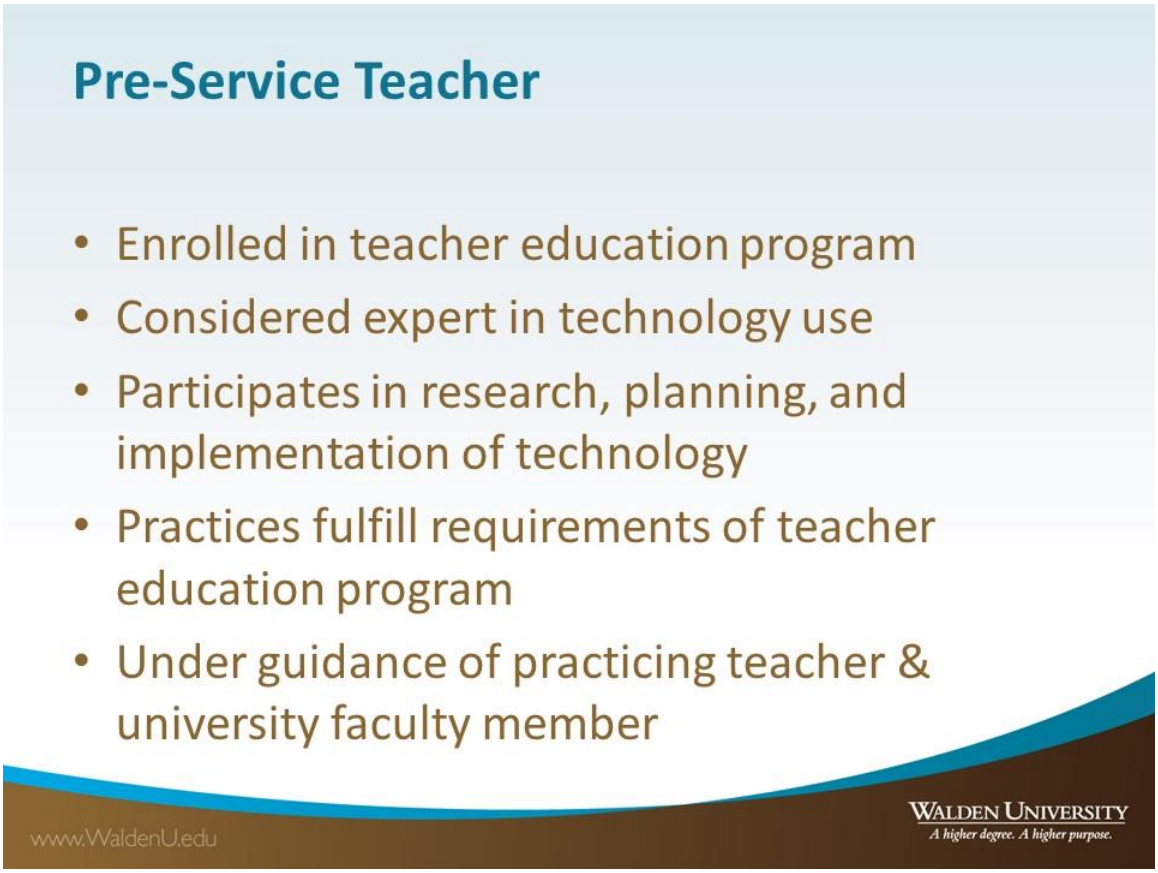
This literature identifies increased sharing of knowledge and skills through long-term relationships in PLC.



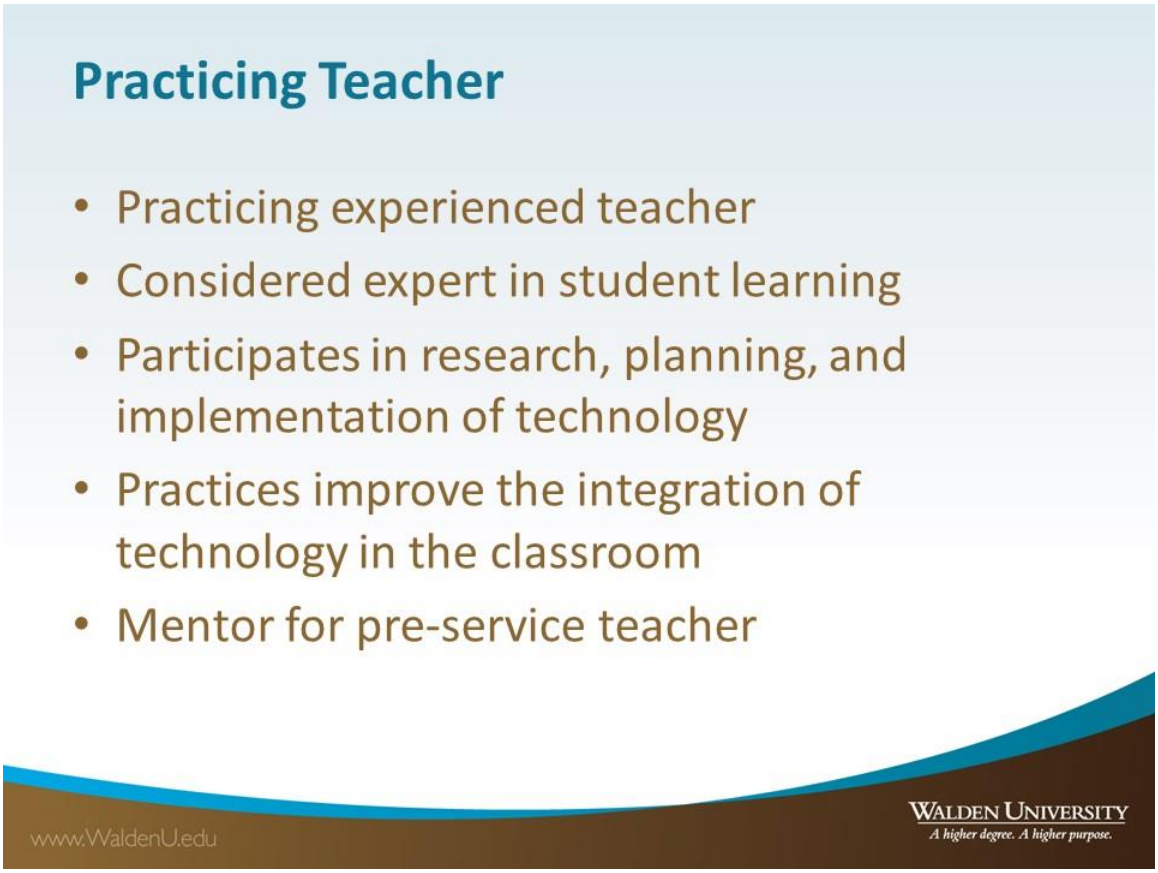
This study shows that university faculty are able to take away from the partnership as well as.

Each Professional Learning Community in this program consists of one preservice teacher, one practicing teacher, and one university faculty member.

For the partnership to be successful, it must be a relationship where collaboration occurs among all members.

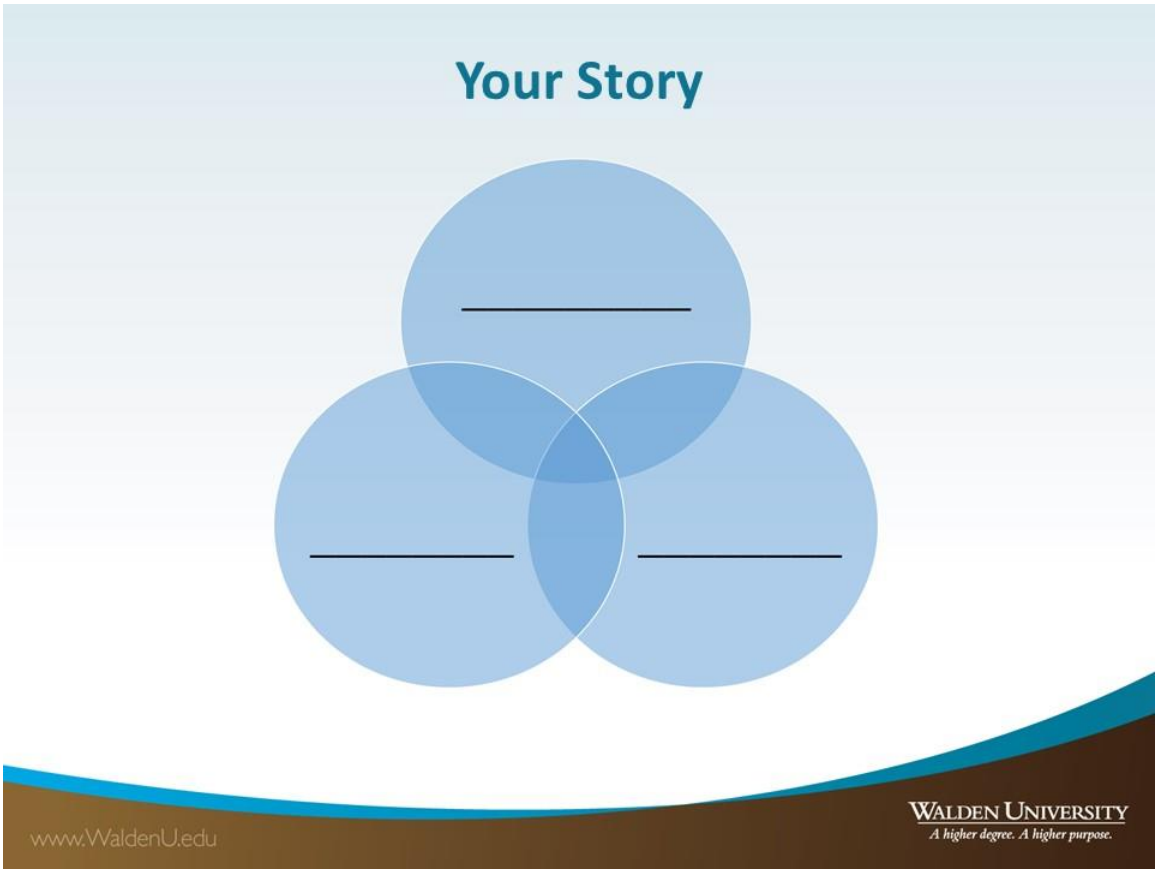


Preservice teacher—student in an education program at a local university, gains from experiences with practicing teacher in the classroom

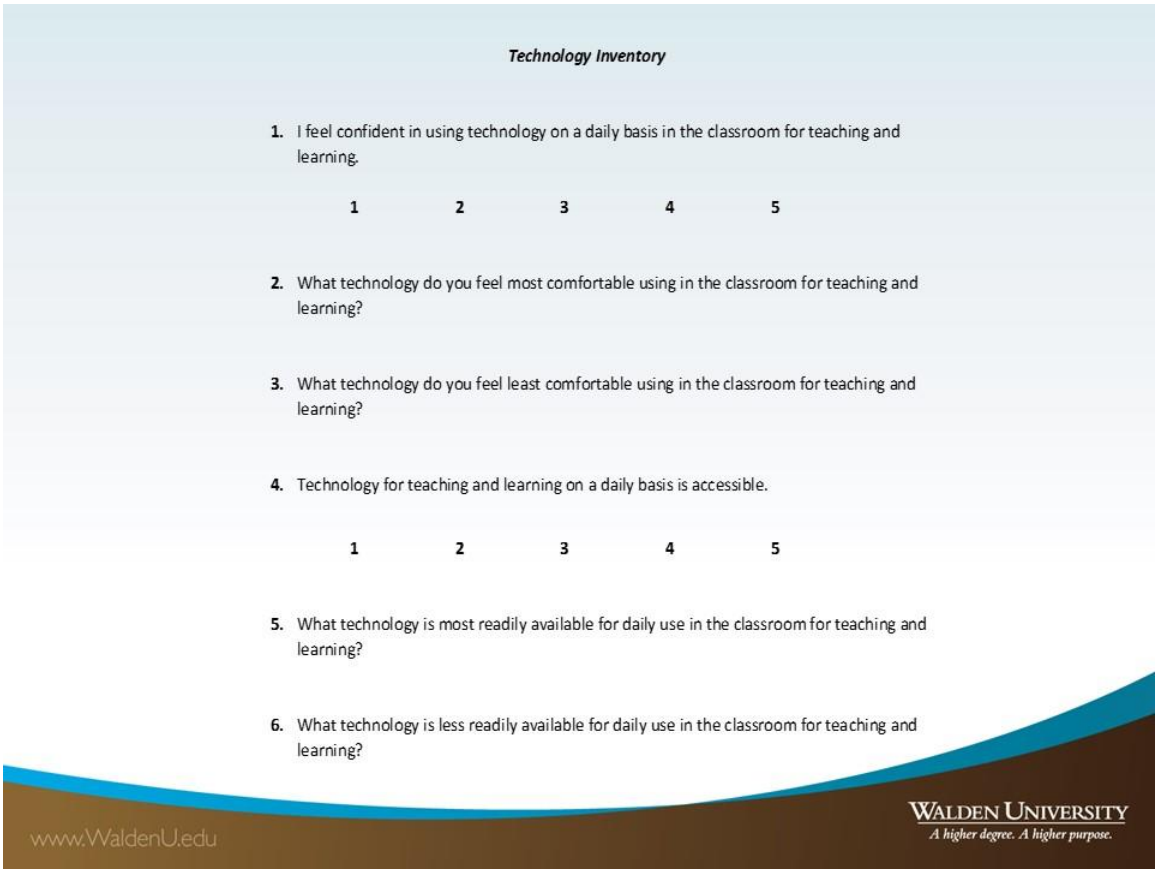


Practicing teacher—certified teacher at a local school, gains from collaboration with preservice teacher and university faculty

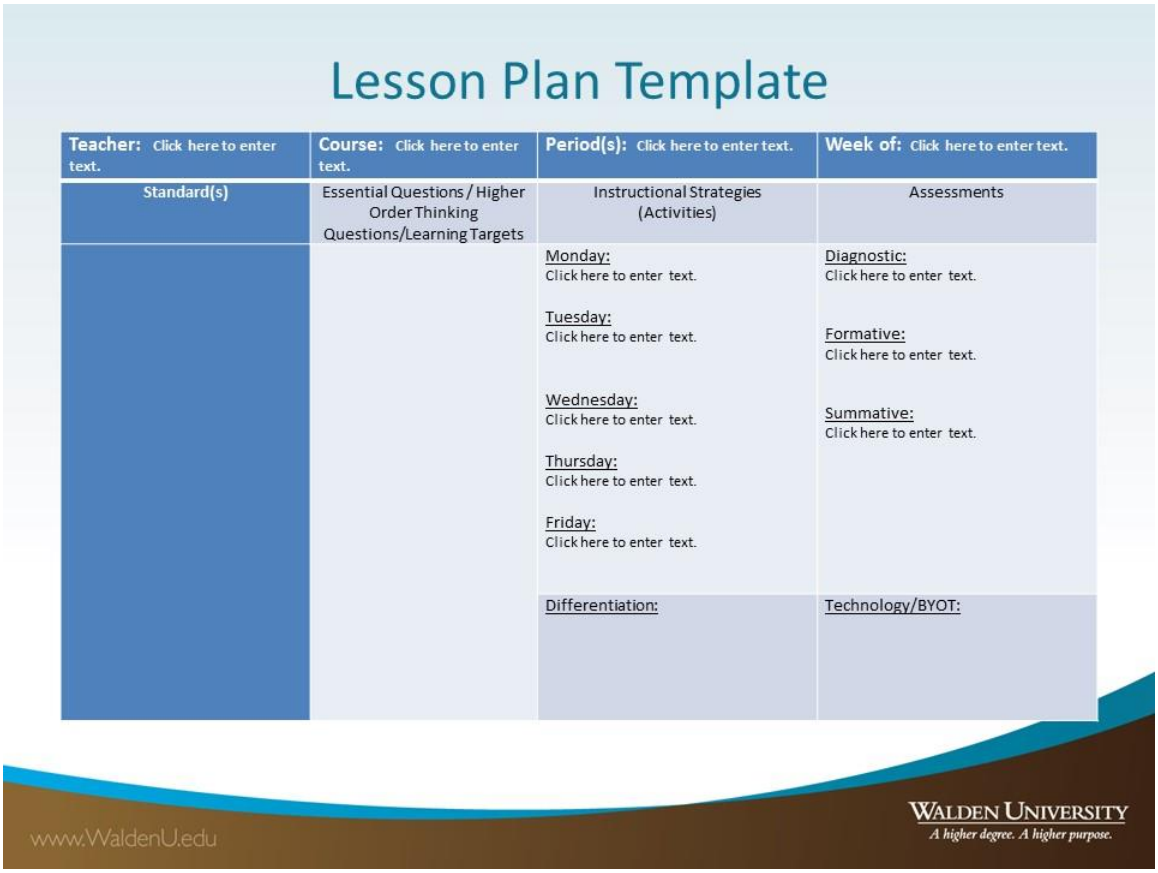
University faculty—instructor and/or mentor at the same university as the preservice teacher, gains from observing new technology experiences in the classroom



Your Story—This activity is used for participant introductions in the first professional development meeting.



Participant Inventory—This inventory is used in the first professional development meeting to identify the available technology resources of the members of the PLC as well as their comfort level for using the available technology before collaboration begins.



Lesson Plan Template

Teacher: Click here to enter text.	**Course:** Click here to enter text.	**Period(s):** Click here to enter text.	**Week of:** Click here to enter text.
Standard(s)	Essential Questions / Higher Order Thinking Questions/Learning Targets	Instructional Strategies (Activities)	Assessments
		Monday: Click here to enter text. Tuesday: Click here to enter text. Wednesday: Click here to enter text. Thursday: Click here to enter text. Friday: Click here to enter text.	Diagnostic: Click here to enter text. Formative: Click here to enter text. Summative: Click here to enter text.
		Differentiation:	Technology/BYOT:

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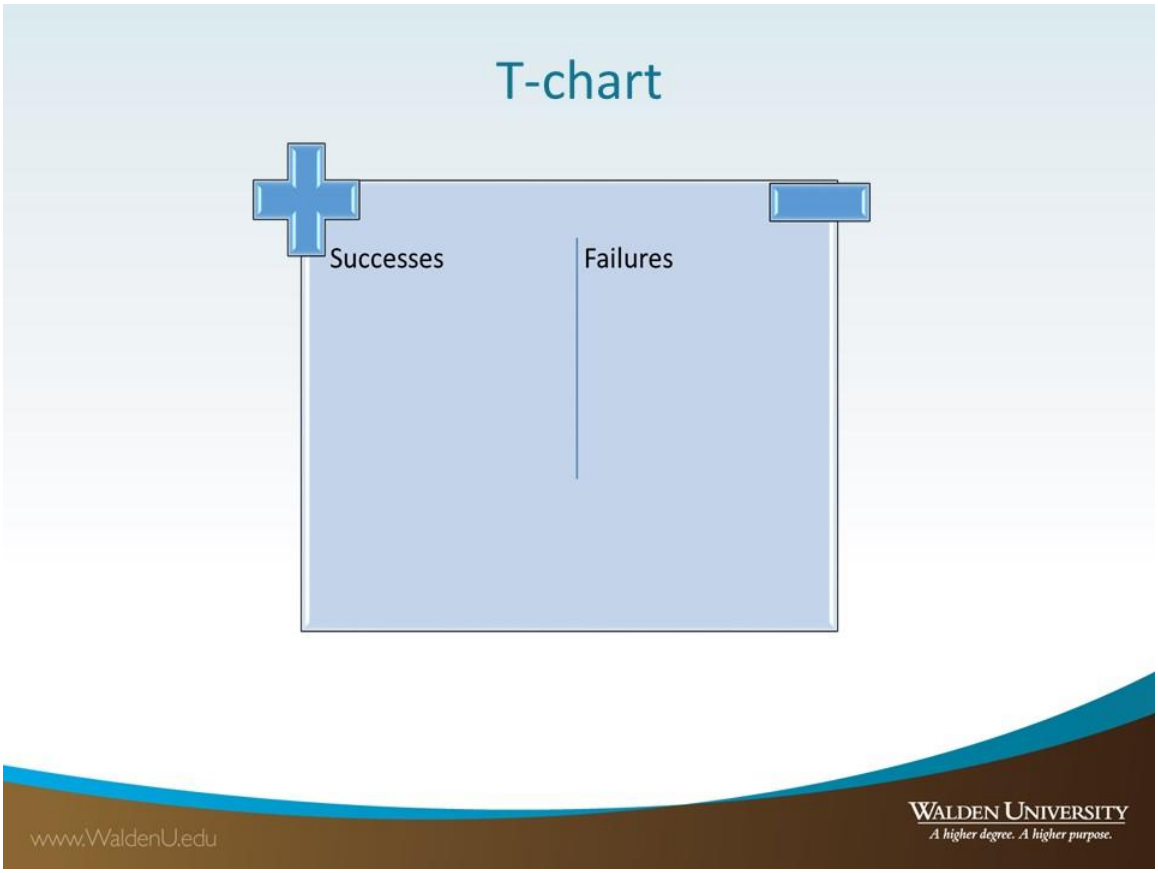
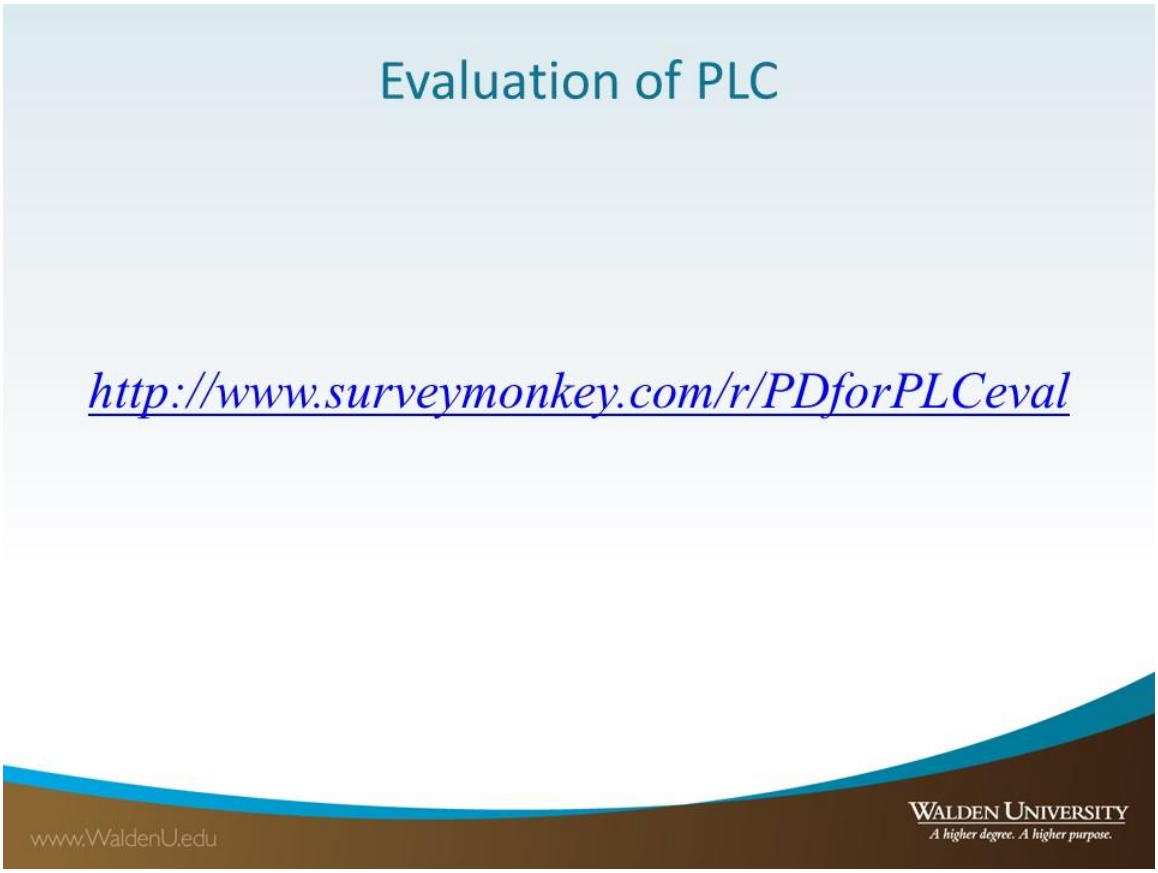
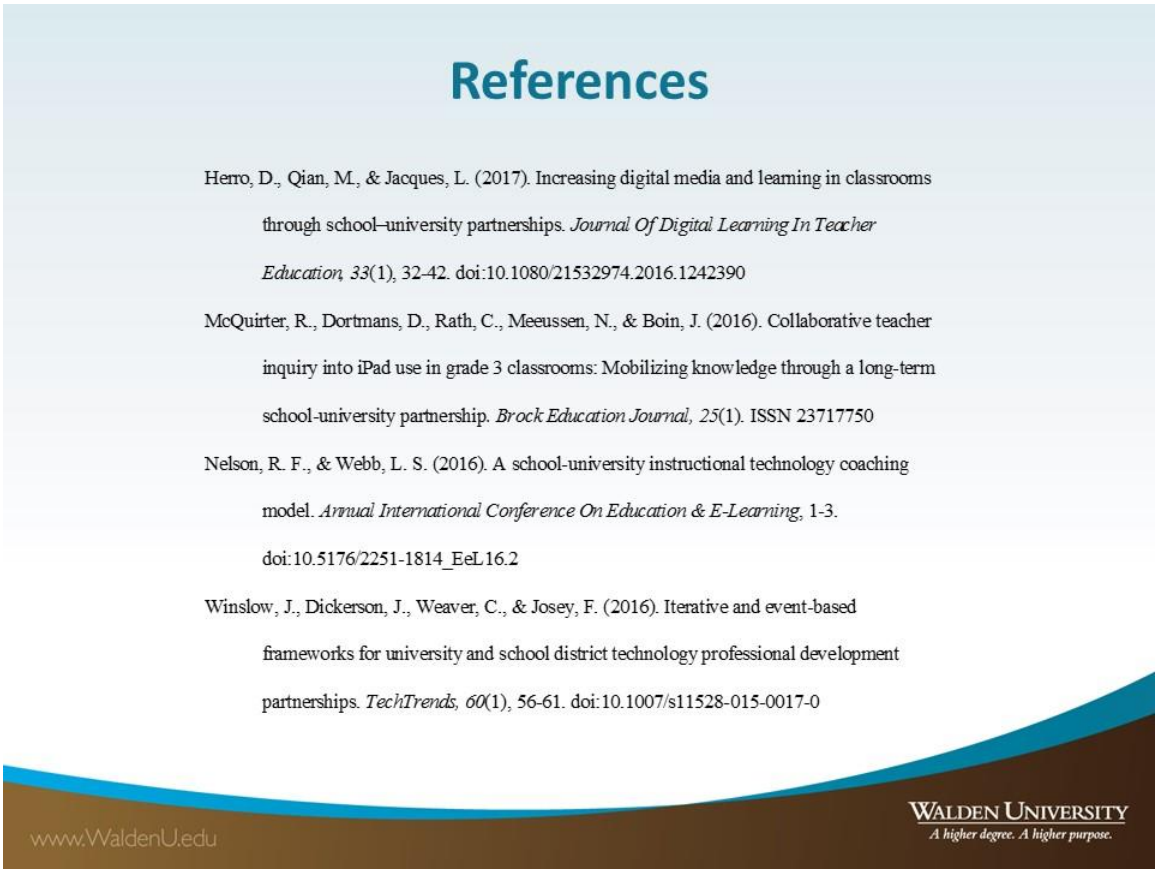
Lesson Plan Template—This template serves as an example of a high school lesson plan that includes the implementation of technology.



T-chart—This graphic organizer for sharing successes and failures of the PLC in the second and third professional development meetings.



Evaluation of PLC—This is the link to evaluation of PLC to be held in the third professional development meeting.



References for PowerPoint presentation

Appendix A4: Evaluation of PLC Professional Development

Evaluation of PLC Professional Development Program

1. What was your role in the personal learning community?

- ◯ Pre-service Teacher
- ◯ Practicing Teacher
- ◯ University Faculty

2. The training received through the professional development program was a valuable experience. (Level 1)

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
◯	◯	◯	◯	◯

3. The presentation of the material in the professional development program was satisfactory. (Level 1)

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
◯	◯	◯	◯	◯

4. The venue in which the three professional development meetings took place was satisfactory. (Level 1)

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
◯	◯	◯	◯	◯

5. My knowledge of technology has increased as a result of the professional development program. (Level 2)

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
○	○	○	○	○

6. My knowledge of professional learning communities has increased as a result of the professional development program. (Level 2)

Strongly Disagree	Disgree	Neither Disagree or Agree	Agree	Strongly Agree
○	○	○	○	○

7. The collaborative environment of the professional learning community promoted a focus on school improvement. (Level 3)

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
○	○	○	○	○

8. The collaborative environment of the professional learning community promoted the focus of meeting the needs of the learners. (Level 3)

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
○	○	○	○	○

9. The collaborative environment of the professional learning community promoted the focus of meeting your current instructional needs. (Level 3)

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
○	○	○	○	○

10. The inegration of technology in the classroom was fostered by the use of current research of best practices. (Level 3)

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
○	○	○	○	○

11. The integration of technology in the classroom for improving learning was fostered by collaborative planning. (Level 3)

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
○	○	○	○	○

12. The integration of technology in the classroom for improving learning was fostered by the planning of technology-rich practices. (Level 3)

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
○	○	○	○	○

13. Field experiences supported the ability of teacher candidates to be successful in the classroom. (Level 3)

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
○	○	○	○	○

14. Student teaching components supported the ability of teacher candidates to be successful in the classroom. (Level 3)

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
○	○	○	○	○

15. The integration of technology in the classroom was increased through the development of professional learning communities. (Level 4)

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
○	○	○	○	○

16. Do you have any recommendations for improving professional development for developing professional learning communities?

17. Do you have any additional comments?

Appendix B: Principal's Permission Letter (E-mail)

November 22, 2016

Dear Principal «Principal_Last_Name»:

I am requesting your assistance in surveying teachers that instruct any of the Grades 9-12 at your school. This survey investigates factors related to the implementation of technology into the curriculum, as well as the influence of technology on student learning activities and teacher practices.

The results of this research will be useful to school systems and individual schools alike in their efforts to improve current training and support practices related to the implementation of technology. The results should prove encouraging to teachers and administrators who support the use of technology as a teaching and learning tool and will provide data for future professional development for technology. Principals in participating schools can receive a summary of the results of the study upon request to share with teachers and other stakeholders.

Please electronically distribute my e-mail to all teachers who instruct students in any of the Grades 9-12 at your school, along with your request that they participate. Each teacher should then complete and submit the survey online. All survey responses will be confidential as submissions will be automatically saved in a database where the data will be later aggregated and analyzed for the study. The survey takes approximately 10 minutes to complete and requires no paperwork. Please encourage each of your teachers to complete it within the next week if possible.

Your assistance is essential to the success of this research. I realize that you are extremely busy with the daily operations of the school and sincerely appreciate your prompt attention and assistance in this matter. Please encourage your teachers to respond in a timely manner. With that said, teacher participation is critical in this study and I realize the difficulties of an additional task at this time of year. My database will be active until <date> and I would appreciate any assistance you can give me in gathering this data. Please contact me by phone or e-mail if you would like further information about my study or if you have any reservations about participating. Thank you.

Sincerely,

Darby Steele

Appendix C: Invitation to Participate (E-mail)

Dear Colleague,

The following text is an *Invitation to Participate* as a volunteer in a study about the degree of Implementation of Technology at our school. I am forwarding this invitation as a courtesy; please understand that you are under no obligation to participate as this survey is not required by this school. Thank you.

Sincerely,
Mr/Mrs/Ms Administrator

I am a doctoral student at Walden University and would like to invite you participate in a project study by completing an online survey that will take no more than 15 minutes of your time. As a teacher or staff member at your school, you were selected as a potential participant in this study because I am researching the Implementation of Technology in the Classroom (ITC) at your school. Your feedback is quite valuable in determining factors that contribute to the implementation of technology at your school. This research is not endorsed or supported by the school district administration or the principal of your school.

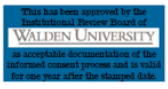
- **Background Information:** The purpose of this study is to determine the relationship among factors that influence degree of implementation of technology in the classroom. Gathering information and perceptions from the classroom teachers will provide data for this analysis.
- **Procedures:** If you agree to be in this study, you will **ONLY** be asked to complete an online survey to communicate which factors are present and have influenced the implementation of technology in the classroom.
- **Voluntary Nature of the Study:** It is your choice to participate in this study. No one in your school or district will know whether you do or do not participate, and you may change your mind or stop participation for any reason or at any point prior to submitting the survey.
- **Risks and Benefits of Participating:** There is minimal risk in participating in this study. By sharing your thoughts on the implementation of technology; however, you will contribute to the improvement of the support systems for other teachers.
- **Compensation:** There is no compensation for participating in this study.
- **Confidentiality:** All responses to the survey are **anonymous**—I will **not** have your name or contact information and cannot include any identifying data in the report or narrative of the study. Responses will only be used for this project study and the improvement of technology integration in your school or district.
- **Contacts and Questions:** Contact me if you have any questions or concerns (Darby Steele, [redacted] If you would like to talk privately about your rights as a participant, you may call Dr. Leilani Endicott Walden University representative (1[redacted] 3[redacted] Valden University's approval number for this study is **11-01-16-0032866** and it expires on **October 31, 2017.**

Statement of Consent: I have read the above information and understand the purpose and voluntary nature of the study. By submitting my survey responses using the link below, I give my consent to participate anonymously in the study. *I acknowledge that I may save or print a copy of this letter for my records.*

PLACE LINK TO SURVEY HERE: https://www.surveymonkey.com/implementationoftechnology

Thank you in advance for your consideration and/or participation.

Darby Steele
(Walden University, [redacted])



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Appendix D: Original Survey

Technology and Professional Development Survey of Louisiana High School Teachers

Teachers across the state are encouraged to *integrate technology into the classroom*, that is, use technology as an instructional strategy to enhance the curriculum. However, all teachers do not integrate technology in the same fashion or at the same pace. The following items intend to gather your thoughts and feelings regarding the integration process that you are currently involved in at your school. Please answer the following questions about yourself and your teaching experience. For each question, consider your current responsibilities/goals as a classroom teacher and your current level of technology integration in the classroom. The purpose of this survey is to gather information about your professional development and classroom practices. Remembering this goal may help you answer the questions that follow.

All responses are completely confidential and will be collected in a database out of state. Your identity cannot be traced so please answer each question honestly. Please answer all questions.

DEMOGRAPHIC INFORMATION

For each of the following items, select or write in the answer in the blank that best applies to you. Please mark all answers distinctively.

	Demographic Questions	Select or Fill in Answer
1.	What is your gender?	○ Male ○ Female
2.	In what year were you born?	
3.	What is your highest achieved degree?	○ Bachelors ○ Masters ○ Specialists ○ Doctorate
4.	How many years of teaching experience do you have?	
5.	Which of the following grade level(s) do you currently teach?	(Mark all that apply) ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12
6.	In what SCHOOL DISTRICT do you currently teach?	
7.	In what SCHOOL do you currently do the majority of your teaching?	
8.	How do you classify your main teaching assignment at this school, that is, the field in which you teach most of your classes?	○ English or Language Arts ○ Math ○ Music and/or Art ○ Science ○ Vocational ○ Social Studies ○ Other _____

TECHNOLOGY ISSUES

In the following items, select YES or NO under AGREE to indicate whether you currently agree with the statement. Then select how important/useful you personally consider that item to be as you strive to meet your daily responsibilities/goals as a classroom teacher. The degree that you integrate technology in your classroom will influence your responses. Select an answer from the 6 choice IMPORTANCE/USEFULNESS SCALE that best represents your feelings and classroom practices. An example is provided.

EXAMPLE		
"I use a modem to access the Internet at school." Note: Each answer should be selected based on your responsibilities/goals as a classroom teacher and your current level of technology integration in your classroom.	If you currently use a modem at school to access the Internet, select YES. If you use high speed Internet or do not use the Internet at school, select NO.	If the way you connect to the Internet is not important or useful to you (i.e. you do not use the Internet at school for classroom instruction or any other work-related cause so it does not affect your responsibilities/goals), select 1 or 2 on the scale. However, if you use the Internet to provide instruction, teaching materials, or to meet some work-related responsibility or goal, then the way you access the Internet is important. Select a higher level on the scale such as 5 or 6.

Importance/Usefulness Scale
1 - Not Important/Useful at all
2 - Not Very Important/Useful
3 - Less Important/Useful
4 - Somewhat Important/Useful
5 - Very Important/Useful
6 - Essential

	Statement	Agree	Importance/Usefulness
9.	Computers and other technology for my classroom(s) are sufficiently available.	○ Yes ○ No	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
10.	I have a computer with Internet access available for use at school.	○ Yes ○ No	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
11.	I have a computer with Internet access available for instructional use in my classroom.	○ Yes ○ No	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
12.	I participate in collaboration with other teachers on issues of instruction that involve teaching with technology.	○ Yes ○ No	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
13.	I participate in mentoring/peer observation/coaching relative to the integration of technology in the classroom.	○ Yes ○ No	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
14.	I participate in a network of teachers that discusses/addresses technology in the classroom (e.g. one organized by an outside agency or over the Internet)	○ Yes ○ No	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
15.	My school provides on-site technology support.	○ Yes ○ No	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
16.	I have a computer at home.	○ Yes ○ No	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6

The following items address Louisiana Technology Initiatives sponsored by Louisiana Center for Educational Technology (LCET). Please select YES or NO to indicate if you have participated (in the past or currently) in the Louisiana Technology Initiative listed. Then indicate how important/useful you personally consider that item to be as you strive to meet your daily responsibilities/goals as a classroom teacher. The degree that you integrate technology in your classroom will influence your responses. Select an answer from the 6 choice IMPORTANCE/USEFULNESS SCALE to indicate your feelings. If you did NOT participate in the initiative, select "No" and "I did not participate."

Importance/Usefulness Scale
0 - I did not participate in this initiative.
1 - Not Important/Useful at all
2 - Not Very Important/Useful
3 - Less Important/Useful
4 - Somewhat Important/Useful
5 - Very Important/Useful
6 - Essential

	Technology Initiative	Participation	Importance/Usefulness
17A.	FIRSTTech **If NO, also select "I did not participate"**	○ Yes ○ No	○ 0 - I did not participate ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
17B.	Louisiana INTECH	○ Yes ○ No	○ 0 - I did not participate ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
17C.	Louisiana INTECH 2 Science	○ Yes ○ No	○ 0 - I did not participate ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
17D.	INTECH Social Studies	○ Yes ○ No	○ 0 - I did not participate ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
17E.	PASS-PORT	○ Yes ○ No	○ 0 - I did not participate ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
17F.	T.H.E. | QUEST	○ Yes ○ No	○ 0 - I did not participate ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6

Select YES or NO to answer the question. Then select an answer from the 6 choice FREQUENCY SCALE that best coincides with the frequency which you have engaged in the indicated activity as you strive to meet your daily responsibilities/goals as a classroom teacher. The degree that you integrate technology in your classroom will influence your responses.

Frequency of Use Scale
1 - Never
2 - Several Times a Semester
3 - Several Times a Month
4 - Several Times a Week
5 - Daily
6 - Several Times a Day

	Statement	Response	Frequency of Use
18.	I use a computer at home for school related purposes.	○ Yes ○ No	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6

In this section, please indicate your personal knowledge of the following online technological resources that are available to you from LCET. Select YES or NO to indicate whether or not you have knowledge of this resource. Then select an answer on the 6 choice FREQUENCY SCALE that indicates how frequently you personally USE or are INVOLVED with the resource as you strive to meet your daily responsibilities/goals as a classroom teacher. The degree that you currently integrate technology in your classroom will influence your responses. If you select "No" also select "No Knowledge" on the FREQUENCY SCALE.

Frequency of Use Scale
0 - No Knowledge of this Technology Resource
1 - Never
2 - Several Times a Semester
3 - Several Times a Month
4 - Several Times a Week
5 - Daily
6 - Several Times a Day

	Technology Resource	Knowledge of Resource	Frequency of Use
19A.	Assistive Technology **If NO, also select "No Knowledge"**	○ Yes ○ No	○ 0 - No Knowledge ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
19B.	Bridging the Gap: UDL	○ Yes ○ No	○ 0 - No Knowledge ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
19C.	Computers for Kids (CLK)	○ Yes ○ No	○ 0 - No Knowledge ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
19D.	Making Connections	○ Yes ○ No	○ 0 - No Knowledge ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
19E.	Marco Polo State Partnerships	○ Yes ○ No	○ 0 - No Knowledge ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
19F.	Science Out of this World	○ Yes ○ No	○ 0 - No Knowledge ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
19G.	Statewide Distributive Learning Network/Louisiana Virtual School (LVS)	○ Yes ○ No	○ 0 - No Knowledge ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
19H.	Technology Standards/Guidelines	○ Yes ○ No	○ 0 - No Knowledge ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6

INSTRUCTIONAL SUPPORT FOR IMPLEMENTING TECHNOLOGY INTO THE CLASSROOM

In this section, select YES or NO to indicate if you have received instructional support from the following resources. Then select an answer on the 6 choice FREQUENCY SCALE that most closely represents how often you have received help with technology integration in the form of instructional support. The degree that you currently integrate technology in your classroom will influence your responses. Examples of *instructional support* could include assistance in the development of specific activities to enhance teaching/learning activities in your curricular area, help with lesson planning, and/or software recommendations. If you select NO under *Support*, select "NEVER" on the FREQUENCY SCALE.

Frequency of Support Scale
1 - Never
2 - Several Times a Semester
3 - Several Times a Month
4 - Several Times a Week

5 - Daily
6 - Several Times a Day

	Resources	Support	Frequency of Support
20A.	Teachers at the school site **If NO, also select "Never"**	○ Yes ○ No	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
20B.	Principal at the school site	○ Yes ○ No	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
20C.	Teachers at other school sites	○ Yes ○ No	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
20D.	Technology coordinator/aide at school site	○ Yes ○ No	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
20E.	District mentor, technology coordinator, or resource person	○ Yes ○ No	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
20F.	Online resource	○ Yes ○ No	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
20G.	Other [ ] **If there is no "other," please write "NONE" in this field and select "NO" and "Never" in the next two columns.**	○ Yes ○ No	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6

TEACHER ATTITUDE TOWARD AND CONFIDENCE IN TECHNOLOGY

Please read each statement and select an answer on the 6 choice AGREE/DISAGREE SCALE that most closely represents how you generally think or feel about each statement. Consider your daily responsibilities/goals as a classroom teacher. Your current level of integrating technology in the classroom will influence your responses.

Agree/Disagree Scale
1 - Strongly Disagree
2 - Disagree
3 - Tend to Disagree
4 - Tend to Agree
5 - Agree
6 - Strongly Agree

	Statement	Agree/Disagree Scale
21.	Using technology enhances student learning.	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
22.	I have many uses for technology in my classroom.	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
23.	I feel confident in my ability to use technology.	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
24.	I expect my technology activities to be successful.	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
25.	I put a lot of effort into implementing technology activities/projects.	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
26.	I keep working even when there are problems with technology.	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6
27.	My instructional leader (i.e. principal, assistant principal, department chair, C&I director, technology facilitator, etc.) encourages me to integrate technology into my classroom curriculum.	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6

28.	My instructional leader (i.e. principal, assistant principal, department chair, C&I director, technology facilitator, etc.) talks/communicates with me frequently about the integration of technology in my classroom.	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6

	Statement	Mark All That Apply
29.	I use a computer at home for the school-related purposes selected.	☐ 1. I do not use a computer at home ☐ 2. To prepare quizzes/tests ☐ 3. To locate online resources ☐ 4. To communicate by e-mail ☐ 5. To e-mail handouts/materials for classroom use (to students, mentors, or colleagues) ☐ 6. Other [ ]

INSTRUCTIONAL LEADER'S STYLE

Questions 27, 28, & 30B all refer to YOUR INSTRUCTIONAL LEADER. In item 30A, select the person who actually serves as your instructional leader. Refer to this person when answering questions 27, 28, & 30B.

30A.	Select your instructional leader.	○ Principal ○ Assistant Principal ○ Department Chair ○ C&I Director ○ Technology Facilitator ○ Other [ ]
30B.	**Using the *Managerial Styles Scale* * that is described below, please select which style you feel best identifies your instructional leader's behaviors and communication with the staff at your school. For example, which approach best describes the way your instructional leader would encourage you to change your classroom practices or implement an innovation such as the integration of technology in the classroom?**	

○ **Coercive**: A leader with this style has the "Do what I tell you" approach; she or he demands immediate compliance with requests.

○ **Authoritative:** A leader with this style has the "Come with me" approach; she or he motivates people toward a common goal.

○ **Affiliative**: A leader with this style has the "People come first" approach; she or he creates harmony and builds emotional bonds between others.

○ **Democratic:** A leader with this style has the "What do you think?" approach; she or he forges a consensus through participation.

○ **Pacesetting:** A leader with this style has the "Do as I do, now!" approach; she or he sets high standards for performance of staff.

○ **Coaching**: A leader with this style has the "Try this" approach; she or he helps develop people for the future.

*Used by permission from the Hay Group, Inc.

DEGREE OF IMPLEMENTATION OF TECHNOLOGY IN THE CLASSROOM (ITC)

31A.	Please select the statement that best describes the frequency of technology use in your classroom. Remember, *technology* refers to any electronic devices used to store and deliver information, including computer, video, and communication systems.	○ 1 - Never ○ 2 - Several times a semester ○ 3 - Several times a month ○ 4 - Several times a week ○ 5 - Daily ○ 6 - Several times a day

31B.	**Please select the statement that best describes your level of technology use in your classroom. Remember, *technology* refers to any electronic devices used to store and deliver information, including computer, video, and communication systems.**	
○	1	I do not use technology, including the computer, for personal or professional use.
○	2	I use technology in my home or classroom, including the computer for e-mail and/or menu-driven programs and/or to search the web for teaching preparation.
○	3	I use technology in my classroom including computer use for e-mail, for common software applications, and to search the web for teaching preparation. I also am aware of the national, state, and local technology standards and occasionally incorporate them into my lessons.
○	4	I integrate technology in the delivery of my subject matter, depend on e-mail exchange with colleagues and students, use computer management tools, and rely on many software applications. I also expect my students to use Internet and/or common software applications as class requirements. In addition, I am aware of the national, state, and local technology standards and frequently incorporate them into my lessons.
○	5	I consider technology to be an integral component for all aspects of teaching and learning. I use multiple features of computer technology (presentation software, web page design, SPSS, and web quests) as needed in my classes. I am proficient in file maintenance, as well as maintenance of a computer system. My students are immersed in technology integration in the classes I teach. Additionally, I almost always incorporate national, state, and local technology standards into my lessons.

TECHNOLOGY TRAINING

Please indicate the number of *clock hours* of technology training you have received over the past 5 years. In this study, technology integration training is defined as *training which focuses on the development of activities through which technology can be used as a tool to support or enhance teaching and learning in the classroom.* This does NOT include training with the purpose of learning to use specific software or hardware on the computer. Technology integration training gives teachers specific examples of how technology can be used in his/her content area to support/enhance teaching and learning activities.

32.	○ 0-9 ○ 10-19 ○ 20-29 ○ 30-39 ○ 40-49 ○ 50-59 ○ 60-69 ○ 70-79 ○ 80-89 ○ 90-100 ○ 100-124 ○ 125-149 ○ 150-174 ○ 175-199 ○ 200+

OPEN-END QUESTIONS

(Use space on back if needed)

33.	How do you think technology should be used to improve teaching, learning, and scholarship?
34.	Is there anything else you would like to tell us about computers and technology in your teaching experience? (For example, the type of support you receive, your technology needs, technological difficulties you have, an example of how you use technology, or how your students responded/performed during an activity/lesson, etc.)

Appendix E: Permission to use Instrument

November 1, 2015

To: Darby Steele
From: Dr. Anissa Harris
RE: Permission to use instrument

Darby,

I wanted to formally welcome you to use my instrument entitled the *Technology and Professional Development Survey of Louisiana High School Teachers* for gathering data on factors that influence Degree of Implementation of Technology in the Classroom. As we discussed, it would be appropriate for you to adjust the geographical data relevant to Louisiana so that it is appropriate for the state of Georgia. You may also print the instrument as an appendix for your doctoral study.

Thank you.

Anissa Harris, Ed.D.

Appendix F: Modified Survey

Technology and Professional Development Survey of Georgia High School Teachers

Welcome to My Survey

Teachers across the state are encouraged to integrate technology into the classroom, that is, use technology as an instructional strategy to enhance the curriculum. However, all teachers do not integrate technology in the same fashion or at the same pace. The following items intend to gather your thoughts and feelings regarding the integration process that you are currently involved in at your school. Please answer the following questions about yourself and your teaching experience. For each question, consider your current responsibilities/goals as a classroom teacher and your current level of technology integration in the classroom. The purpose of this survey is to gather information about your professional development and classroom practices. Remembering this goal may help you answer the questions that follow.

All responses are completely confidential and will be collected in a database out of state. Your identity cannot be traced so please answer each question honestly. Please answer all questions.

Next

Technology and Professional Development Survey of Georgia High School Teachers

DEMOGRAPHIC INFORMATION

For each of the following items, select or write in the answer in the blank that best applies to you. Please mark all answers distinctively.

* **1. What is your gender?**

- ◯ Female
- ◯ Male

* **2. In what year were you born? (enter 4-digit birth year; for example, 1976)**

* **3. What is your highest achieved degree?**

- ◯ Bachelors
- ◯ Masters
- ◯ Specialists
- ◯ Doctorate

* **4. How many years of teaching experience do you have?**

* **5. Which of the following grade level(s) do you currently teach?**

- ☐ 8
- ☐ 9
- ☐ 10
- ☐ 11
- ☐ 12

* **6. In what SCHOOL DISTRICT do you currently teach?**

* **7. In what SCHOOL do you currently do the majority of your teaching?**

* **8. How do you classify your main teaching assignment at this school, that is, the field in which you teach most of your classes?**

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Technology and Professional Development Survey of Georgia High School Teachers

TECHNOLOGY ISSUES

In the following items, select YES or NO under AGREE to indicate whether you currently agree with the statement. Then select how important/useful you personally consider that item to be as you strive to meet your daily responsibilities/goals as a classroom teacher. The degree that you integrate technology in your classroom will influence your responses. Select an answer from the 6 choice IMPORTANCE/USEFULNESS SCALE that best represents your feelings and classroom practices.

Importance/Usefulness Scale

1 - Not Important/Useful at all
2 - Not Very Important/Useful
3 - Less Important/Useful
4 - Somewhat Important/Useful
5 - Very Important/Useful
6 - Essential

* **9. Computers and other technology for my classroom(s) are sufficiently available.**

	Agree	Importance/Usefulness
Response to Statement		

* **10. I have a computer with Internet access available for use at school.**

	Agree	Importance/Usefulness
Response To Statement		

* **11. I have a computer with Internet access available for instructional use in my classroom.**

	Agree	Importance/Usefulness
Response to Statement		

* **12. I participate in collaboration with other teachers on issues of instruction that involve teaching with technology.**

	Agree	Importance/Usefulness
Response to Statement		

* **13. I participate in mentoring/peer observation/coaching relative to the integration of technology in the classroom.**

	Agree	Importance/Usefulness
Response to Statement		

* **14. I participate in a network of teachers that discusses/addresses technology in the classroom (e.g. one organized by an outside agency or over the Internet).**

	Agree	Importance/Usefulness
Response to Statement		

* **15. My school provides on-site technology support.**

	Agree	Importance/Usefulness
Response to Statement		

* **16. I have a computer at home.**

	Agree	Importance/Usefulness
Response to Statement		

Prev Next

Technology and Professional Development Survey of Georgia High School Teachers

TECHNOLOGY INITIATIVE

The following items address Georgia Technology Initiatives. Please select YES or NO to indicate if you have participated (in the past or currently) in the Georgia Technology Initiatives listed. Then indicate how important/useful you personally consider that item to be as you strive to meet your responsibilities/goals as a classroom teacher. The degree that you integrate technology in your classroom will influence your responses. Select an answer from the 6 choice IMPORTANCE/USEFULNESS SCALE to indicate your feelings. If you did NOT participate in the initiative, select "No" and "I did not participate."

Importance/Usefulness Scale

0 - I did not participate in this initiative.
1 - Not Important/Useful at all
2 - Not Very Important/Useful
3 - Less Important/Useful
4 - Somewhat Important/Useful
5 - Very Important/Useful
6 - Essential

* **17A. Point Training**

If No, also select "I did not participate"

	Participation	Importance/Usefulness
Response to Initiative		

* **17B. Infinite Campus Training**

If No, also select "I did not participate"

	Participation	Importance/Usefulness
Response to Initiative		

Select YES or NO to answer the question. Then select an answer from the 6 choice FREQUENCY SCALE that best coincides with the frequency which you have engaged in the indicated activity as you strive to meet your daily responsibilities/goals as a classroom teacher. The degree that you integrate technology in your classroom will influence your responses.

Frequency of Use Scale

1 - Never
2 - Several Times a Semester
3 - Several Times a Month
4 - Several Times a Week
5 - Daily
6 - Several Times a Day

* **18. I use a computer at home for school related purposes.**

	Response	Frequency of Use
Response to Statement		

* **19A. Edmodo**

	Knowledge of Resource	Frequency of Use
Technology Resource		

* **19B. Nearpod**

	Knowledge of Resource	Frequency of Use
Technology Resource		

* **19C. LiveBinders**

	Knowledge of Resource	Frequency of Use
Technology Resource		

* **19D. Educreations**

	Knowledge of Resource	Frequency of Use
Technology Resource		

* **19E. Brainscape**

	Knowledge of Resource	Frequency of Use
Technology Resource		

* **19F. Blendscape**

	Knowledge of Resource	Frequency of Use
Technology Resource		

* **19G. Assistive Technology**

	Knowledge of Resource	Frequency of Use
Technology Resource		

Prev Next

Technology and Professional Development Survey of Georgia High School Teachers

INSTRUCTIONAL SUPPORT FOR IMPLEMENTING TECHNOLOGY INTO THE CLASSROOM

In this section, select YES or NO to indicate if you have received instructional support from the following resources. Then select an answer on the 6 choice FREQUENCY SCALE that most closely represents how often you have received help with technology integration in the form of instructional support. The degree that you currently integrate technology in your classroom will influence your responses. Examples of *instructional support* could include assistance in the development of specific activities to enhance teaching/learning activities in your curricular area, help with lesson planning, and/or software recommendations. If you select NO under *Support*, select "NEVER" on the FREQUENCY SCALE.

Frequency of Support Scale
1 - Never
2 - Several Times a Semester
3 - Several Times a Month
4 - Several Times a Week
5 - Daily
6 - Several Times a Day

* **20A. Teachers at the school site**

If No, also select "Never"

Resource	Support	Frequency of Support

* **20B. Principal at the school site**

Resource	Support	Frequency of Support

* **20C. Teachers at other school sites**

Resource	Support	Frequency of Support

* **20D. Technology coordinators at school site**

Resource	Support	Frequency of Support

* **20E. District mentor, technology coordinator, or resource person**

Resource	Support	Frequency of Support

* **20F. Online resource**

Resource	Support	Frequency of Support

* **20G. Other (Insert other resource of support received then choose "YES" and select an answer on the 6 choice FREQUENCY SCALE below. If there is no "other," please write "NONE" in this field and select "NO" and "Never" below.)**

* **20G Other (as indicated above).**

	Support	Frequency of Support
Resource		

Prev Next

Technology and Professional Development Survey of Georgia High School Teachers

TEACHER ATTITUDE TOWARD AND CONFIDENCE IN TECHNOLOGY

Please read each statement and select an answer on the 6 choice AGREE/DISAGREE SCALE that most closely represents how you generally think or feel about each statement. Consider your daily responsibilities/goals as a classroom teacher. Your current level of integrating technology in the classroom will influence your response.

Agree/Disagree Scale
1 - Strongly Disagree
2 - Disagree
3 - Tend to Disagree
4 - Tend to Agree
5 - Agree
6 - Strongly Agree

* **21. Using technology enhances student learning.**

1 - Strongly Disagree | 2 - Disagree | 3 - Tend to Disagree | 4 - Tend to Agree | 5 - Agree | 6 - Strongly Agree

* **22. I have many uses for technology in my classroom.**

1 - Strongly Disagree | 2 - Disagree | 3 - Tend to Disagree | 4 - Tend to Agree | 5 - Agree | 6 - Strongly Agree

* **23. I feel confident in my ability to use technology.**

1 - Strongly Disagree | 2 - Disagree | 3 - Tend to Disagree | 4 - Tend to Agree | 5 - Agree | 6 - Strongly Agree

* **24. I expect my technology activities to be successful.**

1 - Strongly Disagree | 2 - Disagree | 3 - Tend to Disagree | 4 - Tend to Agree | 5 - Agree | 6 - Strongly Agree

* **25. I put a lot of effort into implementing technology activities/projects.**

1 - Strongly Disagree | 2 - Disagree | 3 - Tend to Disagree | 4 - Tend to Agree | 5 - Agree | 6 - Strongly Agree

* **26. I keep working even when there are problems with technology.**

1 - Strongly Disagree | 2 - Disagree | 3 - Tend to Disagree | 4 - Tend to Agree | 5 - Agree | 6 - Strongly Agree

* **27. My instructional leader (i.e. principal, assistant principal, department chair, C&I director, technology facilitator, etc.) encourages me to integrate technology into my classroom curriculum.**

1 - Strongly Disagree | 2 - Disagree | 3 - Tend to Disagree | 4 - Tend to Agree | 5 - Agree | 6 - Strongly Agree

* **28. My instructional leader (i.e. principal, assistant principal, department chair, C&I director, technology facilitator, etc.) talks/communicates with me frequently about the integration of technology in my classroom.**

1 - Strongly Disagree | 2 - Disagree | 3 - Tend to Disagree | 4 - Tend to Agree | 5 - Agree | 6 - Strongly Agree

* **29. I use a computer at home for the school-related purposes selected.** **(Mark All That Apply Below)**

- [ ] 1. I do not use a computer at home
- [ ] 2. To prepare quizzes/tests
- [ ] 3. To locate online resources
- [ ] 4. To communicate by email
- [ ] 5. To email handouts/materials for classroom use (to students, mentor, or colleagues)
- [ ] 6. Other

Other (please specify)

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Technology and Professional Development Survey of Georgia High School Teachers

INSTRUCTIONAL LEADER'S STYLE

Questions 27, 28, & 30B all refer to YOUR INSTRUCTIONAL LEADER. In item 30A, select the person who actually serves as your instructional leader. Refer to this person when answering questions 27, 28, & 30B.

* **30A. Select your instructional leader.**

- [ ] Principal
- [ ] Assistant Principal
- [ ] Department Chair
- [ ] C&I Director
- [ ] Technology Facilitator
- [ ] Other

Other (please specify)

* **30B. Using the *Managerial Styles Scale** that is described below, please select which style you feel best identifies your instructional leader's behaviors and communication with staff at your school. For example, which approach best describes the way your instructional leader would encourage you to change your classroom practices or implement an innovation such as the integration of technology in the classroom?**

***Used by permission from the Hay Group, Inc.**

- ◯ Coercive: A leader with this style has the "Do what I tell you" approach; she or he demands immediate compliance with requests.
- ◯ Authoritative: A leader with this style has the "Come with me" approach; she or he motivates people toward a common goal.
- ◯ Affiliative: A leader with this style has the "People come first" approach; she or he creates harmony and builds emotional bonds between others.
- ◯ Democratic: A leader with this style has the "What do you think?" approach; she or he forges a consensus through participation.
- ◯ Pacesetting: A leader with this style has the "Do as I do, now!" approach; she or he sets high standards for performance of staff.
- ◯ Coaching: A leader with this style has the "Try this" approach; she or he helps develop people for the future.

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Technology and Professional Development Survey of Georgia High School Teachers

DEGREE OF IMPLEMENTATION OF TECHNOLOGY IN THE CLASSROOM (ITC)

* **31A. Please select the statement that best describes the frequency of technology use in your classroom. Remember, *technology* refers to any electronic devices used to store and deliver information, including computer, video, and communication systems.**

1 - Never	2 - Several times a semester	3 - Several times a month	4 - Several times a week	5 - Daily	6 - Several times a day
○	○	○	○	○	○

* **31B. Please select the statement that best describes your level of technology use in your classroom. Remember, *technology* refers to any electronic devices used to store and deliver information, including computer, video, and communication systems.**

- ○ 1 - I do not use technology, including the computer, for personal or professional use.
- ○ 2 - I use technology in my home or classroom, including the computer for e-mail and/or menu-driven programs and/or to search the web for teaching preparation.
- ○ 3 - I use technology in my classroom including computer use for e-mail, for common software applications, and to search the web for teaching preparation. I also am aware of the national, state, and local technology standards and occasionally incorporate them into my lessons.
- ○ 4 - I integrate technology in the delivery of my subject matter, depend on e-mail exchange with colleagues and students, use computer management tools, and rely on many software applications. I also expect my students to use Internet and/or common software applications as class requirements. In addition, I am aware of the national, state, and local technology standards and frequently incorporate them into my lessons.
- ○ 5 - I consider technology to be an integral component for all aspects of teaching and learning. I use multiple features of computer technology (presentation software, web page design, SPSS, and web quests) as needed in my classes. I am proficient in file maintenance, as well as maintenance of a computer system. My students are immersed in technology integration in the classes I teach. Additionally, I almost always incorporate national, state, and local technology standards into my lessons.

Prev Next

Technology and Professional Development Survey of Georgia High School Teachers

TECHNOLOGY TRAINING

Please indicate the number of clock hours of technology training you have received over the past 5 years. In this study, technology integration training is defined as *training which focuses on the development of activities through which technology can be used as a tool to support or enhance teaching and learning in the classroom.* This does NOT include training with the purpose of learning to use specific software or hardware on the computer. Technology integration training gives teachers specific examples of how technology can be used in his/her content area to support/enhance teaching and learning activities.

* **32.**

0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100	100-124	125-149	150-174	175-199	200+
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

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Technology and Professional Development Survey of Georgia High School Teachers

OPEN-END QUESTIONS

* **33. How do you think technology should be used to improve teaching, learning, and scholarship?**

* **34. Is there anything else you would like to tell us about computers and technology in your teaching experience? (For example, the type of support you receive, your technology needs, technological difficulties you have, and example of how you use technology, or how your students responded/performed during an activity/lesson, etc.)**

Prev Done

Appendix G: Reminder E-mail

Dear Colleague,

As a reminder, the following text is an *Invitation to Participate* as a volunteer in a study about the Implementation of Technology at our school. I am forwarding this invitation as a courtesy; please understand that you are under no obligation to participate as this survey is not required by this school. However, if you do wish to participate and have not yet done so, there is still opportunity. Thank you.

Sincerely,

Mr/Mrs/Ms Administrator

I am a doctoral student at Walden University and would like to invite you participate in a research study by completing an online survey that will take no more than 15 minutes of your time. As a teacher or staff member at your school, you were selected as a potential participant in this study because I am researching the Implementation of Technology in the Classroom (ITC) at your school. Your feedback is quite valuable in determining factors that contribute to the implementation of technology at your school. This research is not endorsed or supported by the school district administration or the principal of your school.

- **Background Information:** The purpose of this study is to determine the relationship among factors that influence degree of implementation of technology in the classroom. Gathering information and perceptions from the classroom teachers will provide data for this analysis.

- **Procedures:** If you agree to be in this study, you will **ONLY** be asked to complete an online survey to communicate which factors are present and have influenced the implementation of technology in the classroom.

- **Voluntary Nature of the Study:** It is your choice to participate in this study. No one in your school or district will know whether you do or do not participate, and you may change your mind or stop participation for any reason or at any point prior to submitting the survey. You may skip any questions that you feel are too personal.

- **Risks and Benefits of Participating:** There is minimal risk in participating in this study. By sharing your thoughts on the implementation of technology; however, you will contribute to the improvement of the support systems for other teachers.

- **Compensation:** There is no compensation for participating in this study.

- **Confidentiality:** All responses to the survey are **anonymous**—I will **not** have your name or contact information and cannot include any identifying data in the report or narrative of the study. Responses will only be used for this project study and the improvement of technology integration in your school or district.

Statement of Consent: I have read the above information and understand the purpose and voluntary nature of the study. By submitting my survey responses using the link below, I give my consent to participate anonymously in the study. I acknowledge that I may save or print a copy of this letter for my records.
PLACE LINK TO SURVEY HERE: https://www.surveymonkey.com/implementationoftechnology

- **Contacts and Questions:** Contact me if you have any questions or concerns (Darby Steele, [redacted]). If you would like to talk privately about your rights as a participant, you may call Dr. Leilani Endicott Walden University representative ([redacted]). Walden University's approval number for this study is **11-01-16-0032866** and it expires on **October 31, 2017**.

Thank you in advance for your consideration and/or participation.

Darby Steele
Walden University, [redacted]